FORMULA STUDENT GERMANY 2014

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Hockenheim, July 29th – August 3rd 2014

FORMULA STUDENT GERMANY

INTERNATIONAL DESIGN COMPETITION

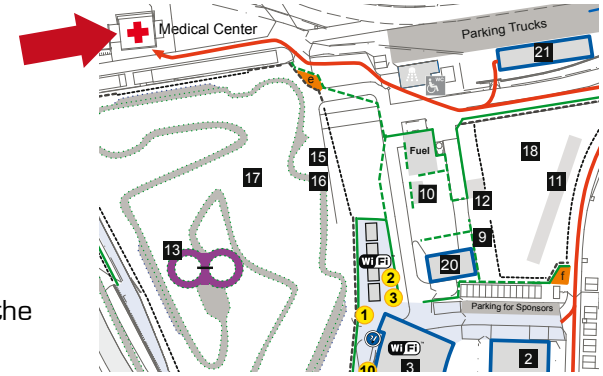
July 29th – August 3rd 2014
Hockenheim

FORMULA STUDENT GERMANY | PROGRAMME 2014

formula student germany

PROGRAMME 2014

EMERGENCY INFORMATION



Minor Injury

Medical Centre:
Please accompany the injured person to the Medical Centre. Emergency aid is provided there.
The Medical Centre is occupied each day round-the-clock.

Severe Injury

Contact someone with a two-way radio:
Every Official and Security has two-way radio. Ask them to call the Medical Centre or an ambulance on channel 11.

Call an ambulance:
Call an ambulance yourself if someone is severely injured and needs urgent help. The Emergency Number for every phone and mobile phone is **112**.

During dynamics:
On Saturday and Sunday an ambulance is on site during the dynamic events. To contact them ask someone with a two-way radio (Official, Security) to call them.

Hospital:
Main Hospital, Kreiskrankenhaus (Schwetzingen), Bodelschwinghstrasse 10, 68723 Schwetzingen
phone: +49 (0) 6202 / 84-30

Emergency Numbers

112

In case of an emergency beyond competition times call 112. This number works with each phone, also with mobile phone or coin-operated telephone as international GSM-standard. It is alway free of charge.

Officials

Pit Marshal Konrad Paule:	+49 (160) 9670 4515
Pit Marshal Sebastian Seewaldt:	+49 (160) 9675 1593
Event Control Daniel Ahrens:	+49 (160) 9675 3763
Event Control Tim Schmidt:	+49 (160) 9679 1225

(In case of an emergency please call one of them, no matter what time it is.)

Emergency Call Contents

The emergency control centre will ask you some questions to ensure proper help for you. To support you at your call, here are some standard questions and some hints for your answers in English and German.

Who is calling? *(Wer ruft an?)*
Say your name and your telephone number for callbacks. Digits in German: 0 (null), 1 (eins), 2 (zwei), 3 (drei), 4 (vier), 5 (fünf), 6 (sechs), 7 (sieben), 8 (acht), 9 (neun)

Where did it happen? *(Wo ist es passiert? / Wo ist es geschehen?)*
the event site has the adress "Hockenheimring, Sachshaus, Am Motodrom", make it more precise!:
pit lane (Boxengasse), dynamic area (Fahrerlager);
the adress for campsite C2 near the Motodrom Hotel " Hockenheimring, Zeltplatz C2 beim Motodrom Hotel"
and for campsite C3 on the other site of the highway "Hockenheimring, Zeltplatz C3 an der Continental Straße"

What happened? *(Was ist passiert? / Was ist geschehen?)*
accident (Unfall), traffic accident (Verkehrsunfall), fire (Feuer), fall (Sturz), explosion (Explosion)

How many people are affected? *(Wie viele Personen sind betroffen?)*
1 (eins), 2 (zwei), 3 (drei), 4 (vier), 5 (fünf), 6 (sechs), 7 (sieben), 8 (acht), 9 (neun), 10 (zehn)

What kind of injury has happened? *(Welche Verletzung liegt vor?)*
fracture (Knochenbruch), bleeding (Blutung), unconsciousness (Bewusstlosigkeit), burn (Verbrennung), electric shock (Stromschlag), suffocation (Ersticken), heart attack (Herzinfarkt), shock (Schock)

Don't hang up after answering these questions! Wait to hear if the control centre has further questions!

GREETINGS
GRUSSWORT

Formula Student Germany, where EVERYBODY is a winner.

Dear friends of Formula Student Germany.

Just few days ago the world was moved by the football World Cup. Teams from 32 different nations fought for the title. Finally the German Team was able to bring the cup home.

At Formula Student in Germany as well one of the teams will take home the overall victory. One team with a car with combustion engine and one team with an electric powered car.

But more important than similarities are the differences. The comparison highlights once more: at Formula Student the extraordinary is ordinary. At Formula Student Germany there simply are no losers. Teams that manage to design and build their own race car and compete with it in Germany are made up of the most motivated and enthusiastic students of their generation. They do not have to overcome any borders regarding teamwork or nationality, for them these borders do not exist.

They think and act globally, they help and feel globally. They cooperate globally, travel globally. Just for those reasons they are winners already.

Certainly each team dreams of the overall victory. More important though is to prove the own capabilities and the performance of the team. And to observe how other teams approach the tasks and perform. To learn from rather than fight against each other is the spirit at Formula Student Germany. That way truly all participants win.

Immerse yourself and become a winner. New impressions, experiences and enthusiasm. Everyone who visits Formula Student Germany returns home as a winner!

Formula Student Germany is so outstanding because the extraordinary is ordinary.

Welcome and enjoy a winning time,

Tim Hannig.

Formula Student Germany, wo ALLE Gewinner sind.

Liebe Freunde der Formula Student Germany,

Noch vor wenigen Tagen war die Welt im Fußballfieber. Mannschaften aus 32 Nationen kämpften in Brasilien um den Titel. Am Ende konnte das deutsche Team den Pokal nach Hause bringen.

Auch bei der Formula Student Germany wird eins der Teams der ganzen Welt den Gesamtsieg nach Hause nehmen. Jeweils eins der Teams mit Verbrennungsmotor und eins derer mit rein elektrischem Antrieb.

Wichtiger als die Gemeinsamkeiten sind die Unterschiede. Der Vergleich zeigt einmal mehr, dass das Besondere in der Formula Student ganz normal ist. Bei der Formula Student Germany gibt es einfach keine Verlierer. Die Teams, die es schaffen, ein Rennauto in Eigenregie zu konstruieren und zu bauen und zum Wettbewerb nach Hockenheimring zu bringen, gehören zu den motiviertesten und engagiertesten Studierenden Ihrer Generation. Sie müssen Grenzen von Teamwork oder Nationen nicht überwinden, für die Mitglieder dieser Teams gibt es diese Grenzen nicht.

Sie denken und handeln global, sie helfen und fühlen global. Sie kooperieren global, reisen global. Schon daher sind alle Teilnehmer echte Gewinner.

Natürlich träumt jedes Team vom Gesamtsieg. Noch wichtiger ist aber, unter Beweis zu stellen, wie gut und viel sie gearbeitet haben und was sie in der Lage sind zu leisten. Und zu sehen, wie andere Teams die Aufgaben lösen und abschneiden. Voneinander lernen statt gegeneinander kämpfen heißt es in der Formula Student. Auch deshalb gewinnen alle Teilnehmer.

Tauchen Sie ein und gewinnen auch Sie. Eindrücke, Erfahrungen und Begeisterung. Jeder, der zur Formula Student Germany kommt, fährt als Gewinner nach Hause! Die Formula Student Germany ist so besonders weil das Besondere hier so normal ist.

Herzlich Willkommen und eine gewinnbringende Zeit,

Tim Hannig.

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CONTENTS
INHALT

Greetings	Grusswort	3
Formula Student Germany - An Introduction	Formula Student Germany - Eine Einführung	6
The Disciplines at a Glance	Die Disziplinen im Überblick	8
Awards 2014	Auszeichnungen 2014	11
Schedule 2014	Zeitplan 2014	13
Floor Plan	Lageplan	14
Formula Student Germany Team	Formula Student Germany Team	16
Judges and Scrutineers 2014	Juroren und Scrutineers 2014	18
Sponsors' Statements	Sponsorenstatements	20
Live Timing at FSG	Das FSG Live Timing	31
FSG Shows Its True Colours	FSG bekennt Farbe	32
Interview - Clenn Giebenhain	Interview - Clenn Giebenhain	36
Interview - Helmut Matschi	Interview - Helmut Matschi	39
Guided Tours	Führungen	41
FSG 2013 - Impressions	FSG 2013 - Impressionen	42
Imprint	Impressum	47
Participating FSC Teams 2014	Teilnehmende FSC Teams 2014	48
Participating FSE Teams 2014	Teilnehmende FSE Teams 2014	50
Wi-Fi	WLAN	91
Emergency Information		114

FORMULA STUDENT GERMANY - AN INTRODUCTION
FORMULA STUDENT GERMANY - EINE EINFÜHRUNG

Formula Student Germany consists of two competitions that run in parallel: Formula Student Combustion – with combustion engines – and Formula Student Electric – with electric motors. What both competitions have in common is that as a team effort, students build a single seated formula-style race-car with which they compete against teams from all over the world. The competition, however, is not simply won by the team with the fastest car, but rather by the team with the best overall package of design, race performance, cost management and sales planning. To succeed in this, interdisciplinary teamwork and an efficient team structure in particular are crucial.

Formula Student Germany complements the students' theoretical education with a challenging and intensive practical experience in designing and manufacturing as well as considering the economic aspects of automotive engineering. For the competition, the teams have to assume that they develop a race-car prototype which will be evaluated for series production. The target customer group is the non-professional weekend-racer, for whom the race-car must offer very good driving characteristics regarding to acceleration, braking and handling. Furthermore, it should be offered at a reasonable price and be reliable as well as dependable. Additionally, the car's market value increases due to other factors such as aesthetics, ergonomics and the use of available standard purchase components.

The competition

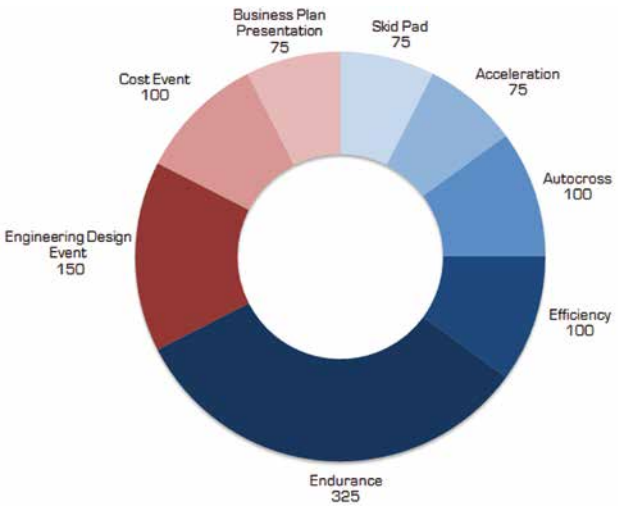
The challenge the teams face is to construct and build a prototype that best matches these given criteria. To determine the winner, a jury of experts from the motorsport, automotive and supplier industries judge every design, cost planning and business plan in comparison to the other competing teams. Furthermore, the performance on the racetrack is decisive; here the students' self-built single-seaters prove how well they hold up under real-life conditions in a number of so called dynamic disciplines.

Die Formula Student Germany besteht aus zwei parallel stattfindenden Wettbewerben: die Formula Student Combustion – mit Verbrennungsmotoren – und die Formula Student Electric – mit Elektromotoren. Bei beiden Wettbewerben bauen Studenten in Teamarbeit einen einsitzigen Formelrennwagen, mit dem sie gegen Teams aus der ganzen Welt antreten. Doch nicht unbedingt das schnellste Auto gewinnt, sondern das Team mit dem besten Gesamtpaket aus Konstruktion, Rennperformance, Finanzplanung und Verkaufsargumentation. Hierfür sind insbesondere interdisziplinäre Teamarbeit und eine effiziente Teamstruktur von großer Bedeutung.

Die Formula Student Germany ergänzt das Studium um herausfordernde und intensive praktische Erfahrungen mit Konstruktion und Fertigung sowie den wirtschaftlichen Aspekten des Automobilbaus. Die Studenten sollen in Vorbereitung auf den Wettbewerb annehmen, dass sie den Prototypen eines Rennwagens bauen, der ebenfalls daraufhin bewertet wird, ob er in Kleinserie produziert werden kann. Zielgruppe ist der nicht-professionelle Wochenendrennfahrer, für den der Rennwagen unter anderem sehr gute Fahreigenschaften hinsichtlich Beschleunigung, Bremskraft und Handling aufweisen muss. Außerdem sollte das Fahrzeug wenig kosten sowie zuverlässig und einfach zu unterhalten sein. Weiterhin wird sein Marktwert durch Faktoren wie Ästhetik, Ergonomie und den Einsatz üblicher Serienteile gesteigert.

Der Wettbewerb

Die Herausforderung für die Teams besteht darin, einen Prototypen zu konstruieren und zu bauen, der diesen Anforderungen am besten entspricht. Um den Sieger zu ermitteln, bewertet eine Jury aus Experten der Motorsport-, Automobil- und Zulieferindustrie alle Konstruktionen, Kostenpläne und Verkaufspräsentationen im Vergleich zu den konkurrierenden Teams. Zusätzlich beweisen die Studenten auf der Rennstrecke in unterschiedlichen sogenannten dynamischen Disziplinen, wie sich ihre selbstgebauten Einsitzer in der Praxis bewähren.



With different disciplines the competition reflects all aspects which have to be kept in mind when constructing and building a car.

Der Wettbewerb spiegelt mit seinen verschiedenen Disziplinen alle Aspekte wider, die bei Konstruktion und Bau eines Fahrzeugs bedacht werden müssen.

Gemeinsam bewegen wir die Welt

trendence Graduate Barometer 2014 DEUTSCHLANDS 100 Top-Arbeitgeber

Zukunft gestalten bei Schaeffler

Schaeffler – das ist die Faszination eines internationalen Technologie-Konzerns mit rund 79.000 Mitarbeitern, verbunden mit der Kultur eines Familienunternehmens. Als Partner aller bedeutenden Automobilhersteller sowie zahlreicher Kunden im Industriebereich bieten wir Ihnen viel Raum für Ihre persönliche Entfaltung. Die Basis dafür bildet eine kollegiale Arbeitsatmosphäre – ganz nach unserem Motto: Gemeinsam bewegen wir die Welt.

Gestalten Sie mit uns die Zukunft.
Spannende Aufgaben und hervorragende Entwicklungsperspektiven warten auf Sie.

Sie wollen mit uns die Welt bewegen?
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THE DISCIPLINES AT A GLANCE
DIE DISZIPLINEN IM ÜBERBLICK

Altogether, in FSG there are eight disciplines. Of these, three are static in which the teams and their cars are judged based on reports, discussions and presentations. The other five disciplines are called dynamic disciplines involving a moving car and thus evaluating different performance aspects of the car.

Bei der FSG gibt es insgesamt acht Disziplinen. In dreien werden die Teams und ihre Autos in Präsentationen und Diskussionen bewertet. Dies sind die statischen Disziplinen. Die anderen fünf sind dynamisch und bewerten verschiedene Aspekte des fahrenden Autos.

The static disciplines

During the three static disciplines the students present their engineering design, cost planning and business plan. These are discussed with a jury of experts from motorsports, automotive and supplier industries.

Engineering Design: In the Design Report the students set their solutions and the resulting advantages out in writing. Eight pages of text and technical drawings have to convince the judges of the construction of the car and its qualities. At the competition the judges examine the constructive solutions and discuss them with the students. The scoring regards the written report, the answers in the discussion and the inspection of the car.

Cost Analysis: Costs are an important factor in building a race car. Hence, the students have to deal with cost estimations, different manufacturing techniques and processes in the Cost Event. The discipline consists of a written report (the cost report) and a discussion with the judges around the manufactured prototype. The cost report contains a list of all components of the car: from wheels to process labour costs for special tooling. The judging comprises the organisation of the cost report, the comprehension of manufacturing processes and the price as well as the performance of a real case task for reducing costs.

Business Plan Presentation: The teams present their business plans of the built prototype to an assumed manufacturer represented by the judges. The goal is to convince the judges that their car meets the demands of the target group of the non-professional weekend autocross driver best and that it can be produced and marketed profitably. Usually, one or two members of the team give a presentation for ten minutes and are questioned by the judges for an additional five minutes. Content, structure, organisation and performance of the talk are judged as well as the answers the students give.

Statische Disziplinen

In den drei statischen Disziplinen präsentieren die Studenten ihre Konstruktionen und Kostenplanung sowie ihr Geschäftsmodell. Diese werden mit einer Jury aus Experten der Motorsport-, Automobil- und Zuliefererindustrie diskutiert.

Engineering Design: Im Design Report dokumentieren die Studenten ihre Lösungen und deren Vorteile. Acht Seiten Text und technische Zeichnungen sollen die Juroren von den Konstruktionen und ihren Vorzügen überzeugen. Beim Wettbewerb werden die Konstruktionen von den Juroren am Fahrzeug begutachtet und mit den Studenten diskutiert. Die Bewertung erfolgt anhand des Design Reports, der Antworten in der Diskussion und der Begutachtung des Fahrzeugs.

Cost Analysis: Die Kosten sind für den Bau eines Rennwagens ein entscheidender Faktor. Beim Cost Event beschäftigen sich die Studenten mit Kalkulation, Fertigungstechniken und -prozessen. Die Disziplin besteht aus einem schriftlichen Bericht (dem Cost Report) und einer Diskussion mit den Juroren am gebauten Prototypen. Der Cost Report enthält eine Auflistung aller Teile: vom Reifen bis zu den Herstellungskosten für Spezialwerkzeuge. Bewertet wird die Aufbereitung des Cost Reports, das Verstehen von Fertigungsverfahren zur Kostenoptimierung, der Preis sowie die Lösung einer Real Case Aufgabe zur Kostenreduktion.

Business Plan Presentation: Bei der Business Plan Presentation stellen die Teams einer fiktiven Herstellerfirma, vertreten durch die Juroren, ihren Geschäftsplan für den gebauten Prototypen vor. Mit diesem wollen sie die Juroren davon überzeugen, dass ihr Fahrzeug am besten die Anforderungen der Zielgruppe, des nicht-professionellen Wochenendrennfahrers, erfüllt und gewinnbringend produziert sowie vermarktet werden kann. Die Präsentation der Teams dauert zehn Minuten, gefolgt von einer fünfminütigen Frage- und Diskussionsrunde mit den Juroren. Bewertet werden Inhalt, Aufbau, Aufbereitung und Darbietung des Vortrags sowie die Antworten des Teams auf Fragen.

At the competition Design and Cost Judges take a closer look at the prototype and discuss the solutions with the students. Both events are based on written reports. However, the Business Plan is presented and closes with questions from the judges.

Beim Wettbewerb betrachten die Design und die Cost Juroren die Prototypen genau und diskutieren die Lösungen mit den Studenten. Beide Events basieren auf schriftlichen Berichten. Dagegen wird bei der Businessplan Prensentation der Geschäftsplan präsentiert und endet mit Fragen der Juroren.



Dynamic disciplines

During the dynamic disciplines the cars have to prove the performance capabilities of the students' design on the race track. The disciplines demand different qualities of the car. In each discipline two drivers have two runs (except in the Endurance Event). The best run of the four will be counted as the optimum the car can achieve.

Acceleration: The race cars prove their accelerating abilities over a distance of 75 meters from a standing start. The fastest cars cover the distance in less than 4 seconds and achieve a maximum velocity of more than 100km/h.

Skid Pad / Wet Pad: The student-built cars drive on a course in the shape of an eight. Two consecutive laps on each circle are driven, with the second lap being timed. The cars demonstrate the steady-state lateral acceleration they can generate. The Skid Pad is carried out on a continuously watered surface ("Wet Pad") to make sure the conditions are constant for all teams.

Autocross: The cars drive on a course of perhaps one kilometre through straights and turns, chicanes and slaloms. The lap time serves as an indicator for driving dynamics and handling qualities. The results of the Autocross discipline also determine the starting order in the Endurance.

Endurance: Providing the highest number of points, the Endurance is the main discipline. Over the course of 22 kilometres the cars have to prove their durability under long-term conditions. Acceleration, speed, handling, dynamics, fuel efficiency and most importantly the reliability of the cars are put to their limits. The Endurance also demands handling skills of the driver as the course can only be walked in preparation. Up to four cars are allowed on the track at the same time. Each team has only one attempt, the drivers change after 11 kilometres. Teams more than one third slower as the fastest team, will just receive the minimum number of points.

Fuel / Energy Efficiency: During the Endurance the fuel consumption (FSC vehicles) / energy consumption (FSE vehicles) is measured. The points' calculation does not only evaluate fuel / energy consumption, but puts it in relation to speed.

Flags
Flaggen

Your session has started, enter the course!
Deine Fahrt beginnt. Fahr auf die Strecke!

Your session has been completed. Exit the course!
Deine Fahrt ist beendet. Verlass die Strecke!

Pull into the passing zone to be passed by a faster competitor!
Fahr in der Überholzone, damit ein schnelleres Fahrzeug überholen kann!

Pull into the penalty box for a mechanical inspection of your car!
Fahr in die Kontrollzone für eine Untersuchung des Fahrzeugs!

Pull into the penalty box for discussion concerning an incident that may cause a time penalty!
Fahr in die Kontrollzone zur Diskussion eines Vorfalls! Ggf. Zeitstrafe!

Come to an immediate safe controlled stop on the course! Pull to the side of the course.
Komm sofort kontrolliert zum Stehen. Halte die Strecke frei.

Dynamische Disziplinen

In den dynamischen Disziplinen müssen die studentischen Konstruktionen ihre Praxistauglichkeit auf der Rennstrecke beweisen. Mit jeder Disziplin werden unterschiedliche Eigenschaften des Autos getestet. Grundsätzlich starten zwei Fahrer mit je zwei Versuchen (außer im Endurance-Rennen). Gewertet wird der jeweils beste Versuch als das Optimum, welches das Fahrzeug erzielen kann.

Acceleration: Auf einer 75 Meter langen Geraden müssen die Rennwagen zeigen, wie schnell sie aus dem Stand beschleunigen können. Die Besten bewältigen die Strecke in einer Zeit von unter vier Sekunden und erreichen dabei eine maximale Geschwindigkeit von mehr als 100km/h.

Skid Pad / Wet Pad: Die selbstgebauten Rennwagen durchfahren einen Parcours in Form einer Acht. Jeder Kreisring wird zweimal nacheinander umrundet. Gemessen wird jeweils die zweite Runde. Die Rundenzeit zeigt, welche statische Querbeschleunigung das Fahrzeug erreichen kann. Die Oberfläche des Parcours wird kontinuierlich bewässert („Wet Pad"), um sicherzustellen, dass die Bedingungen für alle Teams gleich sind.

Autocross: Über eine etwa 1 Kilometer lange Runde fahren die Rennwagen durch Geraden, Kurven und Schikanen. Eine schnelle Rundenzeit ist sowohl ein Indikator für eine gute Fahrdynamik als auch für gute Handling- und Beschleunigungseigenschaften. Die Platzierung im Autocross entscheidet über die Startreihenfolge in der Endurance-Disziplin.

Endurance: Das Endurance-Rennen stellt mit der höchsten erreichbaren Punktzahl die Hauptdisziplin dar. Über eine Renndistanz von 22 Kilometern muss sich die Gesamtkonstruktion unter Dauerbelastung beweisen. Hier sind alle Eigenschaften von der Beschleunigung bis hin zu Handling und Fahrdynamik gefragt. Das Rennen erfordert ebenfalls besonderes Fahrgeschick des Fahrers, da die Strecke als Vorbereitung nur abgeschritten werden darf. Während des Rennens sind bis zu vier Fahrzeuge gleichzeitig auf der Strecke. Jedes Team hat einen einzigen Versuch, die Fahrer wechseln nach 11 Kilometern. Die Teams erhalten nur dann Punkte, wenn sie höchstens ein Drittel langsamer waren als das schnellste Team.

Fuel / Energy Efficiency: Während des Endurance-Rennens wird der Kraftstoffverbrauch (FSC Fahrzeuge) / Energieverbrauch (FSE Fahrzeuge) gemessen. Bei der Berechnung der erreichten Punkte, zählt nicht einfach der Verbrauch, sondern vielmehr der Verbrauch in Relation zur Geschwindigkeit.

Something is on the track that should not be there. Be prepared for evasive maneuvers to avoid debris or liquids!
Es ist etwas Unerwartetes auf der Strecke. Sei bereit Flüssigkeiten oder Bruchstücken auszuweichen!

Something has happened beyond the flag station. No passing unless directed by the track marshals. Stationary: Danger! Slow down, be prepared to take evasive action. Waved: Great Danger! Slow down, evasive action is most likely required, be prepared to stop.
Etwas ist jenseits der Flagge passiert.Fahr nicht vorbei ohne Anweisung der Streckenposten. Feststehend: Gefahr! Fahr langsam, sei bereit zum Ausweichen. Geschwenkt: Große Gefahr! Fahr langsam, Ausweichen wird erforderlich sein. Sei bereit anzuhalten.

There is a slow moving vehicle on the course. Be prepared to approach it at a cautious rate.
Es ist ein langsames Fahrzeug auf der Strecke. Nähere dich vorsichtig an.

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Formula Student Germany

Audi ultra Award „Best Lightweight Concept“	II
BASF “Best Use Of Fiber Reinforced Plastic”	I
Henkel “Best Use Of Adhesives”	I
FSG Sportsmanship Award presented by FSG Executive Committee	II
FSG Media Award powered by FSG Communication Team	W
FSG Best Overall Dynamics	II

Formula Student Combustion

Formula Student Combustion Champion	II
Formula Student Combustion – 2nd	II
Formula Student Combustion – 3rd	II
FSC Business Plan Presentation Award – 1st	I
FSC Business Plan Presentation Award – 2nd	I
FSC Business Plan Presentation Award – 3rd	I
FSC Cost Analysis Award – 1st	II
FSC Cost Analysis Award – 2nd	II
FSC Cost Analysis Award – 3rd	II
FSC Engineering Design Award – 1st	II
FSC Engineering Design Award – 2nd	II
FSC Engineering Design Award – 3rd	II
FSC Acceleration Winner	II
FSC Autocross Winner	II
FSC Endurance Winner	II
FSC Skid Pad Winner	I
Dekra “Best Prepared Car For Scrutineering”	I
Kautex „Most Fuel Efficient Car“	II
MTU „Most Innovative Powertrain“	II

The letter behind the award states at which time the award will be presented.
I - Award Ceremony - Part I (Friday)
II - Award Ceremony - Part II (Sunday)
W - FSG Workshop

Formula Student Electric

Formula Student Electric Champion	II
Formula Student Electric – 2nd	II
Formula Student Electric – 3rd	II
FSE Business Plan Presentation Award – 1st	I
FSE Business Plan Presentation Award – 2nd	I
FSE Business Plan Presentation Award – 3rd	I
FSE Cost Analysis Award – 1st	I
FSE Cost Analysis Award – 2nd	I
FSE Cost Analysis Award – 3rd	I
FSE Engineering Design Award – 1st	I
FSE Engineering Design Award – 2nd	I
FSE Engineering Design Award – 3rd	I
FSE Acceleration Winner	II
FSE Autocross Winner	II
FSE Endurance Winner	II
FSE Skid Pad Winner	I
Bosch Engineering „Best Power System“	I
Daimler „Best E-Drive Packaging“	I
Dekra “Best Prepared Car For Scrutineering”	I
Harting „Most Energy Efficient Car“	II

Der Buchstabe hinter dem Preis gibt an, zu welchem Zeitpunkt der Preis verliehen wird.
I - Award Ceremony - Teil I (Freitag)
II - Award Ceremony - Teil II (Sonntag)
W - FSG Workshop

Get to know our pioneering spirit!

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Welcome to MTU in Friedrichshafen, Germany.
We look forward to hearing from you.

MTU Friedrichshafen GmbH is a Rolls-Royce Power Systems Company
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Power. Passion. Partnership.

SCHEDULE 2014
ZEITPLAN 2014

TUESDAY, 29TH OF JULY 2014

14:00	Scrutineering, Registration & Entrance Order Available	1 Ticket Centre
16:00 – 18:00	FSC & FSE Team Registration	1 Ticket Centre
18:00 – Sun 20:00	FSC & FSE Pits Available	4 19 Pits
18:00 – 20:00	Event Control, Driver & Safety Responsible Registration	2 Event Control
18:00 – 22:00	Entrance for Team Vehicles	
20:00 – 22:00	Charging Tent	21 Charging Tent
21:00 – 22:00	Team Welcome	5 Marquee above Pits

WEDNESDAY, 30TH OF JULY 2014

06:00 – 22:00 daily	Charging Tent	21 Charging Tent
07:30 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
09:00 – 13:00	Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain / Fuel	9 10 11 12
13:00 – 14:00	Lunch Break & Staging for Panoramic Photograph	17 Big Dynamic Area
14:00 – 19:00	Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain / Fuel	9 10 11 12
14:00 – 19:00	Engine Test	17 Big Dynamic Area

THURSDAY, 31ST OF JULY 2014

07:30 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
08:00 – 08:30	Team Briefing	5 Marquee above Pits
08:30 – 19:00	Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain / Fuel	9 10 11 12
09:00 – 19:00	Engine Test / Testing	17 Big Dynamic Area
11:00 – 12:30	Judge Briefing: Business Plan, Cost & Design	7 BW Tower
12:00 – 13:00	Scrutineering Lunch Break	
13:15 – 17:55	FSE Engineering Design & FSE Cost Analysis	5 Marquee above Pits
13:30 – 18:10	FSE Business Plan Presentation	7 8 BW Tower, Race Control Tower
18:30 – 20:30	Judge Briefing: Cost & Design	7 BW Tower
19:00 – 20:30	FSE Business Plan Presentation Finals	5 Marquee above Pits
20:30 – 21:30	Get-together for all Volunteers	7 BW Tower

FRIDAY, 1ST OF AUGUST 2014

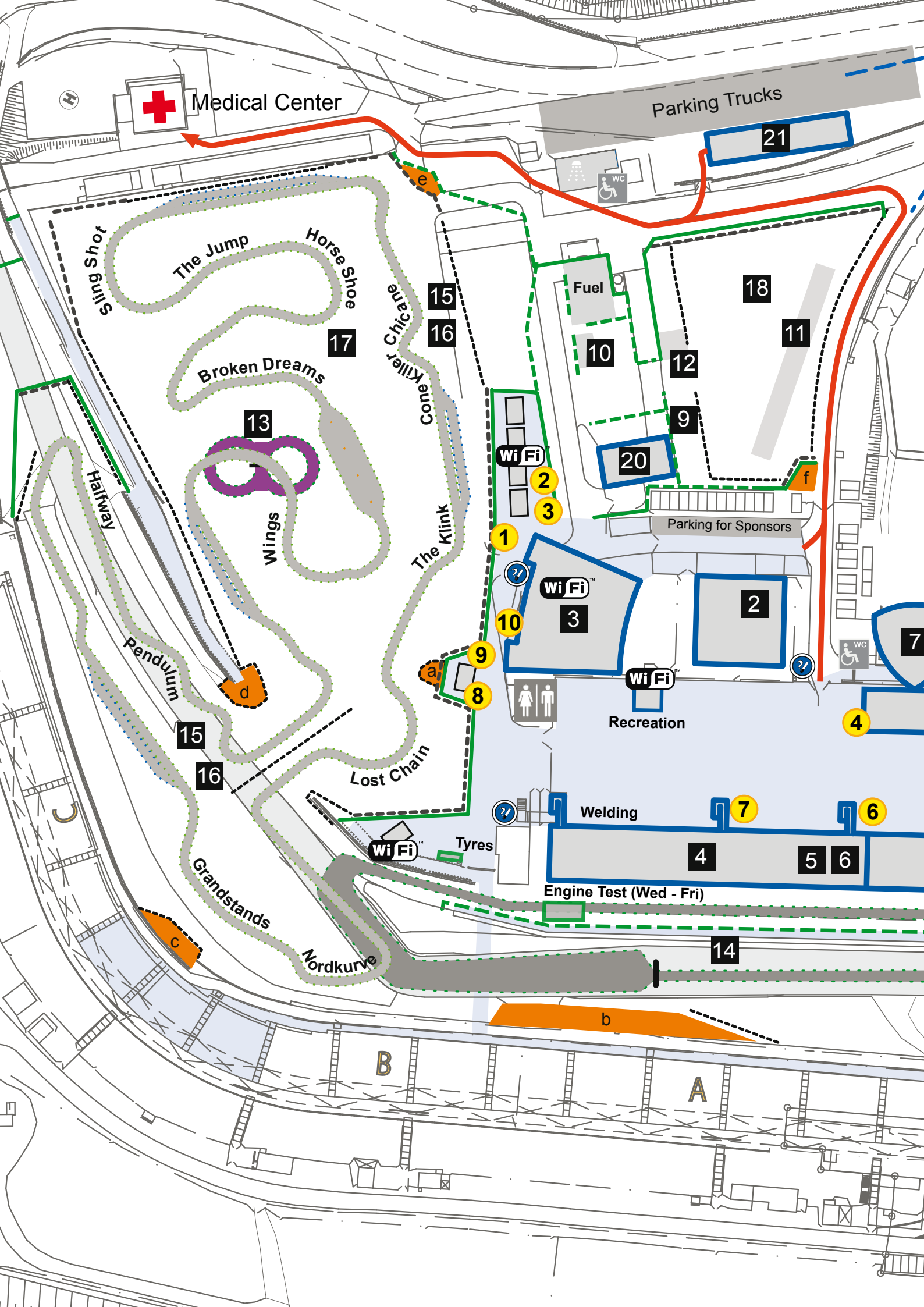
07:00 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
07:30 – 08:00	Team Briefing	5 Marquee above Pits
08:00 – 08:45	Judge Briefing: Business Plan Presentation	7 BW Tower
08:30 – 18:40	FSC Engineering Design, FSC Cost Analysis	5 Marquee above Pits
08:30 – 19:00	Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain / Fuel	9 10 11 12
09:00 – 18:40	FSC Business Plan Presentation	7 8 BW Tower, Race Control Tower
09:00 – 18:30	Engine Test/Testing	17 Big Dynamic Area
10:00 – 12:00	Worldwide Formula Student Officials Meeting	Motodrom Hotel
11:00 – 18:30	Skid Pad	13 Dynamic Area
12:00 – 13:00	Scrutineering Lunch Break	
19:00 – 20:30	FSE Engineering Design Finals (not public)	3 FSG Forum
20:00 – 21:00	FSC Business Plan Presentation Finals	5 Marquee above Pits
21:00 – 22:00	Award Ceremony - Part I	5 Marquee above Pits
22:00 – 23:00	Get-together for all Judges	7 BW Tower

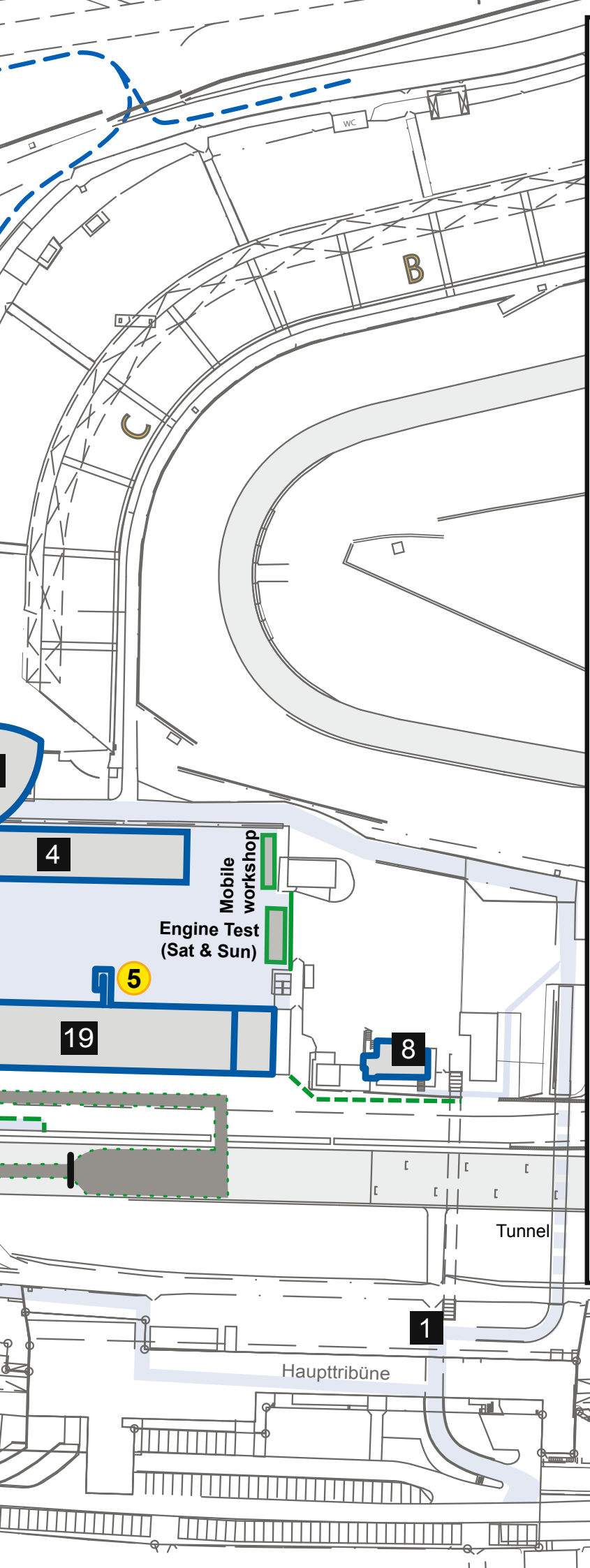
SATURDAY, 2ND OF AUGUST 2014

07:00 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
07:30 – 08:00	Team Briefing	5 Marquee above Pits
08:30 – 18:30	Fuel / Engine Test / Testing	18 Small Dynamic Area
08:30 – 18:30	on request: Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain	
08:30 – 13:00	FSC & FSE Acceleration	14 Start / Finish Line
11:00 – 11:45	Press Guided Tour	8 BW Tower (basement)
12:00 – 12:45	Press Conference	8 BW Tower (4th floor)
13:00 – 14:00	VIP Reception	8 BW Tower (5th floor)
13:05 – 13:25	Coursewalk Autocross	15 Big Dynamic Area
13:30 – 18:30	FSC & FSE Autocross	15 Big Dynamic Area
19:00 – 21:30	FSC Engineering Design Finals (not public)	3 FSG Forum

SUNDAY, 3RD OF AUGUST 2014

07:00 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
07:30 – 08:00	Team Briefing	5 Marquee above Pits
08:00 – 08:20	Coursewalk Endurance	16 Big Dynamic Area
08:30 – 18:30	Fuel / Engine Test / Testing	18 Small Dynamic Area
08:30 – 13:00	FSC & FSE Endurance Morning Session & Parc Fermé	16 Big Dynamic Area
13:00 – 18:00	FSC & FSE Endurance Afternoon Session & Parc Fermé	16 Big Dynamic Area
19:30 – 20:30	Design Review	3 FSG Forum
21:00 – 22:00	Award Ceremony - Part II	5 Marquee above Pits
22:00 – 01:00	MAHLE-Party	5 Marquee above Pits


Medical Center
Parking Trucks
21
Sling Shot
The Jump
Horse Shoe
Chicane
Killer Cone
Broken Dreams
17
15
16
13
Fuel
18
11
10
12
9
20
Wi Fi
2
3
1
Parking for Sponsors
f
Halfway
Wings
The Klink
Pendulum
d
a
9
8
10
Wi Fi
3
2
7
Recreation
4
15
16
Lost Chain
Welding
7
6
Tyres
4
5
6
Engine Test (Wed - Fri)
Grandstands
Nordkurve
c
14
b
B
A



1 Ticket centre

2 Event control

3 FSG forum

4 FSC pits (ground floor)

5 Marquee above pits (first floor)

6 Engineering design & cost analysis (first floor)

7 Business plan presentation (BW tower)

8 Business plan presentation (Start-Finish Building)

9 Technical inspection

10 Tilt table / rain test

11 Brake test

12 Noise test

13 Skid pad (Friday)

14 Acceleration (Saturday)

15 Autocross (Saturday)

16 Endurance (Sunday)

17 Dynamic area

18 Test area

19 FSE pits (ground floor)

20 E-scrutineering

21 FSE charging & accumulator workshop

Visitor's area

Press area

Stands

Information sign

formula student germany

Formula Student Germany is a non-smoking event. Smoking is only allowed in designated areas.

FORMULA STUDENT GERMANY TEAM 2014

Tim Hannig
Board (Chairman)
KION Group GmbH

Rainer Kötke
Board (Finance), EC (Dynamics)
Volkswagen AG

Daniel Mazur
Board (Event Manager)
mazur | events + media

Frank Röske
Board (Rules)
Porsche Leipzig GmbH

Ludwig Vollrath
Board (External Relations)

Matthäus Decker
EC (Personnel & Event Support)
Siemens AG Österreich

Barbara Decker-Schlögl
EC (Statics)
MAGNA Steyr Fahrzeugtechnik

Jürgen Falb
EC (Head E-Inspector)
Falb-IT

Tobias Michaels
EC (FS-Electric Rules)
AUDI AG

Konrad Paule
EC (FS-Academy) & Pit Marshal
Dr. Ing. h.c. F. Porsche AG

Ulf Steinfurth
EC (Head Technical Inspector)
University of Applied Sciences Stralsund

Daniel Ahrens
OT (Event Control)
Dentsu Aegís Network

Raphaela Bihr
OT (Business Plan Presentation)
Karlsruhe Institute of Technology

Matthias Brutschin
OT (Event Support)
MBtech Group GmbH & Co. KGaA

Cas Droogendijk
OT (Design Event)
DAF Trucks N.V.

Leona Ehrenreich
OT (Registration, Visa)

Hannah Esser
OT (Communications & Sponsors)

Lukas Folie
OT (FS-Electric)
AUDI AG

Robert Fromholz
OT (Cost Event)
H&D International Group

Sebastian Hoppe
OT (Cost Event)
ZF Friedrichshafen AG

Peter Jakowski
OT (Security)
Bosch Engineering GmbH

Johannes Kratzel
OT (Event Support)
Robert Bosch GmbH

Alia Pierce
OT (Communications & FSG TV)
xperion Energy & Environment GmbH

Wolf-Bastian Pöttner
OT (IT & Timekeeping)
Bosch Connected Devices and Solutions GmbH

Torsten Rilka
OT (Special Awards)
Volkswagen AG

Jochen Schmidt
OT (Dynamics)
DLR

Sebastian Seewaldt
OT (Pit Marshal)
KS engineering & consulting GmbH

Lena Töppich
OT (Communications)
ABB AG

Emil Kleijn
OT (Energy Meter)
Eindhoven University of Technology

Henning Nissen
OT (Scoring)
SAT Anlagentechnik GmbH

Jost Philip Pöttner
OT (Design Event)
Volkswagen AG

Hendrikje R. Neumann
OT (Communications & Guided Tours)

Klaus Scheuplein
OT (Communications & Photographers)
Euro Engineering

Tim Schmidt
OT (Back Office)
Diehl Comfort Modules GmbH

Karsten Stammen
OT (Dynamics)
AUDI AG

The team behind Formula Student Germany is divided into three groups.The board is responsible for Formula Student Germany, its operations, finances, sponsoring and overall strategy.

The executive committee (EC) is responsible for the design and development of the competition. Each member of the EC is responsible for one of the fields of the competition and its organisation.

The operative team (OT) supports the board and EC in the preparation and realisation of the event throughout the year.

Das Team der Formula Student Germany ist in drei Gruppen unterteilt.Das Board trägt die Verantwortung für die Formula Student Germany und ihre Kooperationen sowie für Sponsoring, Finanzen und Strategie.

Das Executive Committee (EC) veranwortet Ausgestaltung des Wettbewerbs. Jedes Mitglied ist für Vorbereitung und Durchführung eines Bereiches verantwortlich.

Das Operative Team (OT) unterstützt das Board und das EC in der Vorbereitung übers Jahr und in der Durchführung des Wettbewerbs.

JUDGES AND SCRUTINEERS 2014
JUROREN UND SCRUTINEERS 2014


Business Plan Presentation Judges 2013

Business Plan Presentation (41)

Bach, Stefan
Badmann, Andre
Benninghoff, Vera
Berg, Alexander
Bjekovic, Robert
Brand, Johann-Diedrich
Bruenn, Katja
Esser, Klaus
Fahr, Alexander
Fichtl, Katrin
Frank, Detlef
Greiner, Alexander
Hahn, Thomas
Hayn, Bernhard
Heidemeyer, Peter
Herrmann, Jesko
Herrmann, Susanne
Hieber, Frank
Hodgkinson, Philip
Hodgkinson, Raymond
Hofmeister, Jörg
Hohnroth, Petra
Klug, Jens
Lange, Stephan
Lenzen, Thomas
Maurer, Andreas
Mueller, Andreas
Niemeyer, Reinhard
Nottbrock, Claus
Nuscheler, Barbara Christine
Ott, Tobias
Porsch, Stefan
Richter, Ralf
Rinka, Carsten
Ruehl, Stephan
Schneider, Isabel
Sommer, Jochen
Tabatabai, Stefan
Vadehra, Bernhard Prem
Wambera, Thomas
Wenzel, Frank


Cost Analysis Judges 2013

Cost Analysis (37)

Aichberger, Marcus
Barth, Michael
Bertram, Michael
Buob, Manuel
Gross, Achim
Grundner, Harald
Hacker, Clemens
Hagl, Markus
Hartmann, Klaus
Herth, Martin
Klein, Christian
Koenig, Ilja
Kolb, Walter
Kotzian, Andreas
Kurzen, Michael
Meier, Stefan
Möll, Winfried
Müller, Jens- Thomas
Piltzing, Roger
Regh, Fabian
Rogowski, Sergej
Rosenau, Bernhard
Scharff, Robert
Schnabel, Matthias
Schreiber, Joachim
Span, Benjamin
Steemann, Jochen
Straubert, Alexander
Tesch, Anke Martina
Thater, Gerald
Timm, Martin
Unger, Herbert
Wannemacher, Christoph
Weber, Axel
Wensch, André
Wilmes, Matthias
Winkler, Tino

Engineering Design Judges 2013

Engineering Design (97)

Aerts, Joris
Ahola, Mikko
Baier, Karlheinz
Bayer, Bernward
Beck, Erhard
Betsch, Jochen
Bolz, Peter
Bremkamp, Joerg
Carless, Owen
Christoffersen, Lasse
Clarke, Pat
Deckers, Jean-Noel
Dencker, Peter
Dittrich, Rudolf
Dölle, Norbert
Drescher, Benjamin
Ellrott, Stefan
Engel, Valerie
Enning, Norbert
Ewert, Sebastian
Fischer, Raphael
Friedrich, Linus
Fries, Benedikt
Frommer, Armin
Galganski, Collin
Gerth, Hendrik
Gesele, Frank
Giebenhain, Clenn
Goslich, Leonhard
Grams, Sebastian
Grassinger, Thomas
Gupta, Manabendra Narayan
Hahn, Christoph
Halsdorf, Georges
Hanigk, Martin
Hölzgen, Andre
Jakobi, Reinhard
Jauns-Seyfried, Stefanie
Jennewein, Tobias
Kaussen, Martin
Keller, Michael
Kerber, Michael
Klaus, Hartmut
Klink, Holger
Klöss, Karl
Knipp, Christian
Krato, Tanja
Kudritzki, Detlef
Küppers, Jörg
Ladda, Josefine
Leipold, Peter
Lopez, Jose
Löser, Stefan
Lück, Peter
Milke, Burkhard
Muelbl, Gregor
Mueller, Rolf
Muemmler, Rainer
Nilsson, Lars
Nowicki, Daniel
Peti, Philipp
Petrich, Florian
Petz, Andreas
Reitz, Jörg Andre
Remmlinger, Jürgen
Rising, David
Sachse, Mick
Sander, Udo
Sandler, Jan
Sattler, Steve
Schäfer, Stephan
Schäffler, Klaus
Schiffer, Wilhelm
Schimmels, Juergen
Schneider, Thomas
Schöpfer, Julian
Schreckeneder, Johannes
Seib, Timo
Soens, Andreas
Stammen, Karsten
Stange, Michael
Stolz, Franz
Strasser, Roman
Straub, Christian
Vogel, Thomas
Völkl, Timo
Volle, Carsten
Wagner, Thomas
Weber, Thomas
Weidinger, Tanja
Weiss, Johannes
Wenzel, Daniel
Wittenbrink, Christian
Wultschner, Andreas
Wunschheim, Lukas
Zinke, Christopher
Zöls, Thomas

Scrutineers 2013

Scrutineering (35)

Ash, Howard
Battige, Sarah-Kristin
Bonilla-Torres, Maria
Densborn, Simon
Drop, Frank
Falb, Jürgen
Goyal, Vandit
Hegedus, Miki
Iturralde, Pablo
Jeitner, Timo
Kirchoff, Sarah
Kleijn, Emil
Kreher, Tina
Kumle, Julian
Kusstatscher, Gerd
Maul, Ralf
Michaels, Ann-Christin
Möller, Benjamin
Müller, Winfried
Navarro Hurtado, Cristobal
Novak, Nandor
Opdam, Rob
Pärschke, Roman
Paß, Julian
Pfefferle, Sebastian
Pletschke, Tobias
Scherke, Felix
Scholz, Juergen
Schütze, Thomas
Sommer, Michael
Steinfurth, Ulf
Stenner, Patrick
Thomassen, Kevin
Wolfsberger, Stefan
Ziebell, Alexander

Status at the time of going to press.
Status bei Redaktionsschluss

Audi

Antje Maas
Director HR Marketing, AUDI AG

The atmosphere at the Hockenheimring fascinates us year after year. This is where we meet around 3,500 young and motivated people who are just as enthusiastic about automotive technology as we are at Audi. With the courage to try out new things and bring ideas to life, the students have the very attributes we are looking for in our future employees. We are impressed by creative and team-oriented pioneers who share our passion for sportiness, progressiveness and sophistication. These are the emotions we sense everywhere at Formula Student Germany – in the pit lane, on the race track and at our stand. When the teams work together on their cars long into the night, they demonstrate their skills and show that they too are passionate about "Vorsprung durch Technik". We look forward to Formula Student 2014 and to many interesting talks with the teams and visitors.

Die Atmosphäre am Hockenheimring fasziniert uns jedes Jahr aufs Neue. Hier treffen wir rund 3.500 junge und motivierte Menschen, die von automobiler Technik genau so begeistert sind wie wir bei Audi. Mit ihrem Mut, Neues auszuprobieren und Ideen umzusetzen, bringen die Studierenden genau das mit, was wir uns von unseren zukünftigen Mitarbeitern wünschen. Uns überzeugen kreative und teamfähige Pioniere, die unseren Anspruch an Sportlichkeit, Progressivität und Hochwertigkeit teilen. Diese Emotionen spüren wir bei der Formula Student Germany überall – in der Boxengasse, auf der Rennstrecke und an unserem Messestand. Wenn die Teams bis spät in die Nacht an ihren Autos tüfteln, beweisen sie uns ihre Qualifizierung und zeigen uns, dass auch ihr Herz für „Vorsprung durch Technik" schlägt. Wir freuen uns auf die Formula Student 2014 und die vielen Gespräche mit den Teams und Besuchern.

AUTODESK.

Don Carlson
Director Post Secondary Education, Autodesk

Autodesk Education Initiatives
Autodesk wants students of all ages to imagine, design and create a better world. By partnering with academic leaders and institutions, Autodesk is helping educators to build skills and engagement, both in and out of the classroom, in order to prepare for successful careers in architecture, engineering, and digital arts. Autodesk offers the technology and learning resources that inspire the next generation of professionals, while providing institutions with educational pricing, training, curricula and community resources.

For more information about Autodesk education programs and solutions, visit http://autodesk.com/education.

Über Autodesk Education
Autodesk hilft Studenten jeden Alters dabei, sich eine bessere Welt vorzustellen, diese zu gestalten und zu schaffen. Außerdem unterstützt Autodesk durch die Kooperation mit akademischen Leitern und Institutionen Pädagogen dabei, die Fähigkeiten der Studenten weiterzuentwickeln und ihr Engagement zu stärken – sowohl im Hörsaal als auch außerhalb – und diese auf erfolgreiche Karrieren als Architekten, Ingenieure oder Digital Artists vorzubereiten. Autodesk bietet die Technologie und die Lehrmittel an, die die zukünftige Expertengeneration inspirieren soll. Institutionen profitieren von Sonderkonditionen, Trainings, Lehrplänen und Communities.

Weitere Informationen zu Autodesk Education unter http://autodesk.com/education

Hans-Peter Beringer
Vice President, Head of Business Management Automotive, BASF SE

For BASF it´s a pleasure to support "Formula Student Germany", because we want to share our passion for automotive technology! Our engineering plastics are widely used in the automotive industry for example in vehicles range from bodywork and chassis to interior trim and engine components. Using plastics instead of other materials reduces vehicle weight and so helps to conserve energy and reduce emissions.
As a global chemical company BASF particularly focuses on science education, realizing that today's students will be the thinkers, innovators, discoverers and leaders of the future. We consider "Formula Student Germany" to be a great opportunity to get in contact with ambitious and well-educated young people.
Good luck to all teams for this extraordinary competition!

Wir freuen uns „Formula Student Germany" zu unterstützen - und so unsere Begeisterung für Technologie rund um das Automobil zu teilen! Die BASF bietet eine Vielzahl von Kunststofflösungen für die Automobilindustrie an, angefangen beim Karosseriebau, über das Fahrwerk bis hin zu Innenausstattung und Motoranbauteilen. Der Einsatz von Kunststoffen reduziert das Fahrzeuggewicht und trägt auf diese Weise zur Ressourcenschonung bei.
Als ein globales Unternehmen der Chemieindustrie schätzen wir die universitäre Forschung, insbesondere die Ingenieurswissenschaften. Hier sehen wir die Denker, Erfinder und Führungspersönlichkeiten der Zukunft. „Formula Student Germany" bietet uns die Möglichkeit, mit ambitionierten und gut ausgebildeten Nachwuchskräften in Kontakt zu kommen. Wir wünschen allen Teilnehmern viel Glück in diesem außergewöhnlichen Wettbewerb!

Michael Albrecht
Head of HR Marketing International and Recruiting, BMW Group

It is with great pleasure that the BMW Group supports initiatives such as Formula Student which combine acquired theory with practical experience in an exemplary manner. The acquisition of skills and key expertise such as interdisciplinary thinking, problem-solving and business knowledge is realized in an exemplary fashion in this competition.
We are only too familiar with these requirements of teams from our own company. We therefore welcome applications from qualified Formula Student participants both from Germany and abroad for practical internships as well as job vacancies. We are looking for enthusiastic young engineers in various departments such as research and development who, like our own staff, enjoy being involved in innovative projects at the very highest level.

Mit großer Freude unterstützt die BMW Group die Formula Student Initiative, da sie Studenten auf einzigartige Weise die Möglichkeit gibt, theoretisches Wissen mit gelebter Praxis zu verbinden. Hier, in der praktischen Anwendung, werden mit Begeisterung Fähigkeiten und Schlüsselkompetenzen wie z.B. fächerübergreifendes Denken, Problemlösefähigkeit oder wirtschaftliche Kenntnisse erlernt und erweitert.
Diese Anforderungen an Teams kennen wir in der BMW Group nur zu gut. Daher freuen wir uns, wenn sich qualifizierte Teilnehmer aus dem In- und Ausland bei uns für Praxiseinsätze oder auf offene Stellen bewerben. Verschiedene Bereiche wie z. B. Die Forschung und Entwicklung suchen begeisterte Nachwuchsingenieure, die genauso wie unsere Mitarbeiter Spaß daran haben, auf höchstem Niveau an innovativen Themen mitzuwirken.

BOSCH
Invented for life

Bernhard Bihr
President, Bosch Engineering GmbH

Diversity is one of our values, as well as a component part of our strategy: at Bosch, there is a mix of individual abilities, experience, and work styles. It is this that gives us our innovative strength and secures our global success.

Diversity is also what we're looking for at Formula Student: it's not the fastest car that wins, but the team with the best overall combination of design, race performance, financial planning, and selling points. That's why we're glad to support talented young people who are innovative and committed, and who work together in a team to master interdisciplinary challenges.

We are looking forward to stimulating discussions with the students attending, and wish all the teams every success.

Yours, Bernhard Bihr
President Bosch Engineering GmbH

For more information visit:
https://www.facebook.com/BoschGlobal

Vielfalt gehört zu unseren Werten und zu unserer strategischen Ausrichtung: Bei Bosch wirken individuelle Kompetenzen, Erfahrungen und Arbeitsstile zusammen. Das macht uns innovativ und sichert unseren weltweiten Erfolg.

Um Vielfalt geht es auch bei der Formula Student: Nicht das schnellste Auto gewinnt, sondern das Team mit dem besten Gesamtpaket aus Konstruktion und Rennperformance, Finanzplanung und Verkaufsargumenten. Daher freuen wir uns, innovative und engagierte Nachwuchskräfte zu unterstützen, die in Teamarbeit die interdisziplinären Herausforderungen gemeinsam meistern.

Wir freuen uns auf anregende Gespräche mit den Studierenden und wünschen allen Teams viel Erfolg!

Ihr Bernhard Bihr,
Geschäftsführer Bosch Engineering GmbH

Mehr Informationen auf:
https://www.facebook.com/BoschGlobal

Brunel
access to excellence

Dr. Ralf Napiwotzki
General Manager, Brunel GmbH

Automotive engineering is one of the most important industries for Brunel. In line with our keen interest in young engineering talents in this sector, we have been one of the main sponsors for Formula Student Germany (FSG) since 2006. Again and again, we are thrilled to see the creativity, passion and team spirit demonstrated by the students who take part. The team members naturally need technical expertise, but also motivation and commitment if they are to master the challenges presented to them. The competition thus constitutes excellent preparation for the world of work, testifies to the students' impressive innovative skills, and powerfully demonstrates the vast potential harbored by our budding engineers. At the same time, it brings us into contact with potential future employees.

Der Bereich Automotive ist eine unserer wichtigsten Branche. Weil uns hier auch der Ingenieurnachwuchs sehr am Herzen liegt, unterstützen wir die Formula Student Germany (FSG) bereits seit 2006 als einer der Hauptsponsoren. Die Kreativität, Leidenschaft und der Teamgeist der teilnehmenden Studenten an der Formula Student Germany begeistern uns immer wieder aufs Neue. Neben dem Fachwissen kommt es vor allem auf die Motivation und das Engagement der Teammitglieder an, um die gestellten Herausforderungen bei diesem Konstruktionswettbewerb überhaupt zu meistern. Der Wettbewerb ist also eine sehr gute Vorbereitung auf die Arbeit in Unternehmen, zeugt von hoher Innovationskraft und demonstriert eindrucksvoll das große Potenzial unserer angehenden Ingenieurinnen und Ingenieure. Zudem kommen wir hier mit potenziellen Mitarbeitern ins Gespräch.

Continental

Barbara Texter
Teamleader Strategic University Relations, Continental AG

For over 140 years, Continental has been working on motorized individual mobility of the future. In order to continue this success story, we are constantly looking for qualified technical and management personnel.

Top talent of the kind we are seeking can be found at the Formula Student competition. There, working in teams, the students experience the values that are also indispensible for a successful career at Continental: teamwork, for one another, freedom to act and passion to win. In addition to this, a large international project like Formula Student hones the social skills that we look for in all our employees.

With this is mind, we support the teams by providing material and expertise, now and in the future, and wish everyone success at the Formula Student Germany at the Hockenheimring.

Seit über 140 Jahren arbeitet Continental erfolgreich an der individuellen Mobilität der Zukunft. Um diese Erfolgsstory weiterzuschreiben sind wir ständig auf der Suche nach qualifizierten Fach- und Führungskräften.

Diese Toptalente finden wir beim internationalen Konstruktionswettbewerb Formula Student. Durch die Arbeit in den Teams erleben die Studierenden die Werte, die auch für eine erfolgreiche Karriere bei Continental unerlässlich sind: Teamwork, Verbundenheit, große gestalterische Freiräume und die Leidenschaft, Projekte zum Erfolg zu führen. Zudem schärft ein derartiges internationales Großprojekt wie Formula Student die Sozialkompetenzen, die wir bei allen unseren Einsteigern suchen.

Daher unterstützen wir jetzt und in Zukunft die Teams mit Material und Know-How und wünschen allen viel Erfolg bei der der Formula Student Germany auf dem Hockenheimring.

DAIMLER

Peter Berg
Senior Manager Global Talent Acquisition and Development, Daimler AG

Enthusiasm and passion for innovation and technology are the driving force of the Automotive Industry.

This eagerness is felt among all participants who are passionate about their project and show enormous engagement and endurance when working on their racing cars. In doing so, they put their technical knowledge into practice, find creative solutions and gain important personal experiences. These decisive qualities exactly match our requirements of gaining qualified junior staff.

With our engagement we wish to encourage entrepreneurial spirit, responsible acting and the courage to innovate. At the Formula Student Event we are looking forward to interesting discussions with the participants in order to show them the possibilities of starting their career with Daimler.

We wish all participants a huge amount of energy and a successful event!

Begeisterung und Leidenschaft für Innovationen und Technik sind der Motor der Automobilindustrie.

Diesen Enthusiasmus spüren wir bei den Teilnehmerinnen und Teilnehmern, die für ihre Sache brennen und mit viel Engagement und Ausdauer an ihren Rennwagen arbeiten. Dabei setzen sie ihr Fachwissen in die Praxis um, finden kreative Lösungen und sammeln wichtige persönliche Erfahrungen.
Auf diese Eigenschaften legen wir als Arbeitgeber bei unseren Nachwuchskräften großen Wert.

Mit unserem Engagement möchten wir einen Beitrag dazu leisten, unternehmerisches Denken, eigenverantwortliches Arbeiten und den Mut zur Innovation zu fördern.
Wir freuen uns auf interessante Gespräche rund um die Themen Einstieg und Karriere.

Allen Teams wünschen wir eine ganze Ladung Energie und ein erfolgreiches Event!

DEKRA
On the safe side.

Clemens Klinke
Chairman of the board of managing directors, DEKRA Automobil GmbH
Member of the board, DEKRA SE

DEKRA has been Technical Partner of FSG since its beginning in 2006. The experts use their experience in vehicle inspection, homologation and motor sports – e.g. as partner of the racing series DTM for 25 years – in order to ensure high technical standards and comprehensive safety within FSG. The check of vehicle structures previous to the event, as well as the actual scrutineering on site at Hockenheim, brings about valuable contact between the experienced engineers and the students of the racing teams – and this often benefits both sides. After all, DEKRA as an internationally leading expert organisation, has to offer very interesting job descriptions for young engineers in about 50 countries worldwide and is constantly on the lookout for highly qualified graduates.

DEKRA ist seit den Anfängen der Formula Student Germany im Jahr 2006 als Offizieller Technischer Partner dabei. Hier bringen die Experten ihre Kompetenz aus der Fahrzeugprüfung und der Homologation sowie aus dem Motorsport – etwa als Partner der DTM seit 25 Jahren – ein, um bei der FSG hohes technisches Niveau und umfassende Sicherheit zu gewährleisten. Schon bei der Überprüfung von Fahrzeugstrukturen im Vorfeld im DEKRA Automobil Test Center in Klettwitz, aber auch bei der Technischen Abnahme vor Ort in Hockenheim, entstehen wertvolle Kontakte zwischen den erfahrenen Ingenieuren und Studierenden aus den Rennteams – oftmals zum beiderseitigen Nutzen. Denn DEKRA als international führende Sachverständigenorganisation bietet jungen Ingenieuren hoch interessante Aufgabenbereiche in rund 50 Ländern der Welt und ist ständig auf der Suche nach hoch qualifiziertem Nachwuchs.

ETAS

Friedhelm Pickhard
President, ETAS GmbH

Speed, high technology, and team spirit – what could be better than to measure oneself in these disciplines? ETAS is proud to be a main sponsor of Formula Student Germany. We share the thrills with our 22 teams as – with engineering skills and passion – they show their mettle under the toughest conditions.

Awards go not only to the fastest cars, but also to the best combination of design, performance, finance, and business planning. And for ETAS, these disciplines are part of everyday life. Only companies that take on global competition with commitment will continue to operate successfully and produce innovations – in our case integrated tools, tool solutions, and services for the development and maintenance of embedded systems.

We wish all teams the motivation, enthusiasm, and success required to be front-runners in the field.

Geschwindigkeit, Spitzentechnologie und Team-Spirit – was kann es Schöneres geben, als sich in diesen Disziplinen zu messen? Mit Stolz unterstützt ETAS als ein Hauptsponsor die Formula Student Germany. Wir fiebern mit unseren 22 Teams mit, wenn sie mit Ingenieurskunst und Herzblut unter den härtesten Bedingungen zeigen, was sie können.

Ausgezeichnet werden nicht nur die schnellsten Boliden, sondern die beste Kombination aus Konstruktion, Leistung, Finanzen und Businessplanung. Für ETAS gehören diese Disziplinen zum Alltag. Nur wer ihnen engagiert begegnet und sich dem globalen Wettbewerb stellt, wird auch künftig weltweit erfolgreich wirtschaften und Innovationen hervorbringen – in unserem Fall integrierte Tools, Werkzeuglösungen und Services für die Entwicklung und Wartung von Embedded Systemen.

Wir wünschen allen Teams den Spirit und Erfolg, ganz vorne mit dabei zu sein.

Janine Hempelmann
Consultant Online Communication, HARTING Electronics GmbH & Co. KG

HARTING technology group develops innovative solutions and technologies for connectivity and networks. Highly motivated young professionals are necessary to create innovations for our customers. Formula Student is considered by HARTING as an outstanding opportunity to encourage the young generation of engineers we regularly seek as an employer. In Formula Student, the participants can prove in practice their professional knowledge and management by developing new solutions through team work.

When technical aspects of a solution are addressed, energy efficiency and conservation of resources should play a central role. Therefore, HARTING will award the team that will realise a solution with the best energy efficient values.

Die HARTING Technologiegruppe entwickelt innovative Lösungen und Technologien in der Verbindungstechnik. Damit wir auch zukünftig unsere Kunden mit Innovationen versorgen können, braucht es junge, motivierte Menschen. Die Formula Student ist eine hervorragende Möglichkeit, um den technischen Nachwuchs zu fördern, den wir als Unternehmen suchen. Hier können die Studenten in der Praxis demonstrieren, wie sie in Teamarbeit neue Lösungen entwickeln – und dabei ihr technisches Fachwissen und betriebswirtschaftliches Know-how unter Beweis stellen.

Wenn es um neue technische Lösungsansätze geht, sollten auch immer Energieeffizienz und Ressourcenschonung eine zentrale Rolle spielen. HARTING wird deshalb einen Preis an das Team verleihen, das bei der Formula Student Electric den geringsten Energieverbrauch realisiert.

Patricia Reis e Silva
Marketing/Key Account Manager - General Industry Germany/Swizerland
Henkel AG & Co. KGaA

For years, global adhesives market leader Henkel has been supporting the contest, the events and the competing teams around the world.

Why? We love the energy-laden, electrifying atmosphere where young, talented people who are fascinated by technology set themselves a goal and follow their vision through with passion and dedication. They are our kind of people. We want to get to know them and perhaps even help them to start their careers at Henkel.

Above all, we want to encourage them, give them access to the latest solutions from research and development, and share our expertise with them. Advanced high-performance adhesives and sealants from Henkel have long been an indispensable part of our daily lives. The knowledge gained about them here can later inspire many of the participating young engineers to create groundbreaking engineering applications and MRO solutions.

Schon seit Jahren unterstützt Klebstoff-Weltmarktführer Henkel den Wettbewerb, das Event und die beteiligten Teams rund um die Welt.

Warum? Uns begeistert die energiegeladene, elektrisierende Atmosphäre, in der sich junge talentierte, Technik-faszinierte Menschen einer Vision verschreiben und ihr Ziel konsequent und voller Leidenschaft bis zur Umsetzung verfolgen. Solche Menschen passen zu uns. Wir möchten sie kennenlernen und ihnen vielleicht sogar den Einstieg in eine Karriere bei Henkel ermöglichen.

Vor allem aber möchten wir sie fördern und ihnen neueste Lösungen aus Forschung und Entwicklung sowie unser Know-how zur Verfügung stellen. Moderne Hochleistungskleb- und -dichtstoffe von Henkel sind aus dem Lebensalltag längst nicht mehr wegzudenken. Vielen der hier teilnehmenden Nachwuchsingenieure werden sie später als Rüstzeug für zukunftsweisende Ingenieursleistungen und MRO-Lösung

automotive engineering iav

Christian Willenberg
Human Resources, IAV GmbH

With over 5,000 members of staff, IAV is one of the world's leading providers of engineering services to the automotive industry. The company can look back on 30 years of experience in developing innovative concepts and technologies for future vehicle generations. Core competencies include perfected, production-ready solutions in all fields of powertrain, electronics and vehicle development.

IAV supports Formula Student Germany and individual teams to produce interest to take part in the engineering departments of the company. To name one example from the motorsport segment: IAV was involved in developing a 2-liter four-cylinder high-speed engine for mass production. Powered by this engine, the BMW 320si went into mass production as the base vehicle for touring-car racing. For further information about IAV, go to www.iav.com.

IAV ist mit über 5.000 Mitarbeitern weltweit einer der führenden Engineering-Partner der Automobilindustrie. Das Unternehmen entwickelt seit 30 Jahren innovative Konzepte und Technologien für zukünftige Fahrzeuggenerationen. Zu den Kernkompetenzen gehören perfekte, serientaugliche Lösungen in allen Bereichen der Antriebsstrang-, Elektronik-, und Fahrzeugentwicklung.

IAV unterstützt Formula Student und einzelne Teams – auch um das Interesse an einer Mitwirkung in den Fachabteilungen zu erwecken. Um ein Beispiel aus dem Bereich Motorsport zu nennen: IAV war bei der Serienentwicklung eines 2-Liter-Vierzylinder-Hochdrehzahlmotors beteiligt. Als Grundlage für den Tourenwagensport ging der BMW 320si mit diesem Motor in Serie. Weitere Infos zu IAV erhalten Sie über unser Karriereportal www.iav.com/karriere.

MAHLE

Joachim Reichle
Director Corporate Personnel Development, MAHLE International GmbH

The MAHLE Group is one of the top 30 automotive suppliers and the globally leading manufacturer of components and systems for the internal combustion engine and its peripherals.

MAHLE has enjoyed close ties to motor sport activities since the early days. Thus we know: if you want to do something decisive, you need a vision, topped with courage, perseverance, and drive. When the environment fits and the team is right, ambitious projects and convincing solutions emerge from innovative ideas. As a company with a passion for the automobile, we are proud to be part of the Formula Student Germany. We support formula student teams who are fascinated by the automotive world and who want to achieve more by working together – the same way we are. We are happy to support talented and enthusiastic engineers in reaching their ambitious goals and we wish all participants an successful Event!

Der MAHLE Konzern zählt zu den 30 größten Automobilzulieferern und ist der weltweit führende Hersteller von Komponenten und Systemen für den Verbrennungsmotor und dessen Peripherie.

Als ein von Anfang an dem Motorsport verbundenes Unternehmen wissen wir: Wer Entscheidendes bewegen will, braucht eine Vision. Und dazu Mut, Ausdauer und Biss. Wenn dann noch das Umfeld stimmt und das Team das richtige ist, werden aus innovativen Ideen ehrgeizige Projekte und überzeugende Lösungen. Als ein Unternehmen mit einer Leidenschaft für das Automobil, sind wir stolz, ein Teil der Formula Student zu sein. Wir unterstützten Teams, die – genauso wie MAHLE – fasziniert sind vom Automobil und gemeinsam mehr bewegen wollen. Wir freuen uns, talentierte und enthusiastische angehende Ingenieure bei der Erreichung ihrer ehrgeizigen Ziele zu unterstützen und wünschen allen Teilnehmern ein erfolgreiches Event

Dr. Bernhard Frey
Head of Human Resources Marketing, MAN Truck & Bus AG

MAN Truck & Bus is a leading international supplier of commercial vehicles and transport solutions. The consistently efficient trucks, buses and engines from MAN put the engineering skills of our outstanding employees on to the road. Combined with reliable and innovative technologies and the highest level of customer orientation, these have provided the basis for our success for over 250 years.

MAN Truck & Bus has many years' experience in the field of motor sports. Every year, MAN successfully leads the way at the Truck Race European Championships. That is why MAN sponsors talented young people at Formula Student who develop sophisticated vehicle concepts with passion and technical expertise. We are looking forward to four exciting race days at the Hockenheimring and wish all the teams every success!

Die MAN Truck & Bus AG ist einer der führenden internationalen Anbieter von Nutzfahrzeugen und Transportlösungen. Die konsequent effizienten Lkw, Busse und Motoren von MAN bringen die Ingenieurskunst unserer hervorragenden Mitarbeiter auf die Straße. In Kombination mit zuverlässigen und innovativen Technologien sowie höchster Kundenorientierung bilden diese seit mehr als 250 Jahren die Basis unseres Erfolgs.

MAN Truck & Bus verfügt über langjährige Erfahrungen im Motorsportbereich. Jedes Jahr fährt MAN bei den Truck Race Europameisterschaften erfolgreich voraus. Aus diesem Grund sponsert MAN junge Talente bei Formula Student, die mit Leidenschaft und technischem Sachverstand ausgeklügelte Fahrzeugkonzepte entwickeln. Wir freuen uns auf vier spannende Renntage auf dem Hockenheimring und wünschen allen Teams viel Erfolg!

Christoph Hahn
Education Technical Specialist Student Competitions, MathWorks

Employing a Model-Based Design approach to automotive design processes for the Formula Student Germany Competition enables teams to design, test, validate and share their models within one environment. Competitions like Formula Student Germany present a unique engineering challenge that requires months of intense focus and hard work. Using industry-standard tools such as MATLAB and Simulink helps students tackle real engineering problems and acquire the collaboration, time-management, and leadership skills they will need for careers in industry.

Learn more about how MathWorks support Formula Student Germany: http://www.mathworks.de/fsg

Formula Student Germany bietet Studententeams eine einzigartige Herausforderung, die innerhalb einer kurzen Vorbereitungs- und Entwicklungszeit und mit großen Engagement und Motivation bewältigt wird. Der modellbasierte Entwicklungsansatz mit MATLAB und Simulink erlaubt es den Teams, im Rahmen dieses Wettbewerbs ihre Simulationsmodelle in einer integrierten Plattform zu entwickeln, zu testen und zu validieren. Zusätzlich zu den großen Herausforderungen im Ingenieursbereich, sammeln die Teams wertvolle Erfahrungen in Teamwork, Leadership, und Zeitmanagement. Erfahrungen die helfen, sich erfolgreich auf den Arbeitsmarkt vorzubereiten.

Lernen Sie mehr zum Thema: MathWorks unterstützt die Formula Student Germany: http://www.mathworks.de/fsg

Vanessa Wünsche
Manager HR Marketing and Employer Branding,
MTU – Engines and System Engineering

Pioneering spirit: the best drive of all

For the Formula Student teams, the past 12 months have brought a lot of work and many challenges. With great passion, new ideas have been developed and a lot of time invested in building their racing cars. Discipline, innovation, dynamism and team spirit have been all-important.

In exactly the same way, our engineers at MTU constantly take on exciting challenges and new tasks. Engines and drive systems carrying the MTU brand guarantee the highest degree of precision and perfect interaction of all system components. Through their dedication and commitment, the racing teams have earned our respect and we are pleased to support this event and the upcoming engineers again in 2014.

Karl Maybach, founding father of MTU and technical pioneer, would certainly love Formula Student Germany. And so do we.

We wish all participants the best of luck!

Pioniergeist – Der beste Antrieb die Dinge zu bewegen!

Ein Jahr voller Herausforderungen und Arbeit liegt hinter den Formula Student Teams. Mit großer Freude und Leidenschaft für Technik haben sie neue Ideen entwickelt und viel Zeit investiert um ihre Rennwagen zu konstruieren. Dazu gehört viel Disziplin, Innovation, Dynamik und einzigartiger Teamgeist.

Auch unsere MTU-Ingenieure stellen sich immer wieder neuen Herausforderungen und spannenden Aufgaben. Wenn es um Motoren und Antriebe geht, steht unsere Marke MTU für größte Präzision im Detail und ein reibungsloses Zusammenspiel im System. Wir wissen den Einsatz der Rennteams sehr zu schätzen und freuen uns das Event und hochmotivierte Nachwuchsingenieure erneut zu unterstützen.

Karl Maybach, MTU-Gründervater und Technikpionier wäre begeistert. Wir Sind es auch! Wir wünschen allen Teams einen erfolgreichen und spannenden Wettbewerb!

Konstanze Marinoff
Director Human Resource Marketing, Dr. Ing. h.c. F. Porsche AG

Porsche stands for Intelligent Performance – for maximum power and efficiency at the same time. With more than 30.000 victories, Porsche, as the most successful manufacturer in motorsports, also stands for extraordinary team spirit. With our return to the LMP1-Series of the World Sportscar Championship and the 24h of Le Mans in 2014, we continue our long tradition in motorsports.
Formula Student is also based on excellent engineering skills. More important than
a fast car, is an intelligent package of team performance and innovative ideas. These factors will lead to success.
We are looking forward to welcome ambitious participants of the Formula Student at Porsche in line with various career entry opportunities. Define the next chapter of the future of sportscar engineering – at the Formula Student competition and at Porsche.
We wish all the teams good luck and success!

Porsche steht für Intelligent Performance – für maximale Leistung bei gleichzeitiger Effizienz. Mit mehr als 30.000 Rennsiegen steht Porsche als der erfolgreichste Hersteller im Motorsport darüber hinaus für einzigartige Teamleistungen. Mit der Rückkehr in die LMP1-Serie der Sportwagen-Weltmeisterschaft und den 24 Stunden von Le Mans 2014, setzen wir unsere lange Tradition im Spitzen-Motorsport fort.
Auch in der Formula Student geht es um Ingenieurskunst. Nicht nur ein schnelles Auto ist entscheidend, sondern ein intelligentes Gesamtpaket aus Teamfähigkeit und innovativen Ideen bestimmt den Erfolg.
Wir freuen uns, engagierte Formula Student Teilnehmer im Rahmen vielfältiger Einstiegsmöglichkeiten bei Porsche begrüßen zu dürfen. Schreiben Sie mit am nächsten Kapitel der Zukunft des Sportwagens - bei der Formula Student und bei Porsche.
Wir wünschen allen Teams viel Glück und Erfolg!

SCHAEFFLER

LuK INA FAG

Prof. Dr. Peter Gutzmer
Member of the Executive Board, CTO,
Schaeffler AG

Success in motorsport is closely associated with the ability of every individual, but more specifically with teamwork. The power of innovation and dynamic, commitment and courage are required in Motorsport - the same applies to the Schaeffler employees in their daily quest to further consolidate their company's position as one of the world's leading automobile suppliers. This is also why the motorsport involvement has been an integral component of Schaeffler's marketing strategy for decades.

Schaeffler has supported Formula Student teams since back in 2006 - by offering our expertise, and also our products. With Formula Student Germany we are close to the talents, the very people we wish to recruit as employees later on: students who enjoy technology and gained project experience that cannot be acquired in university life.

Erfolge im Motorsport sind eng verbunden mit dem Können jedes Einzelnen, aber vor allem mit Teamwork. Im Motorsport sind Innovationskraft, Entschlossenheit und Mut gefordert - das gilt in gleicher Weise für das tägliche Streben der Mitarbeiter von Schaeffler, um sich weiter als weltweit führender Automobilzulieferer zu behaupten. Auch deshalb ist das Motorsport-Engagement seit Jahrzehnten wesentlicher Bestandteil der Schaeffler Markenstrategie.

Teams der Formula Student unterstützt Schaeffler bereits seit 2006 - mit Know-how und Produkten. Bei der Formula Student Germany sind wir dicht dran an den Talenten, die wir uns später als Mitarbeiter wünschen: Studierende, die Spaß an Technik haben und die Projekterfahrung mitbringen, die man im universitären Alltag nicht sammeln kann.

SKF

Bastian Mattlener
Manager Employer Branding & Corporate Communication, SKF GmbH

The challenges in the automotive industry are diverse: The globalisation is changing the production and the markets around the world. Climate change and the shortage of fossil fuels require new and better technologies. At the same time, manufacturers must be flexible enough to meet the high demands that each customer has on individuality and comfort of a car.
To face these challenges it requires courage, strength and endurance, but also creativity, teamwork and vision. Qualities that you, dear participants, demonstrate already today. We are pleased to support young students from all over the world with such an ambitious project as the Formula Student. On behalf of the SKF team, we wish all participants good luck!

Die Herausforderungen in der Automobilindustrie sind vielfältig: Die Globalisierung verändert die Produktions- und Absatzmärkte auf der ganzen Welt. Der Klimawandel und der Mangel an fossilen Brennstoffen erfordern neue, bessere Technologien. Gleichzeitig müssen die Hersteller flexibel genug sein, um die hohen Ansprüche zu erfüllen, die jeder einzelne Kunde an Individualität und Komfort eines Automobils hat.
Sich diesen Herausforderungen zu stellen verlangt Mut, Kraft und Ausdauer, aber auch Kreativität, Teamarbeit und Weitsicht. Eigenschaften die Sie, liebe Teilnehmer, mit Ihrem Engagement bereits heute beweisen. Dazu möchten wir Ihnen schon jetzt gratulieren. Wir freuen uns, junge Studenten aus allen Teilen der Welt bei einem so ambitionierten Projekt wie der Formula Student unterstützen zu können. Im Namen des gesamten SKF Teams wünschen wir allen Teilnehmern viel Erfolg!

Thomas Albrecht
VDI-Society Automotive and Traffic Systems Technologies, VDI e.V.

If Formula Student didn't exist it ought to be invented on the spot. It epitomizes everything that makes the engineering profession so exhilarating: the cool, scientific pursuit of the optimum result, as measured against the irrefutable, objective scale of physical measurement, combined with the highly emotional values of imagination and inventiveness and the focused and frantic co-operation within a team of like-minded companions, who together will face the heat of the competition, and share the elation of success, or the burden of failure, in solidarity.
VDI with its Society for Vehicle and Transport Technology have established Formula Student Germany in its beginning, and continue as its spiritual sponsors, because it provides engineering students with an opportunity to live their passion, and to strive for excellence in a very early stage of their careers.

Wenn es die Formula Student nicht gäbe, man müsste sie auf der Stelle erfinden. Sie bringt auf den Punkt, was den Ingenieurberuf so begeisternd macht: das kühle, wissenschaftliche Streben nach optimalen Ergebnissen, gemessen am unwiderleglichen, objektiven Maßstab physikalischer Größen, gepaart mit den hochemotionalen Werten der Phantasie, des Einfallsreichtums und der konzentrierten Zusammenarbeit in einem Team aus Gleichgesinnten, in dem auch hoher Druck gemeinsam ausgehalten und Erfolg wie Misserfolg zusammen errungen und ertragen werden.
Der VDI mit seiner Fachgesellschaft für Fahrzeug- und Verkehrstechnik hat die Formula Student Germany etabliert und ist ihr ideeller Träger, weil sie dem Nachwuchs im Ingenieurberuf eine Chance gibt, diese Begeisterung zu leben und schon früh in der eigenen Laufbahn nach Exzellenz zu streben.

Thomas Lieber
Head of Electro-Traction, Volkswagen AG

Volkswagen is once again at the Formula Student Event at the Hockenheimring to support and to look for an open dialogue with young talents.
Alongside their expert knowledge, these aspiring engineers have innovative power and creativity as well as team and communication skills, which is exactly what is needed for a career and for working successfully in our company.
We are therefore happy to support highly-motivated young engineers with our expert knowledge, to inform them about the varied and individual opportunities to start a career in our company and to encourage their enthusiasm for Volkswagen as an attractive employer.
And we always have the same common denominator: The enthusiasm for „Das Auto".

We wish all teams a successful and exciting competition!

Volkswagen fördert bei der Formula Student hoffnungsvolle Talente und tritt mit ihnen in den Dialog. Die angehenden Ingenieurinnen und Ingenieure bringen Fachwissen, Innovationskraft, Kreativität, Team- und Kommunikationsfähigkeit mit. Das sind genau die richtigen Stärken für eine erfolgreiche Karriere bei Europas größtem Automobilhersteller.

Wir unterstützen die Nachwuchskräfte mit dem Wissen unserer Experten und informieren sie über die vielfältigen Einstiegs- und Entwicklungsmöglichkeiten bei Volkswagen. Einen gemeinsamen Nenner haben wir in unseren Gesprächen auf dem Hockenheimring auf jeden Fall: die Begeisterung für Das Auto.

Wir wünschen allen Teams einen erfolgreichen und spannenden Wettbewerb!

Martin Frick
Head of Talent Attraction & Social Media, ZF Friedrichshafen AG

As a global leader in driveline and chassis technology, ZF is permanently looking for highly qualified, creative, and motivated junior staff.
Team players with key competencies such as well-founded knowledge in project management as well as international experience and cost optimization are just what we need. We find exactly such key qualifications with the Formula students, and as such we have been committed to those undertakings for years. Moreover, we perceive this commitment as an important contribution to enhancing the education quality as well as practice orientation at the universities worldwide.
Formula Student makes it possible to link the qualification of engineers with motorsports - a highly emotional and fascinating topic. I am personally convinced that the entire business site is profiting from such projects, but, primarily us, the ZF Group, as a technology-oriented company.

ZF als ein weltweit führender Technologiekonzern in der Antriebs- und Fahrwerktechnik ist permanent auf der Suche nach qualifizierten, kreativen und motivierten Nachwuchskräften.
Gefragt sind Schlüsselkompetenzen wie Teamfähigkeit, internationale Erfahrung und solide Kenntnisse in Projektmanagement und Kostenoptimierung. Da wir genau diese Schlüsselqualifikationen bei den Formula Studenten finden, engagieren wir uns seit vielen Jahren. Wir sehen darin einen wichtigen Beitrag, die Ausbildungsqualität und Praxisnähe an den Hochschulen weltweit zu stärken.
Das Projekt Formula Student ermöglicht es, die Ingenieursausbildung mit dem Rennsport zu verknüpfen, einem emotionalen und faszinierenden Thema. Ich bin davon überzeugt, dass hiervon der ganze Wirtschaftsstandort profitiert, aber natürlich auch wir als weltweiter Technologiekonzern.

LIVE TIMING AT FSG
DAS FSG LIVE TIMING

During the dynamic events a website for the FSG live timing will be available online.

On **http://tk.formulastudent.de** you will continuously find the latest lap times, of the teams on track at that specific moment in time. The personal best of the teams will be shown in green. An overall best time in the respective class (FSC or FSE) will be displayed in pink.

To stay informed, the overall best lap times will always be shown, regardless of the level of lap times achieved at the time.

Während der dynamischen Events wird im Internet eine Webseite fürs Live Timing verfügbar sein.

Unter **http://tk.formulastudent.de** erfährt man immer die neuesten Rundenzeiten, die von den Teams zum jeweiligen Zeitpunkt gefahren werden. Dabei wird die persönliche Bestzeit eines Teams in grüner Farbe markiert. Eine neu gefahrene absolute Bestzeit in der jeweiligen Fahrzeugklasse (FSC oder FSE) wird in Pink dargestellt.

Um den Überblick behalten zu können, werden die absoluten Bestzeiten immer dargestellt, unabhängig von den aktuell gefahrenen Zeiten.

In 2014, several displays are again available on the dynamics area.
Auch in 2014 wird es wieder mehrere Displays bei den dynamischen Disziplinen geben.

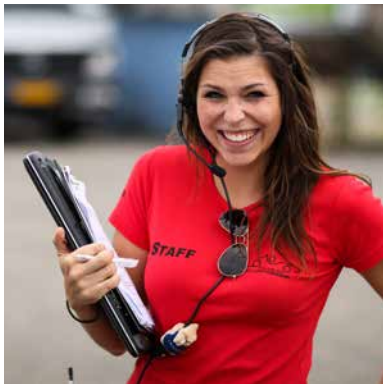
In addition, the latest lap times will be available online on http://tk.formulastudent.de.
Zusätzlich sind die aktuellen Rundenzeiten unter http://tk.formulastudent.de verfügbar.

FSG SHOWS ITS TRUE COLOURS
FSG BEKENNT FARBE

Meet the multi-coloured army of volunteers who keep FSG on track

Have you ever wondered what it takes to organise a global competition on the scale of FSG? The key to success is the competition's 450+ dedicated volunteers.

Take a moment to look at the crowds at the Hockenheimring this year and it won't be long before you notice the colourful shirts worn by the various members of the organising team, judges, scrutineers and helpers, each of whom plays a vital part in making the whole competition run smoothly. But what do the different shirts mean?



Probably the first group you'll notice are the **Red** Shirts. These are the guys and girls on the ground who set up and maintain all the key infrastructure that makes FSG tick. They also handle everything from getting you your tickets to making sure the judges get something to eat. The Red Shirts are the backbone of FSG's volunteer army. They come from all over the world and many have been involved from the very beginning in 2006. Without the Red Shirts there would be no FSG.

First and foremost, FSG is a competition and competitions need judges. Meet the **Blue** Shirts. These are the highly experienced experts, from industry and academia, who evaluate and score the work of the student teams. They are responsible for a fair competition but they also play a vital role in mentoring the teams, helping them to reflect and improve on their performances at every turn.

Of all the officials at FSG, perhaps the group who inspire the most respectful terror in the minds of the students are those wearing he **Green** Shirts. These are the scrutineers. They have the critical job of making sure that every one of the 75 combustion and 40 electric cars pass the strict safety requirements to be allowed on the track.

Meet the multi-coloured army of volunteers who keep FSG on track

Was ist die Erfolgsformel eines globalen Wettbewerbs dieser Größe? - die Unterstützung von über 450 hochmotivierten freiwilligen Helfern!

Blickt man sich um beim diesjährigen FSG Ereignis am Hockenheimring, bemerkt man in der Menge Menschen, die Hemden in verschiedenen Farben tragen. Diese sind die bunten Uniformen unserer FSG Armee, mit ihren Truppen aus Organisatoren, Juroren, Prüfern und Helfern. Jede Truppe hat ihre bestimmte Aufgabe, damit der Wettbewerb reibungslos läuft. Aber was bedeuten die Farben?

Wahrscheinlich fällt als erstes die Gruppe mit den **roten** Shirts auf. Diese Red Shirts organisieren den Aufbau und die Wartung der FSG-Infrastruktur. Sie sind „Mädchen für Alles" kümmern sich z.B. um die Anmeldung der Studententeams, Eintrittskarten der Besucher, sind Streckenposten und Vieles mehr. Unsere Red Shirts sind das starke, flexible Rückgrat unserer FSG-Armee von Freiwilligen aus der ganzen Welt. Viele von ihnen sind schon seit dem FSG-Geburtsjahr 2006 dabei. Ohne unsere Red Shirts gäbe es keine FSG!

FSG ist zu allererst ein Wettbewerb, und dafür braucht man Juroren. Unsere Juroren tragen die **blauen** Shirts und rekrutieren sich aus hoch kompetenten Experten aus der Wirtschaft und Wissenschaft. Ihre Aufgabe ist die fachgerechte und faire Bewertung der Arbeit der studentischen Teams. Darüberhinaus sind sie wichtige Mentoren, damit die Studenten ihre Arbeit kritisch hinterfragen und ihre Leistung verbessern können.

Die, die **grünen** Shirts tragen, sind die Scrutineers - die Truppe, die wohl am meisten „Angst und Schrecken" unter den Studenten verbreitet. Ihre verantwortungsvolle Aufgabe

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Today FSG is a major international event, attracting more than 6,000 visitors and generating considerable interest, both within Germany and world-wide. This is where the **Black** Shirts come in. They handle communications including FSG TV, the official photography and live-streaming video coverage of the competition. Also wearing black shirts are the information technology experts who manage the computer infrastructure, audio visual and timing systems which power the competition.

Last, but not least, there are the **White** Shirts. These are worn by the key members of the organising team who work throughout the year on the planning, organisation and strategic development of FSG. Due to the size and complexity of today's international FSG, the White Shirts have established themselves into structured groups, like you might find in any growing company. There are groups responsible for Static Events, Dynamic Events, Electrical Scrutineering, Technical Scrutineering, Time Keeping, Event Control & Support and Media. Each of these "departments" has its own responsibilities and they grow and develop each year according to the outcome of the past year's event as well as the capabilities of the individual members.

With the growth of Formula Student around the world, the White Shirts often travel to the different FS events to share their experience and pick up ideas. For example, the Energy Meter which was pioneered by members of the Formula Student Germany team to measure energy usage from the electric car, has since been shared with other competitions and is now in use at almost all.

The White Shirts ensure the top class organisation of Formula Student Germany. They all remain infected with the Formula Student virus and are passionately committed to developing and improving the event even further in the years ahead.

Whatever the shirt colour, the FSG team are one big family. Their shared goal is to help everyone participating in or visiting FSG to get the most out of this very special event. So don't be shy! Ask your questions, give your feedback and suggestions, and above all, **have a great time at FSG 2014!**

ist sicher zu stellen, dass alle 75 Verbrenner- und alle 40 Elektofahrzeuge den zulässigen Kriterien für die Sicherheit vor Ort entsprechen, bevor sie auf die Strecke gehen können.

Heute ist die FSG zu einer der wichtigsten internationalen Studentenveranstaltung geworden. Sie zieht über 6.000 Besucher an und erregt nicht nur in Deutschland sondern weltweit großes Interesse in der Öffentlichkeit. Und hier kommt die Truppe mit den **schwarzen** Shirts ins Spiel. Sie filmen und fotografieren vor Ort und sind verantwortlich für FSG-TV und die Livestream - Übertragung des Wettbewerbs. Schwarze Shirts tragen auch unsere IT-Experten. Sie kümmern sich z.B. um die Computer-Infrastruktur, Zeitmessung und Fahrerregistrierung, damit der Reifen rollt.

Last, but not least zu den **Weiß**hemden, der Kerntruppe, die rund ums Jahr an Konzept, Organisation und strategischen Weiterentwicklung der FSG arbeitet. Die Aufgaben bei der Planung und Durchführung des Internationalen Wettbewerbes sind vielfältig: Statische und Dynamische Events, Technische Abnahme, Regelsetzung, Zeitmessung, Kommunikation oder Event Control & Support vor Ort in Hockenheim. Hierzu haben sich die Weißhemden in Abteilungen mit jeweils eigenen Zuständigkeitsbereichen gegliedert, und diese wachsen und entwickeln sich weiter von Jahr zu Jahr - auf der Grundlage der Erfahrungen der Vorjahre und des jeweiligen Fachwissens der einzelnen Teammitglieder.

Durch das Wachstum von Formula Student als Wettbewerb auf der ganzen Welt reisen diese Weißhemden oft zu den verschiedenen FS-Veranstaltungen, um Erfahrungen aus zu tauschen und neue Ideen zu sammeln. Der Energymeter, z.B., wurde als Pionierleistung von Mitgliedern des Formula Student Germany Teams entwickelt, um den Stromverbrauch in E-Fahrzeugen zu messen. Seit dieser Zeit fand er Eingang in den anderen FS-Wettbewerben als integraler Bestandteil.

Welche Farbe auch immer – alle zusammen sind wie eine große Familie und setzen sich für eine erstklassige Organisation der Formula Student Germany ein. Ihr gemeinsames Ziel: Jeder Teilnehmer oder Besucher soll den größtmöglichen Nutzen aus dieser besonderen Veranstaltung ziehen. Also, nur keine falsche Bescheidenheit! Stellen Sie Fragen, lassen Sie sich helfen und geben Sie uns Ihr Feedback, vor allem aber **"have a great time at FSG 2014!"**

I NEVER MISSED A SINGLE FSG EVENT…
ICH HABE NIE EINE FSG VERPASST…

Interview with Clenn Griebenhain

Clenn Giebenhain, a founding member of the Formula Student team of the TU Darmstadt in 2005, has a background in Formula Student in lightweight suspension and brake development on three of their cars. He has been part of the FSG Community as a design judge ever since.

Where do you work now?
I work for Dr. Ing. h.c. F. Porsche AG in the Center of Development in the department of Innovation. My job is to create innovative and platform independent simulation techniques perfectly fitting to our future concerning sustainability and energy- and weight saving potentials we face through the electrification of the automobile sector. My work majorly contributes to the vision that one day we will be able to facilitate a resource friendly, reproducible and computer optimized virtual vehicle test drive instead of having to develop plenty of costly prototypes.

How do you think that Formula Student Germany helped you with your career?
FSG was a major contribution to help me to develop something I would call engineering and creative thinking. I also learned to grow stronger from wrong decisions and heart-breaking moments. I will never forget 2007, when the failure of a part worth a few cents ruined a complete year of work. We were within reach of a win of the FSG overall dynamics!

Now that you have a successful career, why did you choose to come back to Formula Student Germany to volunteer as a design judge?
I still appreciate seeing how FSG enables young engineers to deploy all their learned knowledge and creativity on an almost non-restricted engineering project. Formula Student brings out ideally educated and highly innovative young professionals fitting perfectly to an industry, which nowadays sees the most significant upheaval in its history concerning the need for electrification and energy preservation. The chance to see the technical result of this project is why I haven't missed a single FSG event since the foundation in 2006.

Interview mit Clenn Griebenhain

Clenn Giebenhain hat 2005 das Formula Student Team der TU Darmstadt mitgegründet und dort seine Expertise in Leichtbau-Fahrwerk und Bremsentwicklung aufgebaut. Heute ist er Teil der FSG-Gemeinschaft als Design Judge.

Wo arbeitest Du jetzt?
Ich arbeite im Entwicklungszentrum der Dr. Ing. h.h. F. Porsche AG in der Abteilung „Innovation". Mein Job ist es, innovative und plattformunabhängige Simulationstechniken zu entwickeln, die perfekt zu einer nachhaltigen, energie- und gewichtsparenden Zukunft passen, die uns aufgrund der Elektrifizierung des Automobilsektors erwartet.
Meine Arbeit trägt maßgeblich zu der Vision bei, dass wir eines Tages in der Lage sein werden, einfacher ressourcenfreundliche, reproduzierbare und computeroptimierte virtuelle Testfahrten durchführen zu können anstatt viele kostspielige Prototypen zu entwickeln.

Was meinst Du wie Dir die Formula Student Germany bei Deiner Karriere geholfen hat?
Die FSG hat einen großen Anteil daran, dass ich ein "Ingenieursdenken bzw. kreatives Denken" entwickelt habe. Außerdem habe ich gelernt,mit falschen Entscheidungen und enttäuschenden Momenten umzugehen und daran zu wachsen. Ich werde niemals vergessen, wie 2007 ein kaputtes Teil, das nur ein paar Cent kostet, ein ganzes Jahr an Arbeit zerstört hat. Wir hätten sonst die „Overall Dynamics" bei der FSG gewonnen!

Du bist jetzt erfolgreich im Job. Warum hast Du Dich entschieden zurückzukommen und Dich freiwillig bei der Formula Student Germany als Design Judge zu engagieren?
Ich schätze sehr, wie es die FSG jungen Ingenieuren ermöglicht, all ihr erlerntes Wissen und all ihre Kreativität in diesem Ingenieurprojekt fast uneingeschränkt einzubringen. Junge Ingenieure, die an der Formula Student teilgenommen haben, sind ideal ausgebildet und höchst innovativ und passen perfekt in eine Arbeitswelt, die heutzutage mehr denn je zuvor die Notwendigkeit der Elektrifizierung und des Energiesparens in den Fokus stellen. Die Chance, die konstruktiven Lösungen der Studenten zu erleben, ist der Grund, warum ich seit der Gründung 2006 nicht eine Formula Student Germany verpasst habe.

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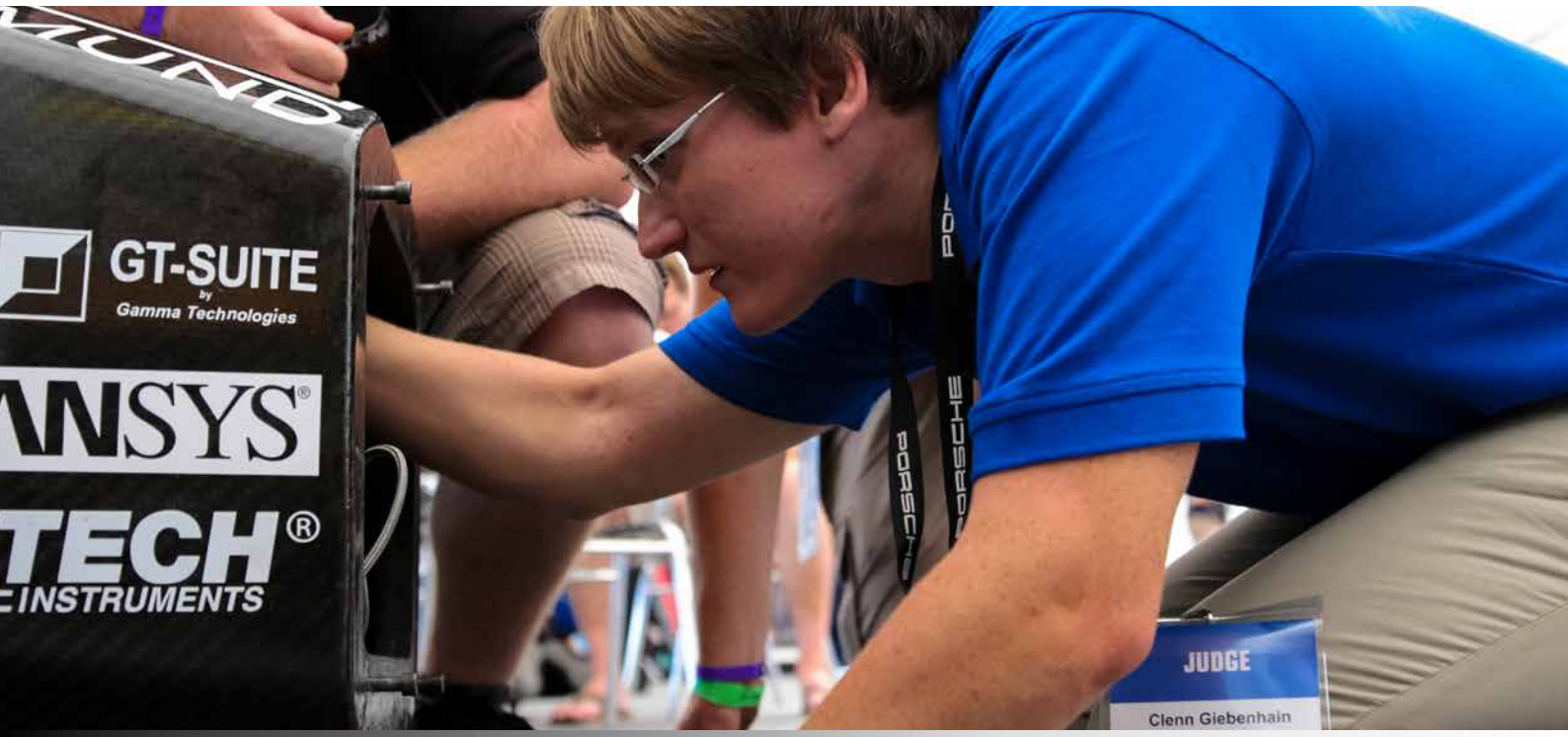
What is your job as a design judge?
I try to stay quite general. My study, my daily work and Formula Student in particular taught me to be a complete engineer. That's why I judge both combustion and electric cars in many different disciplines. For me, it is all about finding out if students have an understanding of how they designed a solution - and even more important why they designed a solution the way they did. It's all about the technical understanding of the students and their creative thinking. This will be the fundamental base of their future job as an engineer. This is what I try to find out during my job as a judge.

Why do you think that other professionals should volunteer as judges at Formula Student Germany?
FSG, and in particular Formula Student Electric has become THE technical showcase of how to develop enduring and resource friendly technologies for our electrical automotive future. It is all about energy efficiency through simulation techniques, intelligent energy management and recuperating systems, which is something which currently drives the automotive industry especially as emission policies get tighter and tighter. This is why I suggest to all the professionals out there to come to Hockenheim and have a look at the amazing work those young professionals achieve in the short period of time they have to design. It is a win win situation. On the one hand, a judge is able to have a first hand look at fascinating new approaches. On the other hand, the students are able to learn from the experience of professionals or even get a first contact for their possible future within the automotive industry.

Was machst Du als Design Judge?
Ich möchte es so zusammenfassen:. Mein Studium, meine tägliche Arbeit und und die Teamarbeit in der Formula Student im Speziellen hat mich gelehrt, das Gesamtkonzept im Auge zubehalten. Das ist der Grund, warum ich in beiden Wettbewerben, also Verbrenner- und E-Fahrzeuge die Auslegung und Konstruktionen in vielen Bereichen des Fahrzeuges bewerte. Mir geht es darum herauszufinden, ob die Studenten ein Verständnis dafür haben, warum und wie sie eine Lösung konstruiert haben. Bewertet wird also das technische Verständnis der Studenten und ihr kreatives Denken. Denn das ist ihre Basis für ihre Zukunft als Ingenieur. Genau dies versuche ich als Design Judge herauszufinden.

Warum sollten sich auch andere Ingenieure als Judges bei der Formula Student Germany engagieren?
FSG und insbesondere die Formula Student Electric ist mittlerweile DAS technische Vorzeigeprojekt. Hier wird gezeigt, wie wir nachhaltige und ressourcenfreundliche Technologien für unsere elektrische Automobilzukunft entwickeln können. Es geht um Energieeffizienz durch Simulationstechniken, intelligentes Energiemanagement und Energierückgewinnungssysteme – alles Aspekte, die aktuell die Automobilindustrie antreiben, gerade vor dem Hintergrund, dass die Emissionsgesetze immer strenger werden. Daher empfehle ich allen Ingenieuren nach Hockenheim zu kommen und einen Blick auf die beeindruckende Arbeit dieser jungen Nachwuchskräfte zu werfen, die sie in so kurzer Zeit auf die Beine stellen. Es ist eine Win-win-Situation: Auf der einen Seite können die Judges einen ersten Einblick in faszinierende neue Ansätze erhalten. Auf der anderen Seite können die Studenten von den Erfahrungen der Ingenieure profitieren oder sogar erste Kontakt für ihre zukünftige Karriere in der Automobilindustrie knüpfen.



FSG - A SOUND CAREER BASIS
FSG - EIN KARRIEREBAUSTEIN

6 Questions to Helmut Matschi,
Member of the Excecutive Board at Continental AG

Mr. Matschi, you experienced Formula Student Germany (FSG) 2013 first-hand. What impressions did you take home from Hockenheim?
Whether you have gasoline in your blood or amps in your veins, Formula Student is one initiative that allows young engineers to demonstrate their passion for cars and show that they could deliver top performance – a sound basis for their future career in industry.

This year, Continental is organizing the main workshop of the FSG Academy. In your opinion, how important are these further training activities at Formula Student Germany?
It is undoubtedly important to offer all the participating students an attractive program. The main workshop of the Formula Student Germany Academy gives the opportunity to combine and convey theory and practice. It also enables us, as host, to come into contact with the students and present both our portfolio and our innovations.

What qualities should the specialists and managers of tomorrow bring to the table and to what extent does FSG put these qualities to the test?
Let me give an example. A decisive factor for the acceptance of automated driving will be that car drivers know what the electronics can do. For Continental, it is therefore important to continually retain young engineers who can implement their theoretical experience in automotive practice.
In all probability, it is the engineers that put their ideas on the road at Formula Student who will be involved in us launching the „chauffeur button“ in less than 15 years.

What skills and qualifications do you look out for in particular? In other words, which FSG disciplines are most important to you?
Innovations in the vehicles of today and tomorrow are increasingly being based on networked systems. In turn, these networked systems require engineers who can think and work in networks. Formula Student is a prime example that, especially nowadays, advanced technology can only be developed in a network. Thus the time of networkers has come. The automotive industry requires precisely these people, these team players.

Helmut Matschi - Continental AG
Member of the Executive Board, Interior Division
Mitglied des Vorstands, Division Interior

6 Fragen an Helmut Matschi,
Mitglied des Vorstandes der Continental AG

Herr Matschi, Sie haben die Formula Student Germany (FSG) 2013 persönlich erlebt. Welche Eindrücke haben Sie aus Hockenheim mitgenommen?
Ob Benzin im Blut oder Ampere in den Adern: Die Formula Student ist eine der Initiativen bei denen junge Ingenieure ihre Leidenschaft für das Auto unter Beweis stellen können - und damit beweisen, dass sie im Verlauf des Studiums Höchstleistungen bringen können und sich dabei gezielt auf den Berufseinstieg vorbereiten können.

Continental richtet in diesem Jahr den zentralen Workshop der FSG Academy aus. Welche Bedeutung messen Sie diesen Weiterbildungsaktivitäten der Formula Student Germany bei?
Es ist sicherlich wichtig, allen teilnehmenden Studenten ein attraktives Programm zu bieten. Der zentrale Workshop der Formula Student Germany Academy gibt die Möglichkeit Theorie und Praxis zu verbinden und zu vermitteln. Darüber hinaus bietet es uns als Gastgeber die Möglichkeit mit den Studenten in Kontakt zu treten und sowohl unser Portfolio als auch unsere Innovationen zu präsentieren.

Welche Eigenschaften sollten Fach- und Führungskräfte von morgen mitbringen und inwieweit stellt die FSG diese Eigenschaften auf die Probe?
Für zum Beispiel die Akzeptanz des Automatisierten Fahrens wird entscheidend sein, daß die Autofahrer wissen, was die Elektronik kann. Für Continental ist also wichtig, dass wir kontinuierlich junge Ingenieure an uns binden können, die Ihre Erfahrung aus der Theorie tatsächlich auch in die automobile Praxis umsetzen können.
Die Ingenieure, die bei der Formula Student ihre Ideen auf die Straße bringen, werden mit hoher Wahrscheinlichkeit auch daran beteiligt sein, dass wir in weniger als 15 Jahren tatsächlich auch den „Chauffeursknopf“ einführen können.

Auf welche Fähigkeiten und Qualifikationen achten Sie besonders, d.h. welche FSG-Disziplinen sind für Sie von hoher Bedeutung?
Innovationen im Auto basieren heute und in Zukunft immer stärker auf vernetzten Systemen. Diese vernetzten Systeme wiederum benötigen vernetzt denkende und vernetzte arbeitende Ingenieure. Die Formula Student ist ein Paradebeispiel dafür, dass gerade heute Spitzentechnologie nur im Netzwerk entwi-

At this year's FSG, a third of the teams are using a purely electrical drive system. Is electromobility also a focus of development at your company?

Continental works consistently to develop highly efficient solutions for environmentally-friendly and fuel-efficient drive systems. On the one hand, this means continuously improving the traditional drive system – whether diesel or gasoline – using technologies such as turbocharging or enhanced injection systems. On the other hand, in the future there will be no getting around the fact that the drive system will need to be electrified in order to meet the CO2 fleet targets of our customers in the long term. The approach is to focus on made-to-measure electrification. This means exploiting all levels of electrification from 12-volt start-stop and 48-volt systems to hybrids and purely electric cars so that the full future range of powertrain solutions can be realized cost-effectively.

What advice do you give to the organizers of FSG in order to better prepare participating students for the future?

Continental has been making history for more than 140 years. For 111 years, Continental has been relying on driver information as an important pillar in automotive success. Formula Student – with its international group of participants – presents an ideal opportunity to discover talented young people who can continue making this history with us. I personally can imagine that future Formula Student events may include a competition with an automated/autonomous vehicle.

I wish the Formula Student initiative much continued success in its efforts to foster inventive spirit further.

ckelt werden kann. Deshalb ist jetzt die Zeit der Netzwerker. Die Automobilindustrie braucht genau diese Menschen, diese Teamspieler.

Bei der diesjährigen FSG setzt ein Drittel der Teams auf einen rein elektrischen Antrieb. Ist Elektromobilität auch ein Entwicklungsschwerpunkt in Ihrem Unternehmen?

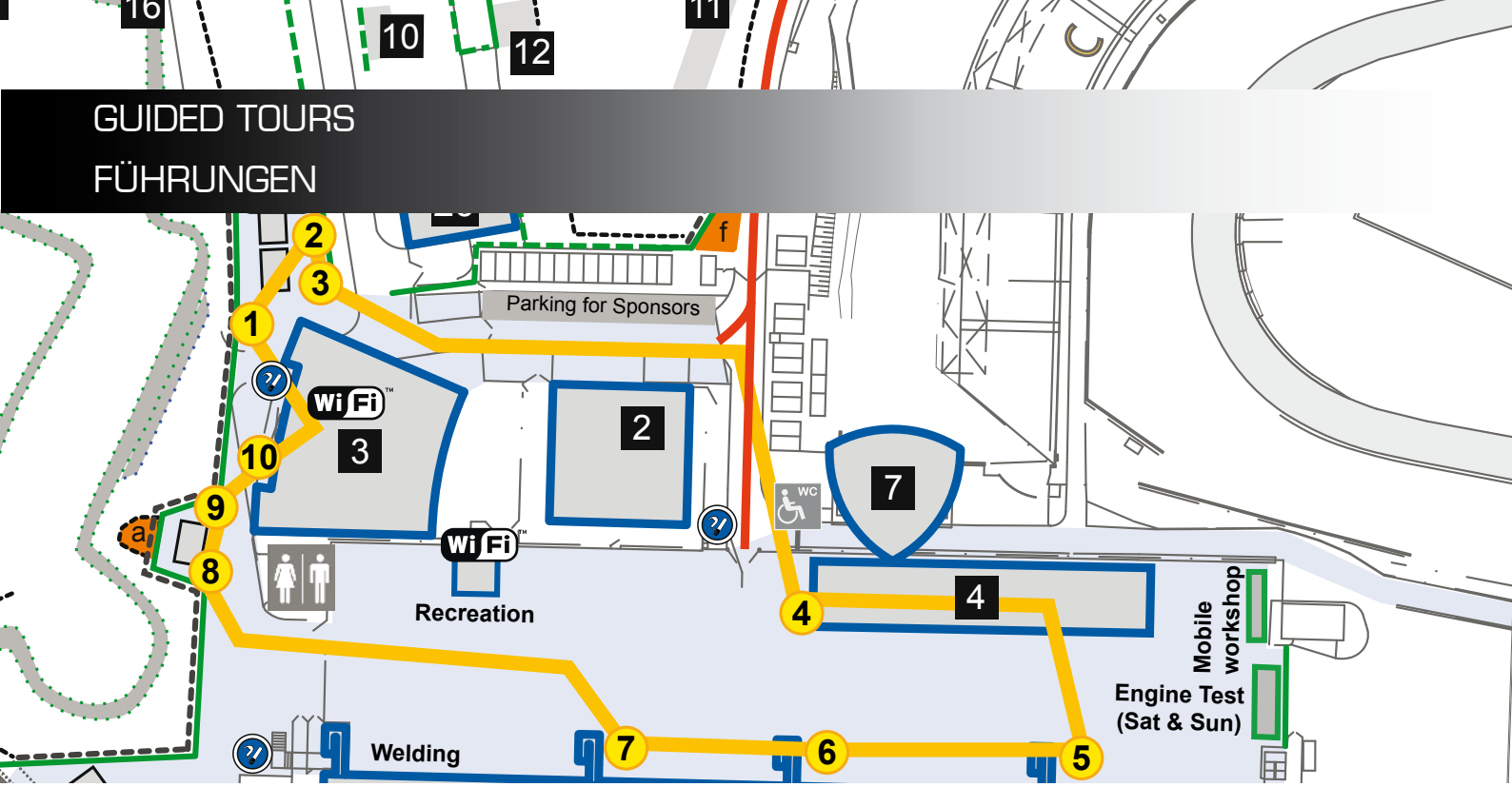
Continental arbeitet konsequent an hocheffizienten Lösungen für einen umweltschonenden und verbrauchsreduzierten Antrieb. Das bedeutet auf der einen Seite den herkömmlichen Antrieb - ob Diesel oder Benziner - durch Technologien wie Turboaufladung oder verbesserte Einspritzsysteme weiter zu verbessern. Gleichzeitig führt zukünftig kein Weg daran vorbei den Antrieb zu elektrifizieren, um langfristig die CO2 Flottenziele unserer Kunden zu erreichen. Der Ansatz ist hier eine Elektrifizierung nach Maß - d.h ein Ausschöpfen aller Elektrifizierungsstufen von 12 Volt Start Stop über 48 Volt bis hin zu Hybriden oder reinen Elektroautos - mit der sich die zukünftige Bandbreite im Antriebsstrang wirtschaftlich umsetzen lässt.

Was geben Sie den Organisatoren der FSG mit auf dem Weg, um die studentischen Teilnehmer noch besser auf die Zukunft vorzubereiten?

Seit über 140 Jahren schreibt Continental Geschichte. Seit 111 Jahren setzt Continental auf Fahrerinformation als eine wichtige Säule des Automobilerfolgs. Die Formula Student – mit ihrem internationalen Teilnehmerkreis – ist eine ideale Plattform, um junge Talente zu erleben, die mit uns diese Geschichte fortschreiben. Ich kann mir gut vorstellen, daß die Formula Student bei der nächsten Generation ein Rennen mit einem automatisierten/autonomen Fahrzeug beinhalten könnte.

Ich wünsche der Formula Student Initiative weiterhin viel Erfolg bei ihren Bemühungen den Erfindergeist weiter zu fördern.

GUIDED TOURS
FÜHRUNGEN



The simply staggering acceptance of the guided tours with almost 350 guided visitors, representatives of the press and sponsors as well as the throughout positive feedback of all tour participants will again be aimed to achieve during Formula Student Germany 2014. For this purpose the "Formula Student Basic Tour" will be offered again for all interested visitors, sponsors and press.

Formula Student Basic Tour

The 45-minute Formula Student Basic Tour offers a comprehensive insight into Formula Student Germany with its two vehicle classes, the Formula Student Combustion and the Formula Student Electric. Additional to the explanation of basic idea and competition history the interested visitor gets an overview of the different static and dynamic disciplines. While visiting the scrutineering and touring the pit lane, the participants get the chance to soak up the unique atmosphere of the competition and to discuss the characteristics of the different racecars. The focus towards electro or combustion racecars will be adjusted individually as requested by the tour group.

The starting point for each guided tour is the info counter inside the FSG Forum. There you will also find schedules with all times and dates for guided tours.

Die Überwältigende Annahme des Führungsangebots von beinahe 350 geführten Besuchern, Pressevertretern und Sponsoren im Jahr 2013 und die durchweg positive Resonanz aller Teilnehmer soll auch bei der Formula Student Germany 2014 erreicht werden. Hierfür gibt es auch in diesem Jahr für interessierte Besucher, unsere Sponsoren und die Pressevertreter die „Formula Student Basic Tour".

Formula Student Basic Tour

Während der 45-minütigen Formula Student Basic Tour erhalten die Führungsteilnehmer einen umfassenden Einblick in die Formula Student Germany mit ihren zwei Fahrzeugklassen, der Formula Student Combustion und der Formula Student Electric. Neben der Darstellung von Grundidee und Historie des Events, werden die verschiedenen dynamischen und statischen Disziplinen des Wettbewerbs erläutert. Beim Besuch der technischen Abnahme und dem Gang durch die Boxengasse bekommen die Teilnehmer die Möglichkeit die besondere Atmosphäre der Veranstaltung aufzusaugen und sich die Besonderheiten der einzelnen Klassen und Fahrzeuge hautnah erläutern zu lassen. Ob der Fokus einer jeden Führung eher auf Verbrennungs- oder Elektrofahrzeugen gelegt werden soll, kann von der Besuchergruppe individuell entschieden werden.

Der Startpunkt für die Führungen befindet sich am Infocounter im FSG Forum. Hier können auch die Startzeiten jeder Führung eingesehen werden.


Very Wet
FORMULA STUDENT GERMANY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FSG


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Our special thanks goes to Harald Almonat, Stefan Brink, Pierre Buck, Richard Grams, Kimmo Hirvonen, Ole Kroeger, Steffen Rose, Klaus Scheuplein, Corvin Schindler & Daniel Sturm for the amazing photos of FSG 2013.

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More pictures on: media.formulastudent.de
Mehr Bilder unter: media.formulastudent.de

IMPRINT

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Team profiles
Text and pictures provided by the teams (July 2014)

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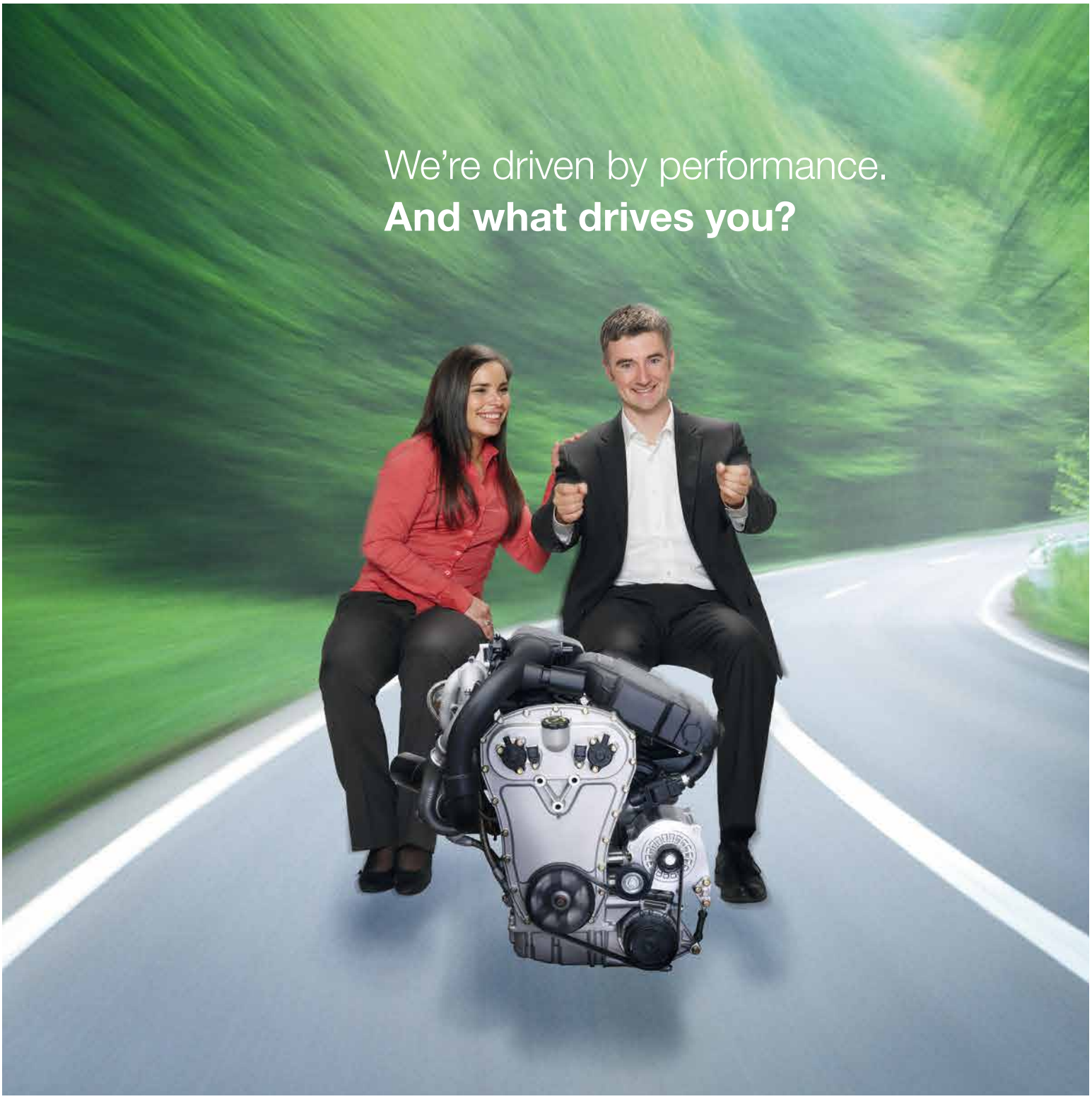
PARTICIPATING FSC TEAMS 2014
TEILNEHMENDE FSC TEAMS 2014

Car	City / University	Country	Pit	Page
1	Corvallis OSU	United States	60	59
2	Stuttgart U	Germany	43	87
4	Göteborg Chalmers	Sweden	72	64
5	München TU	Germany	78	78
6	Akron U	United States	48	52
7	Seattle U Washington	United States	73	85
9	Ann Arbor U MI	United States	104	53
10	Hatfield UH	United Kingdom	70	65
12	Thessaloniki U	Greece	98	88
13	München UAS	Germany	54	78
14	Bath U	United Kingdom	56	54
15	Glasgow U Strath	United Kingdom	40	62
17	Pomona CSU	United States	62	83
18	Mumbai Somaiya	India	87	77
19	Roma U Sapienza	Italy	76	84
20	Moscow BMSTU	Russia	77	74
21	Loughborough U	United Kingdom	53	70
23	Stralsund UAS	Germany	61	86
24	Valéncia UPV	Spain	39	89
25	Madrid TU	Spain	50	71
26	Krefeld HSNR	Germany	57	69
27	Patiala U Thapar	India	97	82
28	Kassel U	Germany	95	67
29	New Delhi IIT	India	51	80
30	Prague CTU	Czech Republic	47	83
32	Bangkok KMITL	Thailand	102	54
33	Xiamen TU	China	90	91
34	Navi Mumbai PIIT	India	109	79
36	Latacunga ESPE	Ecuador	93	69
38	Berlin UAS	Germany	71	55
41	Lund U	Sweden	103	71
42	Darmstadt UAS	Germany	100	60
43	Konstanz UAS	Germany	66	68
44	Columbus OSU	United States	44	58
46	Huddersfield U	United Kingdom	64	66
48	Bochum U	Germany	99	56
49	Erlangen U	Germany	55	60
50	Faridabad MRIU	India	108	61

Car	City / University	Country	Pit	Page
51	Sevilla U	Spain	46	86
52	Moscow MAMI	Russia	107	76
53	Lemgo UAS	Germany	52	70
54	Vellore VIT	India	74	89
55	Gießen UAS THM	Germany	68	62
58	Paderborn U	Germany	84	81
60	Weingarten UAS	Germany	91	90
63	Aachen UAS	Germany	105	52
65	Karlsruhe KIT	Germany	85	66
66	Melbourne Monash	Australia	114	73
68	Mannheim UAS	Germany	58	72
69	Hamburg UAS	Germany	67	65
70	Pforzheim U	Germany	96	82
71	Nevers ISAT	France	86	79
74	Brno TU	Czech Republic	45	57
77	Mumbai DJSCE	India	69	77
78	Tampere UAS	Finland	106	87
80	Coburg UAS	Germany	83	58
84	Mittweida UAS	Germany	113	74
85	Padova U	Italy	75	81
88	Bangalore BIT	India	88	53
89	Bratislava TU	Slovakia	110	56
90	Roma U Tor Vergata	Italy	112	84
92	Oxford Brookes U	United Kingdom	80	80
94	Esslingen UAS	Germany	49	61
96	Manipal U	India	81	72
97	Schweinfurt UAS	Germany	79	85
99	Chennai IITM	India	89	57
100	Wuppertal U	Germany	82	90
101	Moscow MADI	Russia	94	76
103	Cottbus TU	Germany	63	59
107	Maribor U	Slovenia	101	73
108	Karlsruhe UAS	Germany	65	67
109	Graz TU	Austria	115	64
113	Ulm UAS	Germany	59	88
117	Kempten UAS	Germany	111	68
118	Berlin TU	Germany	92	55



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PARTICIPATING FSE TEAMS 2014
TEILNEHMENDE FSE TEAMS 2014

Car	City / University	Country	Pit	Page
E1	Delft TU	Netherlands	31	97
E3	Karlsruhe KIT	Germany	19	103
E5	Dresden TU	Germany	23	98
E7	Hannover U	Germany	33	101
E11	Trondheim NTNU	Norway	32	111
E12	München TU	Germany	25	105
E13	München UAS	Germany	26	106
E14	Budapest TU	Hungary	3	95
E19	Braunschweig TU	Germany	38	94
E21	Bayreuth U	Germany	29	94
E22	Leuven KU	Belgium	15	104
E23	Amberg UAS	Germany	24	92
E25	München UBW	Germany	35	105
E26	Stuttgart U	Germany	42	110
E31	Ilmenau TU	Germany	22	101
E33	Zürich ETH	Switzerland	30	113
E34	Ingolstadt UAS	Germany	27	102
E35	Wolfenb. UAS Ostfalia	Germany	18	112
E37	Sint-Katelijne-Waver TMM	Belgium	21	109
E40	Eindhoven TU	Netherlands	10	98

Car	City / University	Country	Pit	Page
E41	Wien TU	Austria	37	111
E42	Clausthal TU	Germany	4	96
E44	Deggendorf UAS	Germany	17	97
E45	Sankt Augustin UAS	Germany	9	108
E53	Kiel UAS	Germany	8	103
E54	Barcelona UPC	Spain	2	93
E56	Darmstadt TU	Germany	12	96
E57	Siegen U	Germany	28	109
E64	Kaiserslautern TU	Germany	6	102
E65	Wiesbaden UAS	Germany	1	112
E66	Stuttgart DHBW	Germany	41	110
E67	Osnabrück UAS	Germany	5	106
E69	Augsburg UAS	Germany	34	93
E72	Bremen U	Germany	14	95
E76	Freiberg TU	Germany	7	100
E78	Hamburg TU	Germany	13	100
E96	Zwickau UAS	Germany	36	113
E97	Landshut UAS	Germany	16	104
E99	Aachen RWTH	Germany	11	92
E104	Ravensburg DHBW	Germany	20	108

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PORSCHE

AACHEN

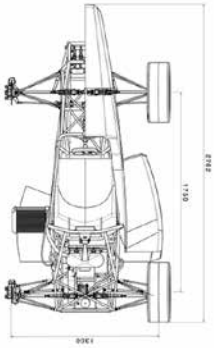
University of Applied Sciences Aachen

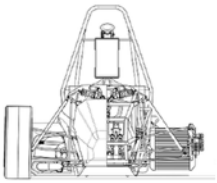
Aixtreme Racing represents the UAS Aachen in FSAE events. The team now consists of 25 Students from the departments mechanical as well as electrical engineering and economics. The AIX FS614 is designed with the intention to establish a new consistency in the team results. We spent much effort to optimize the existing Systems and developed new solutions for problems which rised up in the last season. We also want to thank all of our sponsors and supporters who made our dream come trueKeep Racing

Engineering Design Priorities

#weight reduction
#fuel consumption
#competitiveness
#optimization
#reliability
#driver assistance

Car 63
Pit 105





WRL 224

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Tube Frame

MATERIAL Steel

OVERALL L / W / H (mm) 2782 / 1512 / 1180

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1750 / 1300 / 1300

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 158

SUSPENSION Unequal double A-Arms. Pushrod configuration. Dampers and springs perpendicular to the vehicle axis.

TYRES (Fr / Rr) 7,0x13, 32mm offset, Hoosier R25B; one piece al-rim

WHEELS (Fr / Rr) 7,0x13, 32mm offset, Hoosier R25B; one piece al-rim

ENGINE Modified Yamaha YZF-R6 Engine (Rj09)

BORE / STROKE / CYLINDERS / DISPLACEMENT 65,5mm / 44,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,4:1

FUEL SYSTEM 3,5 bar injection pressure open fuel rail and lightweight laser welded fuel tank

FUEL 98 octane gasoline unleaded

MAX POWER DESIGN (rpm) 1300

MAX TORQUE DESIGN (rpm) 8400

DRIVE TYPE Modified sequential gearbox

DIFFERENTIAL Limited Slip differential

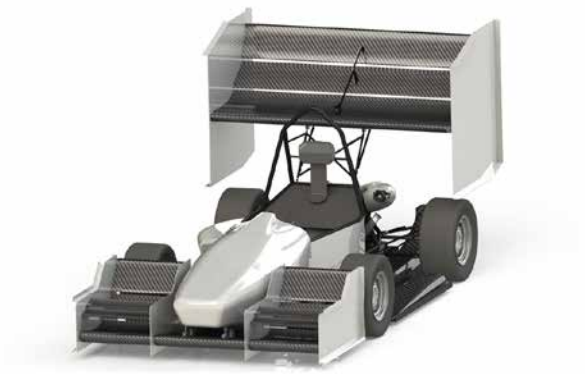
COOLING Sideways mounted radiator with fan

BRAKE SYSTEM 4-Disk system with two separate braking circuits

ELECTRONICS Self developed chassis control unit, electrical shifting and telemetry system. Lightweight Harne

AKRON

University of Akron

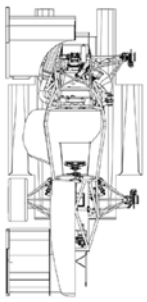


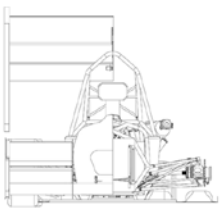
In order to effectively manage Zips Racing and achieve the highest level of performance during the season, the group established goals focused on both the team and vehicle. The team's primary philosophy is centered on producing a vehicle that is simple in nature. Great attention to detail was employed throughout the design, construction, and testing of the ZR14.

Engineering Design Priorities

#design
#performance
#construction
#simple
#testing

Car 6
Pit 48





WRL 8

World Ranking List rank at the end of 2013

United States

FRAME CONSTRUCTION Tubular steel frame w/ composite SIS and floor

MATERIAL 4130, CFRP, Ti, Al, Plastics

OVERALL L / W / H (mm) 3020 / 1220 / 1145

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1220 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 110 / 110

SUSPENSION Double Wishbone, Pull-rod actuated coilovers

TYRES (Fr / Rr) Hoosier 18.0x6.0-10 LCO

WHEELS (Fr / Rr) 7.0x10, 3 pc Al Rim

ENGINE Yamaha WR450F

BORE / STROKE / CYLINDERS / DISPLACEMENT 95.0mm / 63.4mm / 1 cylinders / 450cc

COMPRESSION RATIO 16,15:1

FUEL SYSTEM Staged Sequential Injection

FUEL E85

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE Chain Drive

DIFFERENTIAL Drexler LSD

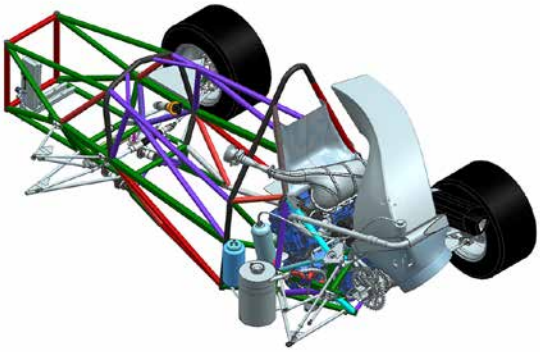
COOLING Single side mount radiator, Contolled Fan

BRAKE SYSTEM 4 Floating Rotor, ISR Caliper

ELECTRONICS MoTeC M400, ACL, VIM, PDM

ANN ARBOR

University of Michigan - Ann Arbor



So imagine this: airplane wing, upside down. Unfortunately world superstar driver Ron Sulligan retired. Between him leaving and our lack of suspension knowledge it was decided they they would just hide everything with big wings. Then they decided to spend a huge chunk of our money on a vacation in Germany, there just happened to be a competition at the same time so they figured they'd spend a few days there.

Engineering Design Priorities

#Serviceability

#Egress

#Sponsor logo space

#Weight

#Downpounds

#Cool carbon

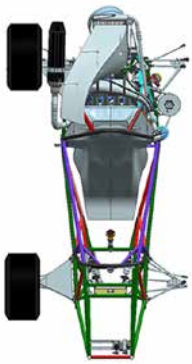
Car 9

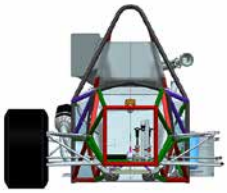
Pit 104

WRL 29

World Ranking List rank at the end of 2013

United States





FRAME CONSTRUCTION Monocoque

MATERIAL Cast iron

OVERALL L / W / H (mm) 4550 / 1301 / 2560

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 6781 / 5421 / 1234

WEIGHT WITH 68kg DRIVER (Fr / Rr) 67 / 67

SUSPENSION Magnetic levitation

TYRES (Fr / Rr) Hoosier R25B

WHEELS (Fr / Rr) Alcoa 1pc Al

ENGINE Modified Honda CBR600RR (PC40E)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 601cc

COMPRESSION RATIO 12.7:1

FUEL SYSTEM Bosch

FUEL E85

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Chain

DIFFERENTIAL Drexler limited slip

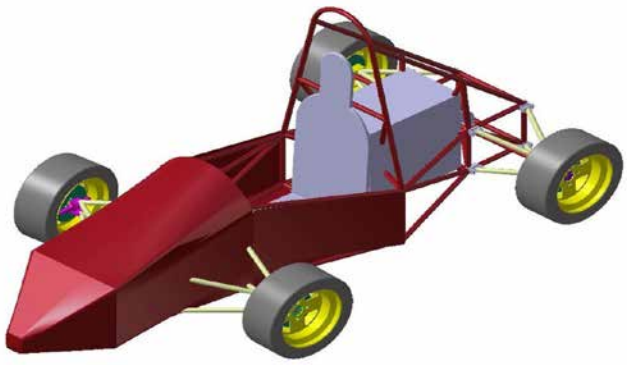
COOLING Air

BRAKE SYSTEM Air brake

ELECTRONICS Bosch, student built wiring harness

BANGALORE

Bangalore Institute of Technology



BIT Formula Racing is a team from Bangalore Institute of Technology, Bangalore. Team comprises of 30 engineering students of various disciplines. Being a first year team, BITFR will build a simple, safe and fully operational and performance oriented formula car with minimum breakdowns using sound engineering principles and six sigma concepts. Team aims to compete in all events and reach top position at FSCG 2014. BITFR aims to set high standards in the competition in all respects.

Engineering Design Priorities

#BITFR

#BIT Motorsports

Car 88

Pit 88

WRL 476

World Ranking List rank at the end of 2013

India

FRAME CONSTRUCTION steel spaceframe structure made hollow tubes

MATERIAL SAE 1030 steel tubing and Aluminium honeycomb

OVERALL L / W / H (mm) 2805 / 1350 / 1338

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 169

SUSPENSION Double wishbone equal length suspension, pushrod actuated spring/damper, adj. ARB

TYRES (Fr / Rr) 185x65 maxxis R13h

WHEELS (Fr / Rr) 185x65 maxxis R13h

ENGINE KTM Duke 390. Single cylinder 4 stroke engine

BORE / STROKE / CYLINDERS / DISPLACEMENT 89mmmm / 60mmmm / 1 cylinders / 374cc

COMPRESSION RATIO 12.6:1

FUEL SYSTEM Bosch Digital integrated spark/fuel injection

FUEL 95 ron gasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 7250

DRIVE TYPE Chain drive 428 motorcycle chain

DIFFERENTIAL open diiferential

COOLING liquid cooling system, continuos circulation of cooling liquid with water pump

BRAKE SYSTEM 4-Disc system with rotor size 240* 4.7, floating, ventilated

ELECTRONICS Power distribution - micro relays. Fan and fuel pump - motor driver, Shielded cable for signals

BANGKOK

King Mongkut's Institute of Technology Ladkrabang

BRUTAX is their new car from INITIAL team Bangkok, Thailand. Their team is the collaboration between Engineering students and Industrial Design students. This year they used a Suzuki LTR450 which with the full horse power of 51 rounds at 9000 rpm, torque starting from 4000 rpm and a maximum torque of 50 Nm at 7000 rpm. They installed Launch Control system and Pneumatic quick shift combined with Ball Valve. To make this car accelerates from 0 - 100 km/h in less than 6 seconds. Good luck everyone!

Engineering Design Priorities

#INITIAL
#XI
#Thailand
#KF2013
#KMITL
#Brutax

Car 32
Pit 102

WRL 284

World Ranking List rank at the end of 2013

Thailand

FRAME CONSTRUCTION Space Frame

MATERIAL Steel Tube STKM13B

OVERALL L / W / H (mm) 2640 / 1420 / 1230

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1220 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 136 / 142

SUSPENSION Front :Double unequal length A-Arm. Pull rod actuated spring / damper. Adj. Roll bar.

TYRES (Fr / Rr) 180/50VR13-A005 N1802 Yokohama / 180/50VR13-A005 N1802 Yokohama

WHEELS (Fr / Rr) 7.5x13, 25mm offset, 5 pc Al Rim / 7.5x13, 25mm offset, 5 pc Al Rim

ENGINE 2006 Suzuki QuadRacer LT-R450 K-6 single-cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 95.5mm / 62.8mm / 1 cylinders / 450cc

COMPRESSION RATIO 11.7:1

FUEL SYSTEM available to use E85 fuel, direct coil with wasted spark ignition

FUEL E85 ethanol

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Chain and sprocket

DIFFERENTIAL Torsen differential T2

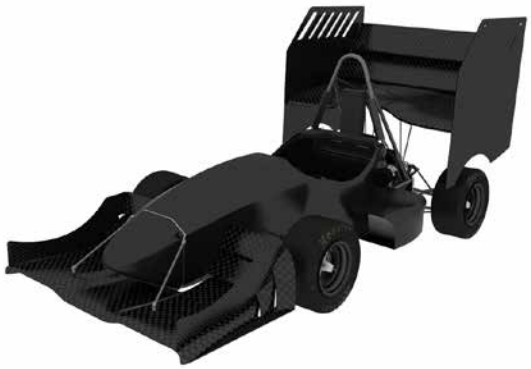
COOLING single side pod mounted radiator with ecu controlled electric fan

BRAKE SYSTEM 4Disc system,self developed rotor front 235mm and rear 200mm,adjust brake balance and Pedal platform

ELECTRONICS DTA S60pro, ECU CAN data stream, console display, wireless data monitor, Launch&Traction control.

BATH

University of Bath

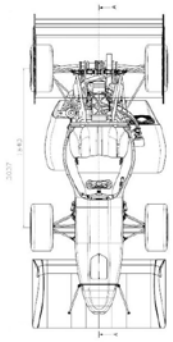


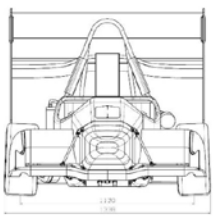
Team Bath Racing have competed in Formula Student since 2001, with an entirely new cohort of team members each year. This presented a clean sheet of paper for the 2014 team, comprising of 25 undergraduates. The focus of this new car has been on a lightweight, tunable and ergonomic chassis, with significant aerodynamic enhancements. To meet this aim we have designed a completely new CFRP monocoque with a tubular rearframe. Thank you to our sponsors including BP, M+W Group and Cytec.

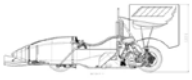
Engineering Design Priorities

#Lightweight
#Drivability
#Ergonomics
#Monocoque
#Efficient Load Paths
#Reliability

Car 14
Pit 56







WRL 84

World Ranking List rank at the end of 2013

United Kingdom

FRAME CONSTRUCTION Composite monocoque front / space-frame rear

MATERIAL Carbon fibre (Cytec 2050 / IM7 & M46J)/aluminium honeycomb (sandwich), 4130 steel tube

OVERALL L / W / H (mm) 3037 / 1338 / 1221

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1540 / 1130 / 1130

WEIGHT WITH 68kg DRIVER (Fr / Rr) 116 / 116

SUSPENSION Double Wishbone, Pull Rod Actuated Coil Over Ohlins TTX25 Dampers, Torsion Anti-Roll Bar

TYRES (Fr / Rr) Hoosier LCO 18.0/6.0-10 / Hoosier LCO 18.0/6.0-10

WHEELS (Fr / Rr) 7.0x10 one piece carbon / 7.0x10 one piece carbon

ENGINE Aprilia RXV550

BORE / STROKE / CYLINDERS / DISPLACEMENT 80mm / 55mm / 2 cylinders / 553cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Stock Aprilia Injectors. Sequential Injection. Transient correction

FUEL 99 RON

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 420 Chain Drive with standard gearbox

DIFFERENTIAL Drexler V3 Limited Slip Differential, 88% acceleration, 51% decelleration bias ratio

COOLING Side mounted 40mm core aluminium radiator, 2x124 cfm fan mounted to duct

BRAKE SYSTEM 191mm x 4mm Stainless Steel, Floating - all round. AP CP4227-2SO Front, AP4226-2SO Rear

ELECTRONICS Student built PDU & fuse unit. 12 Fused outputs, 8 via solid state relays. ECU & Switch controlled,

BERLIN
Technische Universität Berlin

The FT2014, the 9th car in the history of FaSTTUBe, is the result of a three-years development plan. After changing to a single-cylinder engine in 2012 and to a 10-inch suspension in 2013, the main focus in designing the FT2014 was to build up a completely new aerodynamic package by leaving the total weight of the car unchanged. Beside optimizing all assemblies of the car (drivetrain, air intake, steering, suspension), another big aim was to maintain our high manufacturing-quality.

Engineering Design Priorities

#Packaging
#weight
#Reliability
#Maintainability
#Performance
#manufacturing quality

Car 118
Pit 92

WRL 59
World Ranking List rank at the end of 2013
Germany

FRAME CONSTRUCTION Tubular Space Frame
MATERIAL 25CrMo4 steel tubes
OVERALL L / W / H (mm) 2925 / 1406 / 1310
WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1200 / 1150
WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 125
SUSPENSION Double A-Arm, Push rod actuated spring and damper
TYRES (Fr / Rr) 6.0/18.0-10 Hoosier R25B
WHEELS (Fr / Rr) 6.0/18.0-10 Hoosier R25B
ENGINE 2007 BMW G 450 X
BORE / STROKE / CYLINDERS / DISPLACEMENT 98.0mm / 59.6mm / 1 cylinders / 449cc
COMPRESSION RATIO 13.5
FUEL SYSTEM ECU with sequential injection and ignition, adhesive bonded fuel tank
FUEL RON 98
MAX POWER DESIGN (rpm) 10800
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE Chain drive, original gearbox
DIFFERENTIAL Drexler differential, limited slip
COOLING one side pod mounted radiator with water temperature controlled electric fan
BRAKE SYSTEM Floating discs, 193mm (front) & 163mm (rear) diameter, 4 callipers, adjustable brake balance
ELECTRONICS multifunctional steering wheel, electropneumatic shifting system, selfdesigned live-telemetry system

BERLIN
University of Applied Sciences Berlin

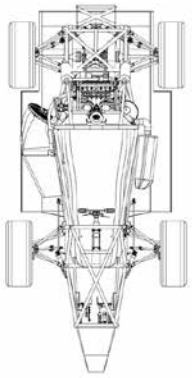
The Formula Student team of the UAS Berlin was founded 9 years ago in June 2005. During that time all team members pursued one ultimate ambition: Participating at Formula Student at Hockenheimring. Starting from scratch, all departments like engine, chassis, suspension and of course the marketing aimed high. Our team is made up of members with many different academic backgrounds. We proudly present the new Berlin Race Car, the BRC14 and looking forward to compete against all the other teams.

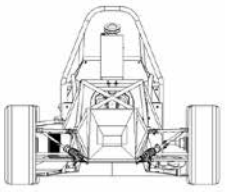
Engineering Design Priorities

#Berlin Race Car
#BRC14
#nice guys
#UAS Berlin
#HTW Motorsport
#Berlin

Car 38
Pit 71

WRL 169
World Ranking List rank at the end of 2013
Germany





FRAME CONSTRUCTION tubular space frame
MATERIAL 25CrMo4 SAE4130 round tubing
OVERALL L / W / H (mm) 2935 / 1400 / 1135
WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1570 / 1234 / 1169
WEIGHT WITH 68kg DRIVER (Fr / Rr) 103 / 126
SUSPENSION Unequal length A-arms, pull rod actuated Sachs Damper
TYRES (Fr / Rr) 20.5 x 7.0-13 Hoosier
WHEELS (Fr / Rr) 20.5 x 7.0-13 Hoosier
ENGINE modified 2005 Yamaha R6 4Zylinder
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 600cc
COMPRESSION RATIO 12,4:1
FUEL SYSTEM AME Motronic, student designed fuel rail, sequential fuel injection
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 11500
MAX TORQUE DESIGN (rpm) 9300
DRIVE TYPE 520 chain drive
DIFFERENTIAL Drexler Formula Student 2010, limited slip
COOLING Side mounted water cooler with ECU controlled electric fan and electric waterpum
BRAKE SYSTEM 4-Disk system, adjustable brake balance, mono-block calipers
ELECTRONICS sequential electronical shifting, ECU controlled fan on water cooler

BOCHUM

Ruhr University Bochum

We are RUB Motorsport, the Formula Student Team from the Ruhr University in Bochum, Germany. Last year we laid the foundations by designing a solid base to build upon this season. Our new mass reduced frame and the use of carbon fiber wishbones is the next step to optimize the car, as well as data acquisition. We would like to thank all of our sponsors as well as university for their financial and technical support that makes it possible for us to compete in FSG and FSAEI this year.

Engineering Design Priorities

#stiffness
#data acquisition
#reliability
#driveability
#weight reduction
#acceleration

Car 48
Pit 99

WRL 428

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Steel Spaceframe

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2780 / 1400 / 1201

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1235 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 144

SUSPENSION Double Wishbone, Push Rod

TYRES (Fr / Rr) 20.5x7.0, R25B, Hoosier / 20.5x7.0, R25B, Hoosier

WHEELS (Fr / Rr) 7

ENGINE Suzuki GSX-R 600 K4

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM BOSCH MS3 Sport sequential injection and single coil ignition system

FUEL Gasoline 98 octane

MAX POWER DESIGN (rpm) 13500

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE gear-reduced motorcycle gearbox, chain

DIFFERENTIAL Drexler limited slip differential (FS2010 V.2), Preload 30Nm,60% Locked

COOLING Side mounted single core custom aluminium radiator, 802 cfm fan mounted to a shroud

BRAKE SYSTEM 4 Disk System, self developed rotors, 220mm front, 210mm rear, adj. brake balance

ELECTRONICS Custom built wiring harness with automotive sealed connectors and electric shifting system

BRATISLAVA

Slovak University of Technology in Bratislava

AM Team is a group of enthusiastic students who are connected by the love for motorsport. They come from the Faculty of Applied Mechanics and Mechatronics. Their vehicle is sixth a generation and full of innovative technologies. This year they improved structural stiffness and reduced weight through extensive simulations. The car was optimized by improved design proposals and a new modern design. This gave them a great opportunity to introduce a car that charms you at the first glance.

Engineering Design Priorities

#Tripod joint
#Springs
#Traction Control
#Multifunc.Steering Wheel
#Electronic Gear Shifting
#Bodywork design

Car 89
Pit 110

WRL 359

World Ranking List rank at the end of 2013

Slovakia

FRAME CONSTRUCTION Tubular space frame

MATERIAL ISO 630:1980 steel round tubing 16mm to 25mm

OVERALL L / W / H (mm) 2610 / 1400 / 1238

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 183

SUSPENSION double wishbone with pullrod - vertically oriented spring and damper

TYRES (Fr / Rr) Goodyear Eagle 20.0x7.0 R13 / Goodyear Eagle 20.0x7.0 R13

WHEELS (Fr / Rr) Braid 7 x 13 inches

ENGINE 2002 Honda CBR 600F

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM student design

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 13160

MAX TORQUE DESIGN (rpm) 9175

DRIVE TYPE Chain

DIFFERENTIAL Drexler Formula Sae Differential 2010

COOLING twin side radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disk system, steel rotors, diam 240mm/60mm; Calipers Brembo PF, 2 x 28diam. piston, floating

ELECTRONICS Traction control, Multifunctional Steering Wheel, Electronic Shifting System, Telemetry System

BRNO
Technical University of Brno

Car 74
Pit 45

WRL 197

World Ranking List rank at the end of 2013

Czech Republic

FRAME CONSTRUCTION Mild steel tubular space frame

MATERIAL 1.0553 steel tound tubing 20mm to 30 mm; 1.0045 steel square tubing 25mm

OVERALL L / W / H (mm) 3144 / 1394 / 1260

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1260 / 1190

WEIGHT WITH 68kg DRIVER (Fr / Rr) 131 / 131

SUSPENSION Double unequal length A-Arm. Pull and push rod actuated horizontally oriented spring and damper.

TYRES (Fr / Rr) 20.5 x 7.5-13 Hoosier R25B / 20.5 x 7.5-13 Hoosier R25B

WHEELS (Fr / Rr) 7.0x13, 30mm offset, Al Rim / 7.0x13, 30mm offset, Al Rim

ENGINE Husaberg FE 570 (2011)

BORE / STROKE / CYLINDERS / DISPLACEMENT 100mm / 74mm / 1 cylinders / 565cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Student designed/built ,electronic fuel injection by single injector

FUEL 98 Octane unleaded gasoline

MAX POWER DESIGN (rpm) 7800

MAX TORQUE DESIGN (rpm) 7400

DRIVE TYPE 428 Chain

DIFFERENTIAL Drexler limited slip differential

COOLING Right side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, with floating rotors, adjustable brake balance, 4-piston calipers Fr, 2-piston Rr

ELECTRONICS self-designed shifting management, self-designed telemetry system. Wiring harness sealed to IP67

The TU Brno Racing team from Brno University of Technology in the Czech republic returns to Hockenheim for second consecutive year. This time around, they will compete with the fourth evolution of their car – Dragon 4. After last year's disappointing fuel system hose failure, the goal is clear: See the checkered flag!This year they opted to explore new field of study – aerodynamics, so they are running whole aerodynamic package.

Engineering Design Priorities

#tubrnoracing

#dragon

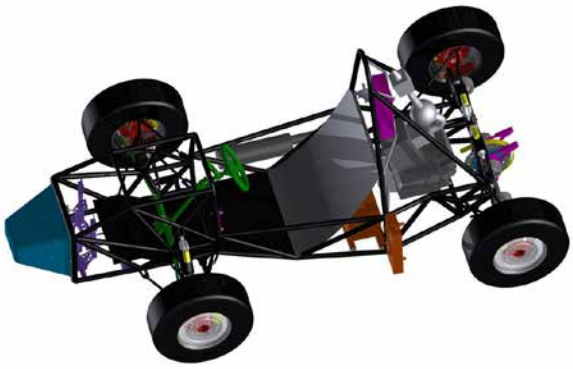
CHENNAI
Indian Institute of Technology Madras

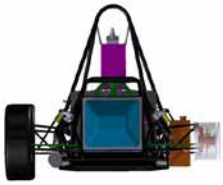
Car 99
Pit 89

WRL 447

World Ranking List rank at the end of 2013

India





FRAME CONSTRUCTION Steel Space Frame

MATERIAL ASTM A500 steel

OVERALL L / W / H (mm) 2400 / 1500 / 1300

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1100

WEIGHT WITH 68kg DRIVER (Fr / Rr) 116 / 142

SUSPENSION Double unequal length A-arm. Pull rod actuated spring/damper front,Push rod actuated rear

TYRES (Fr / Rr) 19.5 x 6.5-R10 R25B Hoosier/ 19.5 x 6.5-R10 WET Hoosier

WHEELS (Fr / Rr) 6.0x10, 50mm offset, 2 pc Al-Mg Rim / 6.0x10, 50mm offset, 2 pc Al-Mg Rim

ENGINE Modified Honda CBR250R

BORE / STROKE / CYLINDERS / DISPLACEMENT 76mmmm / 55mmmm / 1 cylinders / 249cc

COMPRESSION RATIO 10,7:1

FUEL SYSTEM Keihin, Port Fuel Injection

FUEL Gasoline RON 98

MAX POWER DESIGN (rpm) 9900

MAX TORQUE DESIGN (rpm) 7400

DRIVE TYPE 2- wheel

DIFFERENTIAL Torque sensing limited slip differential with custom housing.

COOLING Side mounted two core water-to-air radiator

BRAKE SYSTEM 4-Disk system, retrofit OEM disk to 186 dia, adjustable brake balance. Wilwood fixed type calipers.

ELECTRONICS Wiring harness with standard Honda ECU.

Having participated in FSUK 2012 and FSG 2013, Raftar Formula Racing embarked on its third season. Fitted with a single-cylinder Honda CBR250R engine, we targeted excellent drivability and a competitive fuel economy. We worked to further enhance vehicle dynamics through a smaller wheelbase and a shift to 10" rims. Composite technology allowed us to use carbon fibre for an extremely ergonomic cockpit and a lighter streamlined bodyworks. A team of 30 highly motivated students bring you RFR-14.

Engineering Design Priorities

#Light weight

#Modularity

#Reduced cost

#Reliability

#Drivability

#Serviceability

COBURG
University of Applied Sciences Coburg

CAT-Racing (CAT = Coburg Automobil Team) changes in this season the most parts of the design concept of the last year. The easy weight reduction is the main reason of the modifications of selected assemblies. For the current racecar named C-14 Gepard, the teams construct their first 10" suspension and hybrid-Monocoque. Reacting to the increased attention of an aerodynamic system and the faster track layouts, the first wings of the team were designed.

Car 80
Pit 83

WRL 56

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Carbon fiber monocoque in the front and tubular steel space frame in the rear

MATERIAL Carbon fiber prepregs, mild steel

OVERALL L / W / H (mm) 3008 / 1336 / 1381

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1555 / 1125 / 1125

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 144

SUSPENSION Double unequal length A-Arm, pull rod actuated spring and damper, adjustable ARB

TYRES (Fr / Rr) 18x6 - 10 LCO Hoosier front and rear

WHEELS (Fr / Rr) 7.2x10, 16mm, 3pc Al Rim custom center

ENGINE Yamaha R6 RJ09

BORE / STROKE / CYLINDERS / DISPLACEMENT 65,5mm / 44,5mm / 4 cylinders / 600cc

COMPRESSION RATIO 12,4:1

FUEL SYSTEM Multipoint fuel injection (EV14), MS4 Bosch

FUEL Gasoline 98 octane

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain 520

DIFFERENTIAL Limited Slip Differential preload 30Nm

COOLING Single side pod mounted aluminum radiator, electronic controlled fan

BRAKE SYSTEM 4-Disk system, inside ventilated in the front, 148 / 170 mm OD, adjustable breakbalance

ELECTRONICS Display with integrated logger, launch control, traction control, electropneumatic shifting system

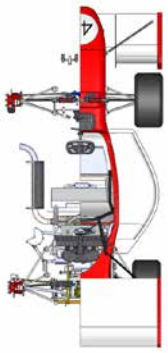
COLUMBUS
Ohio State University

The focus of the Formula Buckeyes 2014 design was weight reduction and lowered CG height. To achieve this, the team has developed 10", 3 piece carbon fiber wheels to replace the current 13" wheels. This combined with the switch to a Drexler differential and a redesigned two piece monocoque chassis a weight reduction of over 30 kg has been achieved. In addition their new dry sump oil system has allowed the engine to be lowered over 60 mm, helping to lower the overall CG height 27 mm.

Engineering Design Priorities

#monocoque
#height
#weight reduction
#dry sump
#carbon fiber wheels
#engine

Car 44
Pit 44



WRL 88

World Ranking List rank at the end of 2013

United States

FRAME CONSTRUCTION 2 Part Carbon Monocoque, integrated roll hoop

MATERIAL CFRP with Al and Nomex core,

OVERALL L / W / H (mm) 2912 / 1412 / 1270

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1168 / 1130

WEIGHT WITH 68kg DRIVER (Fr / Rr) 115 / 141

SUSPENSION Double Unequal Length A-Arm, Push Rod Actuated

TYRES (Fr / Rr) Hoosier 18.0x7.5-10 R25B

WHEELS (Fr / Rr) 7x10 3pc, CFRP Shell, Topology optimized Al center

ENGINE Modified Honda CBR600 F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.4:1

FUEL SYSTEM Motec M400

FUEL E85

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain

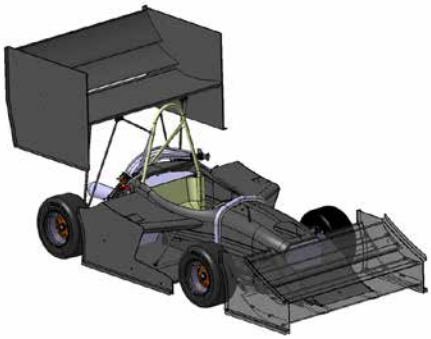
DIFFERENTIAL Drexler differential

COOLING Sidepod mounted custom radiator with adjustable RC helicptor fan

BRAKE SYSTEM floating 4 disk system. 187.5mm diameter, driver adjustable balance, front GP 200, rear PS-1

ELECTRONICS Self developed CAN based multifunction display and live-telemetry, electropneumatic shifting

CORVALLIS
Oregon State University

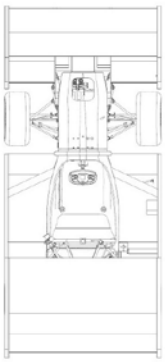


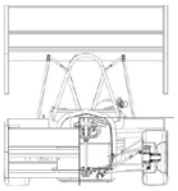
Car 1
Pit 60

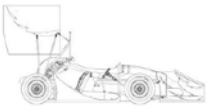
WRL 37

World Ranking List rank at the end of 2013

United States







FRAME CONSTRUCTION CFRP monocoque, Nomex honeycomb core

MATERIAL Carbon, steel, aluminum, plastic

OVERALL L / W / H (mm) 3034 / 1355 / 1488

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1555 / 1145 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 108 / 122

SUSPENSION SLA, pullrod front, pushrod rear

TYRES (Fr / Rr) Hoosier LC0

WHEELS (Fr / Rr) Keizer rim, GFR center

ENGINE Honda CRF450X

BORE / STROKE / CYLINDERS / DISPLACEMENT 96mm / 61.7mm / 1 cylinders / 449cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Honda CRF450X pump Honda CRF450R injector

FUEL Gasonline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain

DIFFERENTIAL Modified Drexler

COOLING Dual side mounted cooler for oil and water

BRAKE SYSTEM Brembo + AP calipers, Tilton master cylinders, student designed rotors

ELECTRONICS Motec

GFR14c is their fifth combustion car. As with all GFR cars, GFR14c is a collaborative effort between teammembers from Oregon State University and Duale Hochschule Baden Wurttemberg Ravensburg. Design, manufacturing, assembly and testing occur at both schools. The cCar will compete at four competitions: FSAE Michigan, FSG, FSA, and FSS. Are you #GFReady?

Engineering Design Priorities

#whenindoubtflatout
#GFRarty
#putawingonit
#GFRacing
#noseconesdon'twork
#GFRiends

COTTBUS
Brandenburg University of Technology

Car 103
Pit 63

WRL 388

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Spaceframe

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2845 / 1270 / 1120

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1270 / 1214

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 180

SUSPENSION Double unequal length A-Arm with a push rod in the front and a pull rod in the rear

TYRES (Fr / Rr) 20,5x7 R13 / 178x50 R13 in the front and rear

WHEELS (Fr / Rr) 7x13, 22mm offset, AL Rim 1pc in the front and rear

ENGINE Kawasaki / ER6N

BORE / STROKE / CYLINDERS / DISPLACEMENT 83mm / 56.2mm / 2 cylinders / 609cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM MAF sensor, throttleposition sensor, crank position

FUEL 98 octan

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE beval gear

DIFFERENTIAL GKN Super-LSD, 1.5 bias ratio

COOLING one side mounted radiator with fan, electrical water pump

BRAKE SYSTEM floating Rotors 220mm x 5mm 42CrMo4 front/rear, ISR Brakes 22-048,4-piston front/rear

ELECTRONICS gear shift support / RPM Display/ Gear Display/ Shift-reminder via LED Flash/ resistive Gear sensing

The BTU Motorsport e.V. was founded in 2007 and is the Formula Student Team of the Brandenburg University of Technology Cottbus. In 2013 to 2014 there was an increase of 45 members from several different departments. We are living the slogan of our University "We are living science". Together we were able to develop, design and manufacture our fifth car, the BTU-05. Based on the experiences of the last years the BTU-05 is the next step towards reaching the top teams of the Formula Student!

Engineering Design Priorities

#BTU-05
#BTU
#We are living science!
#Cottbus

DARMSTADT

University of Applied Sciences
Darmstadt

„Back to the Roots“ is our this year's slogan! This means a light and powerful single cylinder combustion-engine and a simple but effective car to challenge the other teams. Our most prominent features are our carbon-fibre rims and many rapid-prototyped parts which allow us to make our car as light as possible.Of course we give a big thank you to our sponsors and supporters who made this beautiful car and the enormous experiences possible!

Engineering Design Priorities

#single cylinder

#weight to power ratio

Car 42
Pit 100

WRL 365

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION tubular steel standard construktion

MATERIAL E355

OVERALL L / W / H (mm) 2900 / 1600 / 1200

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1260 / 1260

WEIGHT WITH 68kg DRIVER (Fr / Rr) 113 / 133

SUSPENSION Double A-Arm with

TYRES (Fr / Rr) Dunlop 175/505R13 Slick

WHEELS (Fr / Rr) 6x13 Steel or 7x13 Carbon

ENGINE KTM SX-F450 (2013)

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 63.4mm / 1 cylinders / 449cc

COMPRESSION RATIO 12.6:1

FUEL SYSTEM wasted spark ignition

FUEL 98 octane

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 7600

DRIVE TYPE chaindrive

DIFFERENTIAL Drexler SAE (2010)

COOLING sidemounted radiator

BRAKE SYSTEM 4 Disk system with AP Brake-Balancer,AP Masterbrake-Cylinder and AP Caliper

ELECTRONICS electric-magnetic shifting system, LED cockpit with rev signal and warning LED's

ERLANGEN

Friedrich-Alexander-Universität
Erlangen-Nürnberg

High-Octane Motorsports is the University of Erlangen-Nurembergs's FSC Team. We will be competing with our seventh car in 2014. The most outstanding technical feature of our car is the powertrain. The modified Aprillia V2 engine is mounted longitudinally and transmits its power to the rear wheels through a bevel gear. Another speciality of our car is the wings! Our front wing has four elements and our rear wing even five together with unique endplate design to increase its efficiency.

Engineering Design Priorities

#Monocoque

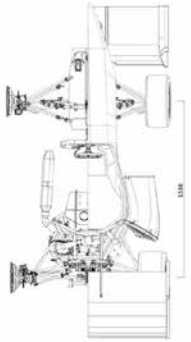
#Drivetrain

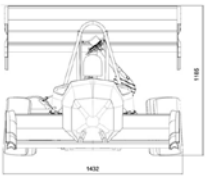
#Cooling system

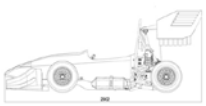
#Electronics

#Aerodynamics

Car 49
Pit 55







WRL 39

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION CFRP monocoque with tubular steel rear frame

MATERIAL CFRP with honeycomb core

OVERALL L / W / H (mm) 2902 / 1432 / 1185

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1240 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 108 / 119

SUSPENSION Double A-Arms; Pull-/Pushrod actuated Öhlins TTX25;

TYRES (Fr / Rr) 10 inch

WHEELS (Fr / Rr) selfdesigned aluminum rim center + CFRP rim well

ENGINE Aprilia SXV 550 (modified)

BORE / STROKE / CYLINDERS / DISPLACEMENT 80mm / 55mm / 2 cylinders / 553cc

COMPRESSION RATIO 16.1:1

FUEL SYSTEM self-designed fuel injection system using DTAfast S80 Pro ECU

FUEL E85

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE bevel gear drive with claw coupling

DIFFERENTIAL self-made limited slip differential with Drexler inner life

COOLING Aluminium counter-stream radiator; closed loop controlled fan&pump

BRAKE SYSTEM 4 stainless steel disks; 200mm (Fr) 170mm (Rr) dia.; balance bar; 4 one-piston caliper

ELECTRONICS Dezentralized control unit CAN-Network, W-LAN live telemetry & logging, high-speed shifting servo

ESSLINGEN

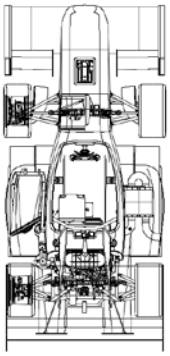
University of Applied Sciences Esslingen

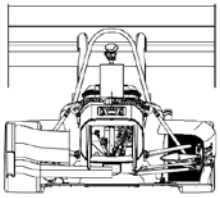
Car 94
Pit 49

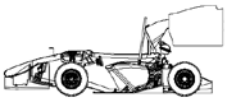
WRL 3

World Ranking List rank at the end of 2013

Germany







Founded at UAS Esslingen in 2006, Rennstall Esslingen has turned into the most prestigious project of the university. This year's Stallardo '14 is the result of hard work, innovation, interdisciplinary cooperation and passion for racecars. We focused on reducing weight and increasing efficiency. For instance we improved the design and manufacturing process of the monocoque and advanced the aerodynamics and drivetrain. We're looking forqard to the upcoming season.

Engineering Design Priorities

#Driveability

#Reliability

#Performance

FRAME CONSTRUCTION CFRP one piece Monocoque with tubular steel frame rear

MATERIAL UHM Prepregs carbon fibres / Nomex Honeycomb / Rohacell

OVERALL L / W / H (mm) 2996 / 1413 / 1238

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1170 / 1110

WEIGHT WITH 68kg DRIVER (Fr / Rr) 117 / 136

SUSPENSION Front. and Rear SLA with pushrod actuated Kaz/ Penske 7800 dampers

TYRES (Fr / Rr) Front and Rear: Hoosier R25B 7,5x10

WHEELS (Fr / Rr) Two-piece Carbon Fibre rim with Aluminum Center, 7.5x10; 37,3mm offset

ENGINE Modified Honda CBR 600RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67,5mm / 42,5mm / 4 cylinders / 608cc

COMPRESSION RATIO 14.1:1

FUEL SYSTEM Bosch MS4, fuel injection, walbro GSL392

FUEL 98 ROZ

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE 520 chain

DIFFERENTIAL clutch pack limited slip, adjustable preload, adjustable bias ratio

COOLING student designed u-flow radiator left side

BRAKE SYSTEM Stainless Steel Floating, Front 4 Piston Caliper; Rear: 2 Piston Caliper

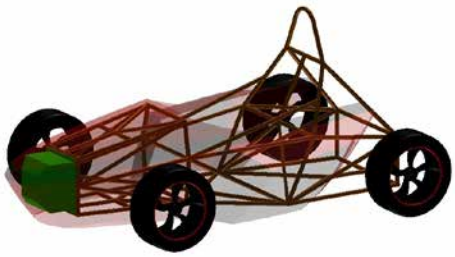
ELECTRONICS Datarecording, CAN Logger, 2x Self made A/D to CAN converter, selfdesigned bidirectional Telemetry

FARIDABAD

Manav Rachna International University

Car 50
Pit 108

India



Team Synchromesh was formed in 2011. Since then, we have been participating in various international events like BAJA International and Shell Eco Marathon Asia. The team has been recognized and praised by all. The motto of our team is to DESIGN, DEVELOP and DRIVE. The team received fame when they introduced the MRV-3, a fuel efficient vehicle, in Shell Eco marathon Asia-2014. We now aim to set a benchmark at formula student Germany for all the upcoming engineers of the world.

Engineering Design Priorities

#strength

#benchmark

#determined

#speed

#safety

#flawless designs

FRAME CONSTRUCTION Tubular space frame

MATERIAL AISI 1010

OVERALL L / W / H (mm) 2620 / 1670 / 1168

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1485 / 1385

WEIGHT WITH 68kg DRIVER (Fr / Rr) 105 / 210

SUSPENSION Double unequal length A-Arm. Push rod actuated

TYRES (Fr / Rr) 175x70 R13 Goodyear / 175x70 R13 Goodyear

WHEELS (Fr / Rr) 6.5 x 13, 40 mm Offset, Al rim / 6.5 x 13, 40 mm Offset, Al rim

ENGINE Maruti Suzuki F8b,3-cylinder,modified displacement

BORE / STROKE / CYLINDERS / DISPLACEMENT 60mm / 71.5mm / 3 cylinders / 606cc

COMPRESSION RATIO 10:1

FUEL SYSTEM Standard motorized fuel injection

FUEL Gasoline

MAX POWER DESIGN (rpm) 6000

MAX TORQUE DESIGN (rpm) 5500

DRIVE TYPE CV joints, direct from differential

DIFFERENTIAL Limited Slip

COOLING Single side aluminium radiator

BRAKE SYSTEM 4-Disk system, 200mm cast iron rotors

ELECTRONICS Fan, fuel pump, ECM, RPM meter, shift indicator

GIESSEN

Technische Hochschule Mittelhessen
UAS

This year 28 team members designed our 5th race car. In contrast to the last season we built a completely new vehicle. For example, we refined our steel tube frame and reduced our car's weight by developing a carbon-fiber suspension. For the first time we have an adjustable pedal box and we are driving without an alternator to save weight and space. We are proud of having solved all the problems that came up during the construction not least because of the team spirit and our ambition.

Engineering Design Priorities

#best prepared car

#weight reduction

#fourth generation

#reliability

Car 55
Pit 68

WRL 76

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Mild Steel Space Frame

MATERIAL S 355

OVERALL L / W / H (mm) 2693 / 1438 / 1160

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 150

SUSPENSION Double unequal length A-Arm, Push rod actuated spring / damper, adjustable antiroll bar.

TYRES (Fr / Rr) 20x7,5-13 R25B Hoosier both

WHEELS (Fr / Rr) 7 inch wide, 13 inch diameter, 22mm offset Al-Mg Rim both

ENGINE Modified Honda CBR 600 (PC40)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,34:1

FUEL SYSTEM sequential fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Chain drive

DIFFERENTIAL Drexler furmola student differential

COOLING Frame mounted Al radiator, speed fan,

BRAKE SYSTEM 4 disc system, ISR rotors, drivers adjustable brakebias, diameters: front 232mm, rear 210mm

ELECTRONICS 2D-Datalogger, selfdesigned Live-Telemetrie multifunctional steering wheel,, fully programmable ECU

GLASGOW

University of Strathclyde

This is the 13th year USM have competed at FSUK. The team consists of around 13 core members and 30 overall. Have won the cost event 3 times, once at FSUK last year and twice in Germany. Working to compete at the top level in the dynamic events as well. The team's engines are named after the Transformers Bumblebee and Megatron. Last year saw a full ground up re-design to a single-cylinder engine and 10" wheels (compared to 4-cylinder, 13" wheels)

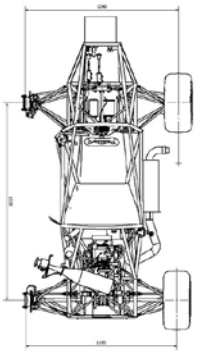
Engineering Design Priorities

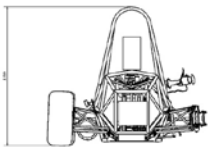
#bigisalwaysbetter

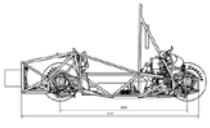
#maythedownforcebewithyou

#kennylovesahashtag

Car 15
Pit 40







WRL 90

World Ranking List rank at the end of 2013

United Kingdom

FRAME CONSTRUCTION Tubular spaceframe

MATERIAL Steel

OVERALL L / W / H (mm) 2752 / 1354 / 1450

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1200 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 123

SUSPENSION Unequal length A-arms. Front pull rod/rear push rod actuated spring-damper units. Cane Creek DB

TYRES (Fr / Rr) Hoosier LCO 6.0/18-10

WHEELS (Fr / Rr) Hoosier LCO 6.0/18-10

ENGINE Suzuki LT-R450 2006

BORE / STROKE / CYLINDERS / DISPLACEMENT 95.5mm / 62.8mm / 1 cylinders / 450cc

COMPRESSION RATIO 11.7

FUEL SYSTEM DTA S80 PRO ECU, Wasted spark ignition

FUEL 98 RON unleaded

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Single 520 chain

DIFFERENTIAL Drexler Formula Student LSD, clutch type

COOLING Sidepod mounted single core aluminium radiator, stock fan mounted to rear of rad

BRAKE SYSTEM Fully-floating cast iron rotors, Ø184mm, drilled, ISR 22-048/Wilwood PS-1 front/rear calipers

ELECTRONICS Custom DAQ sensor nodes, custom logger, real-time telemetry with browser based analysis, custom dash

Typical engineer?

Ulrike Krafft
ESP-Applicator
Bosch Engineering

Racing Driver
FIA-ETCC-Series

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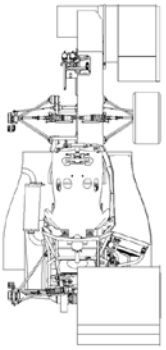
GÖTEBORG
Chalmers University of Technology

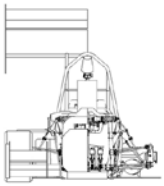
Each year they build a new team and a new car. The Chalmers Formula Student 2014 team goal, the mentality that permeates and unifies all work done in the project, reads: „To become skilled and knowledgeable engineers, we challenge ourselves to build a respectful and communicative goal-oriented team that, through data-driven decisions and a holistic approach, delivers a reliable, sustainable, high-performanceFormula Student car and a business venture to reach the podium at FS and FSG 2014."

Engineering Design Priorities

#High performance
#Sustainability
#Safety
#Easy adjustability
#Reliability
#Ergonomics

Car 4
Pit 72





WRL 21

World Ranking List rank at the end of 2013

Sweden

FRAME CONSTRUCTION Rear steel spaceframe and front CFRP monocoque hybrid

MATERIAL 4130 steel tubing, 6082 Al. Front roll hoop, 5056-Al. honeycomb core, HS-CFRP

OVERALL L / W / H (mm) 2937 / 1437 / 1550

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 113 / 149

SUSPENSION Double wishbone unequal length susp., pusrod actuated spring/damper, adj. ARB

TYRES (Fr / Rr) Hoosier 18.0x7.5 -10 R25B

WHEELS (Fr / Rr) 10x8

ENGINE Yamaha Fazer FZ6, in-line 4 cylinder, 600 cc

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.4mm / 4 cylinders / 600cc

COMPRESSION RATIO 12.1:1

FUEL SYSTEM Denso, Fully sequential fuel injedction

FUEL 98 RON Unleaded

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain drive 428 motorcycle chain

DIFFERENTIAL Limited slip (clutch type), accel/decel options: 51/29%, 60/42%, 88/51%, reversible

COOLING One side pod mounted 320 x 322 mm core , 11

BRAKE SYSTEM 4-Disk system, self developed rotors with 195/185 mm diameter F/R. Adjustable bias.

ELECTRONICS 0.22-16 mm2. Shielded signal cables, IP67 for critical components.

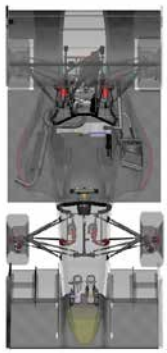
GRAZ
Graz University of Technology

The TU Graz Racing Team started their year with the organizing of a new arrangement for their module captains as well as finding new members. Once this had been decided, the design of their newest TANKIA could begin! Their focus this year, once again, is lightweight design. Their newest features are the drag-reduction-system, an additional injector, as well as a completely redesigned aero-package. They have also implemented some of their old parts, such as the single-piece carbon-fibre moncoque.

Engineering Design Priorities

#drivability
#fuel efficiency
#reliability
#aerodynamics
#weight
#engine cooling

Car 109
Pit 115



WRL 25

World Ranking List rank at the end of 2013

Austria

FRAME CONSTRUCTION one-piece sandwich-structured composite monocoque

MATERIAL carbon fibre prepregs, nomex and aluminium honeycombs, structural foam, carbon and titanium inserts

OVERALL L / W / H (mm) 3046 / 1393 / 1245

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1190 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 107

SUSPENSION Double unequal length A-Arm. Pull rod and bell crank actuated Öhlins damper and spring units.

TYRES (Fr / Rr) 152x66 R10 Hoosier LC0 / 152x66 R10 Hoosier LC0

WHEELS (Fr / Rr) 6,5x10, 19mm offset, CFRP rim / 6,5x10, 19mm offset, CFRP rim

ENGINE KTM SX-F 450 compined with KTM EXC 510 parts

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 72mm / 1 cylinders / 510cc

COMPRESSION RATIO 12,8:1

FUEL SYSTEM 2 Spray Keihin Injector, Bosch single spray

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9700

MAX TORQUE DESIGN (rpm) 7200

DRIVE TYPE Chain #520

DIFFERENTIAL Drexler multiplate LSD

COOLING single sidepot mounted aluminium core WP radiator

BRAKE SYSTEM 4-disk system, floating, adj. brake balance

ELECTRONICS electropneumatic shifting system, electrohydraulic clutch actuation, 2-channel live-telemetry

HAMBURG

University of Applied Sciences
Hamburg

HAWKS Racing proudly presents the HOX. It is the result of 12 years of Formula Student experience and the hard work of 45 students. Its Bosch M4 ABS and a homogenous torque curve provide excellent drivability. The layer-optimized CFRP-full body monocoque containing a supporting aluminum frame structure reduces weight. The heart of the HOX is a Kawasaki ZX6R engine. The 3D simulated aerodynamics package that consists of an undertray, front and rear wings has been further optimized.

Engineering Design Priorities

#functional design
#style
#drivability
#saftey
#dynamic performance
#lightweight

Car 69
Pit 67

WRL 33

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION full body CFRP monocoque and a aluminium tubular support frame

MATERIAL Preprag / honeycomb sandwich and aluminium 7020

OVERALL L / W / H (mm) 3176 / 1367 / 1333

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1649 / 1170 / 1138

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 144

SUSPENSION Double unequal lenght A-Arm. Pull (front)/ push (rear) rod actuated spring and damper

TYRES (Fr / Rr) 205/510 R13 Continental C14

WHEELS (Fr / Rr) 7x13, -22mm offset, 1pc Mg Rim

ENGINE Kawasaki ZX6R

BORE / STROKE / CYLINDERS / DISPLACEMENT 66mm / 43.8mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,8:1

FUEL SYSTEM aluminium tank

FUEL 98 RON

MAX POWER DESIGN (rpm) 10100

MAX TORQUE DESIGN (rpm) 8700

DRIVE TYPE 520 Chain

DIFFERENTIAL Drexler limited slip differential

COOLING Left side mounted student designed radiator with electric fan

BRAKE SYSTEM Student desigend brake calipers, 250mm rotors, adjustable brake bias, ABS

ELECTRONICS Mechatronic clutch and shifter, Data logger, Live- Telemety, CAN bus, multifunctional display

HATFIELD

University of Hertfordshire

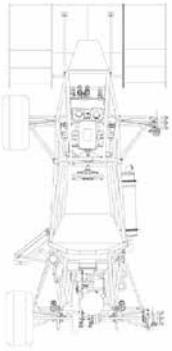
UH Racing has only one aim and that is to become the first UK team to win Formula Student Germany. Following last year's successful collaboration of Masters and Undergraduate students, UH Racing is looking to build upon our 6th place overall at FSG. The team has a well-defined structure including a core managerial team overseeing all aspects of the car. The broad knowledge of its 30 team member's makes UH Racing a strong contender and one to watch this year.

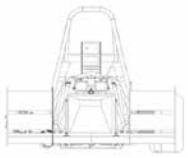
Car 10
Pit 70

WRL 30

World Ranking List rank at the end of 2013

United Kingdom





FRAME CONSTRUCTION Steel Tubular Space Frame Chassis

MATERIAL Steel CDS and T45

OVERALL L / W / H (mm) 2930 / 1368 / 1515

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1625 / 1190 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 124

SUSPENSION Double unequal length A-Arm. Pull Rod actuated coilover spring and damper.

TYRES (Fr / Rr) Hoosier R25B 18x6

WHEELS (Fr / Rr) 7x10. 3pc Al Rim

ENGINE KTM 450 SXF

BORE / STROKE / CYLINDERS / DISPLACEMENT 97mm / 60.8mm / 1 cylinders / 449cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM F88 ECU with Fuel Injection

FUEL 98 Octane

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 5 Speed Gearbox

DIFFERENTIAL Student Designed Limited Slip Differential

COOLING Single side mounted radiator

BRAKE SYSTEM AP Racing calipers with student designed brake discs

ELECTRONICS F88 ECU, Raychem 25 Wiring Loom, NI Single Board RIO slave, Pi Delta Logging System, Live Telemetry

HUDDERSFIELD
University of Huddersfield

Car 46
Pit 64

WRL 124

World Ranking List rank at the end of 2013

United Kingdom

Team HARE enters this year pursuing success after our Top UK entry in 2013.The main aim of 2014 was to minimise technical risk to grant us the reliability that cemented our success in competition last year.Features for 2014 include improved driver ergonomics, an optimised drivetrain and a reduced size fuel tank thanks to the outstanding fuel efficiency of our powertrain.Track testing has furthered our understanding of the car and providing driver experience, ensuring competition readiness

Engineering Design Priorities

#Simplicity
#Performance
#Reliability
#Maintainability
#Drivability
#Lightweight

FRAME CONSTRUCTION Tubular Steel Spaceframe

MATERIAL Cold Drawn Seamless, Steel round tubing 12.7mm to 25.4mm dia

OVERALL L / W / H (mm) 2825 / 1520 / 1108

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1546 / 1320 / 1253

WEIGHT WITH 68kg DRIVER (Fr / Rr) 103 / 145

SUSPENSION Double unequal length A-Arm. Pull rod actuated Ohlins TTX 25 Dampers

TYRES (Fr / Rr) Hoosier 20.5x7.5 R13 / Hoosier 20.5x7.5 R13

WHEELS (Fr / Rr) 13

ENGINE KTM 500 EXC

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mmmm / 72mmmm / 1 cylinders / 510cc

COMPRESSION RATIO 11.8

FUEL SYSTEM Student designed and built tank, single point fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 6000

DRIVE TYPE Chain Driven, KTM Standard Gearbox

DIFFERENTIAL Drexler Sailsbury LSD

COOLING Side mounted double pass single core radiator, 610 m3/h fan mounted to radiator

BRAKE SYSTEM Custom 4 floating Disc system with adjustable bias using ISR and AP calipers

ELECTRONICS Student designed and built wiring loom, custom dashboard, 2D data logging system

KARLSRUHE
Karlsruhe Institute of Technology

Car 65
Pit 85

WRL 19

World Ranking List rank at the end of 2013

Germany

We are the Formula Student Team of the Karlsruhe Institute of Technology (KIT) - building racecars since 2006.From 2010 on we stand for „One team, two cars“ designing, manufacturing and competing with a combustion car and an electric one.The KIT14c - comes with a self-developed turbocharged two-cylinder engine. We switch to a 10“-wheels based suspension. The aerodynamical package got extended to side-wings.We would like to thank all our supporters for the enormous help throughout the season.

FRAME CONSTRUCTION Hybrid CFRP Monocoque with tubular space frame

MATERIAL HAT and HM fibres, twill unidirectional plies, kevlar-carbon hybrid twill

OVERALL L / W / H (mm) 3037 / 1455 / 1280

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1220 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 107 / 145

SUSPENSION Double unequal length A-Arm. Pull-Rod actuated ZF Damper with coil spring

TYRES (Fr / Rr) Hoosier 18.0x7.5-10 R25B

WHEELS (Fr / Rr) Student design CFRP-Rim 7.5“ wide, spokes integrated in wheel hub

ENGINE selfdesigned AMG FS133

BORE / STROKE / CYLINDERS / DISPLACEMENT 83,0mm / 55,0mm / 2 cylinders / 595cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Bosch system, 2 single fire coils, direct injection

FUEL E85

MAX POWER DESIGN (rpm) 6500

MAX TORQUE DESIGN (rpm) 4500

DRIVE TYPE gearbox with spur gear stage

DIFFERENTIAL Clutch pack limited slip differential, preload 25 Nm, bias ratio drive: 85%

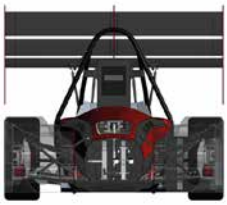
COOLING side pod mounted radiator, electrical fan and water pump with student designed control

BRAKE SYSTEM 4-Disk system, self developed rotors (188mm(front)/183mm(rear)) diameter, adjustable brake balance

ELECTRONICS wiring harness, multifunctional Steering Wheel, Electropneumatic Shifting System

KARLSRUHE
University of Applied Sciences
Karlsruhe

Car 108
Pit 65



WRL 108

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Front: CFRP monocoque, Rear: Steel space frame

MATERIAL Front: CFRP Tenax-IMS65/-HTA40, Gimapox EL3, Rohacell 31 / 71 / 110 / 200, Rear: E235+C steel tubing

OVERALL L / W / H (mm) 3011 / 1400 / 1221

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1599 / 1180 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 148

SUSPENSION Double unequal length A-Arm. Pull Rod actuated spring/damper. Adjustable roll bar (electric)

TYRES (Fr / Rr) Hoosier 20.5x7 - R13 / Hoosier 20.5x7 - R13

WHEELS (Fr / Rr) 7x13, 18mm offset, 2 pc Al Rim / 7x13, 18mm offset, 2 pc Al Rim

ENGINE Modified 2003 - 2006 Honda CBR600RR (PC37)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.0:1

FUEL SYSTEM Student des./build system fuel injection, 4 injectors full sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain 520KZU with U-Ring, tensile str. 3

DIFFERENTIAL clutch pack limited slip, 10 Nm preload, 2.3 bias ratio

COOLING Sidepod mounted 325x240x43, PWM controlled fan, back of radiator

BRAKE SYSTEM 4-Disk system, self developed rotors with 230/225mm diameter, adjustable brake balance (electric)

ELECTRONICS Full electric clutch and shift actuation, Multi-functional steering wheel

High Speed Karlsruhe, founded 2006, contains about 41 students out of different fields of study. This year we built our 8th combustion car the F-108. It's powered by a 600cc 4 cylinder Honda engine and the chassis is composed of a CFRP monocoque in the front and a tubular space frame in the rear. With the multifunctional steering wheel the driver can adjust the brake balance and the anti-roll bars while driving. To enhance the dynamic performance we designed a new Aerodynamic package.

Engineering Design Priorities

#vehicle dynamics

#durability

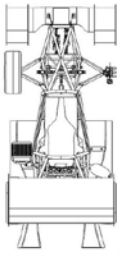
#driveability

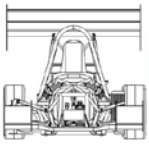
#aerodynamics

#DOWNFORCE

KASSEL
University of Kassel

Car 28
Pit 95





WRL 44

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Steel Spaceframe

MATERIAL E235JR; 25CrMo4

OVERALL L / W / H (mm) 3192 / 1400 / 1310

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1620 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 164

SUSPENSION push

TYRES (Fr / Rr) Hoosier 20,5x7,0-13 R25B / Hoosier 20,5x7,0-13 R25B

WHEELS (Fr / Rr) OZ 7x13E31 / OZ 7x13E31

ENGINE Suzuki GSXR 600

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM fuly sequenziell ECU (megasquirt MS8X)

FUEL RON 98

MAX POWER DESIGN (rpm) 10300

MAX TORQUE DESIGN (rpm) 7020

DRIVE TYPE chain 520, sequentiel gearbox

DIFFERENTIAL Drexler limited slip differential, antihopping clutch

COOLING side mounted radiator, 1200 cfm fan mounted to radiator

BRAKE SYSTEM 4 Disk system, self developed rotos with 240 / 230 mm diameter. ISR 4/2 Piston-Caliper

ELECTRONICS sized wiring harness, self buil: charging system/ HUD/shift by wire/Data Logging (GPS, G-Sensor etc.)

The Herkules Racing Team was founded in 2009. After the great succeeds we achieved with our last three cars we are looking forward to compete in 2014 with an even better developed car. To accomplish this goal we build on the experience we have gained the last years to improve our existing concepts. Besides our ambition to get under the top 10, it´s our intended aim to create and provide a basis which drives a continuously improvement of our team and car to open the door for ongoing success.

Engineering Design Priorities

#disciplined

#ambitious

#excited in technology

#flexible

#innovativ/creative

#efficient

KEMPTEN

University of Applied Sciences
Kempten

The Infinity Racing Team was established in 2007 and currently consists of about 45 highly motivated and dedicated students out of all faculties of the UAS Kempten. In 2014 we present our 6th car. The concept is: • 600cc 4 cylinder Yamaha R6 engine• Tubular steel space frame • 13" rims on Continental Slicks. After Hockenheim we will compete in FS Austria and FS Spain.

Engineering Design Priorities

#less manufacturing effort

#weight reduction

#high performance

#reliability

#maintainability

Car 117

Pit 111

WRL 67

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Steel Tubular space frame

MATERIAL E235 + C1

OVERALL L / W / H (mm) 2632 / 1405 / 1138

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 132 / 138

SUSPENSION double unequal lenght A-Arms, pushrod actuated Penske spring/damper units

TYRES (Fr / Rr) 205/510 R13 Continental 2014, 205/510 R13 Continental 2014

WHEELS (Fr / Rr) Braid Sturace 1 pc Al Rim, 7.0X13 ET+31 / 7.0X13 ET+31

ENGINE 2005 Yamaha R6 RJ 09 4 cylinder DOHC

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.4:1

FUEL SYSTEM Student designed fuel injection system using BOSCH MS4 ECU, sequential injection and ignition

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE 520 Chain Drive

DIFFERENTIAL Salisbury type clutch pack differential from Drexler

COOLING One side mounted student designed radiator

BRAKE SYSTEM 4- Disk system, floating, steel, hub mounted rotors, ISR calipers

ELECTRONICS Student built live-telemetry system, streaming via ISM-Band, electropneumatic shifting system

KONSTANZ

University of Applied Sciences
Konstanz

With new team-leaders in almost every section and high expectations of building the ninth racecar the BRT had a special challenge for this season. Nevertheless the Iltis14 shows that the challenge got mastered. With the new aero package we want to become stronger in dynamic disciplines. Live telemetry will help to create a perfect setup, which is based on a more recent type of the Suzuki GSX-R, a tubular space frame and 13 inch wheels. We are looking forward to a great season 2014.

Engineering Design Priorities

#Testing

#Simplicity

#Lateral Acceleration

#Driveability

#Downforce

#Easy Maintenance

Car 43

Pit 66

WRL 200

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION turbular space frame

MATERIAL S235JR steel round tubing

OVERALL L / W / H (mm) 3121 / 1382 / 1290

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1585 / 1210 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 141 / 153

SUSPENSION Double unequal length CFK A-Arm, Push rod actuated horizontally oriented damper with coil spring

TYRES (Fr / Rr) 205x7.0 R13, Hoosier R25B/ 205x7.0 R13, Hoosier R25B

WHEELS (Fr / Rr) 7 x13,0Z Racing alum. wheels,22 mm offset/ 7 x13,0Z Racing alum. wheels,22 mm offset

ENGINE Modified Suzuki GSX-R600 K8

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.8:1

FUEL SYSTEM self deceloped fuel rail, sequential injection

FUEL 98 octane unleadedgasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE 520 X-ring chain original gearbox4 gears

DIFFERENTIAL Drexler clutch pack limited slip

COOLING one side pod mounted 2 core aluminium radiator and 623,98 cfm electric fan

BRAKE SYSTEM 4-Disk system, self developed floating V2A rotors with 238mm diameter, adjustable brake balance

ELECTRONICS multifunctional steering wheel, selfdesigned Live-Telemetry,

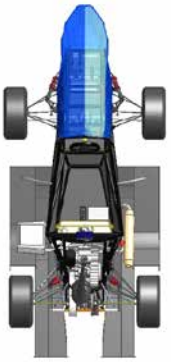
KREFELD
Hochschule Niederrhein

Car 26
Pit 57

WRL 368

World Ranking List rank at the end of 2013

Germany



FRAME CONSTRUCTION Full Tubular space frame

MATERIAL E235+C steel round tubing and square tubing

OVERALL L / W / H (mm) 3048 / 1455 / 1175

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1625 / 1250 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 129

SUSPENSION Double wishbone suspension, pull rod

TYRES (Fr / Rr) Hoosier LC0

WHEELS (Fr / Rr) Keizer Aluminum Wheels, 6x10 in wide, 3 pc Al Rim

ENGINE KTM 500 EXC 2013

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 72mm / 1 cylinders / 510cc

COMPRESSION RATIO 11,8:1

FUEL SYSTEM Student des/built , fuel injection, sequential

FUEL E85

MAX POWER DESIGN (rpm) 7600

MAX TORQUE DESIGN (rpm) 7200

DRIVE TYPE Chaindrive

DIFFERENTIAL Drexler Limited Slip FS V1

COOLING Student designed

BRAKE SYSTEM 3-Disk system, adjustable brake balance

ELECTRONICS

The passion for racing is what drives us and what we all have in common in our young racing team. In our third season our team has grown considerably. 60 students from nearly all faculties are given their best every day to take our team to a higher level. Countless hours, spent at the workshop or in the office, are a sacrifice everyone is willing to make to achieve our common goal: Be as a team a little bit better today than we were yesterday. We are looking forward seeing you all in Hockenheim!

Engineering Design Priorities

#Driveability

LATACUNGA
Universidad de las Fuerzas Armadas - ESPE

Car 36
Pit 93

WRL 454

World Ranking List rank at the end of 2013

Ecuador

FRAME CONSTRUCTION Tubular structure

MATERIAL ASTM A 500 25mm dia.

OVERALL L / W / H (mm) 3060 / 1400 / 1070

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1240 / 1220

WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 156

SUSPENSION Double unequal length A-Arm. Pull rod longitudinally and Push rod actuated horizontally

TYRES (Fr / Rr) 20.0x7.0 R13 GoodYear

WHEELS (Fr / Rr) 7x13, 100 ofsset,2 pc Al Rim

ENGINE 2006 Honda CBR600 F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Multipoint Injection. Programmed Fuel Injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 5,25 Chain Step

DIFFERENTIAL Torsen limited slip

COOLING Radiator with Electric fan

BRAKE SYSTEM 4 Disk system,floating rotor, 220 mm diam., adjustable brake balance

ELECTRONICS Electronic shifter, Adquisition module SB RIO, and Haltech PS1000

FESPE racing team is a group of engaged students from different areas of study of our University. COLIBRI is the third car of the team; this one fitted with a Honda CBR600 F4i engine and comes with some improvement along the design like: reduction of weight, better suspension, lower center of gravity and other in general. All the improvements developed result a car more dynamic, finally we grateful to our sponsors for all their assistance.

Engineering Design Priorities

#developed
#Ecuador
#FESPE
#Colibri
#improvement
#dynamic

LEMGO

University of Applied Sciences
Ostwestfalen-Lippe

We are celebrating our fifth season in the huge Formula Student Family. Founded in 2008 by some students, we have developed into a big team. Our first success had been 2009 as the best newcomer at the ATA Italy. Driven by our strong will and enormous passion we created the cars OWL 1.1/ 1.2/1.3 and finally our newest innovation the OWL 1.4 MS 7. With this new car we have high expectations in finishing this season more than just successful. This is our first season with a selfdeveloped aeropaket.

Engineering Design Priorities

#Lightweight
#Michael Schumacher
#innovation
#ergonomic
#self-production
#aerodynamic

Car 53
Pit 52

WRL 310

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION steel tube space frame with aluminium honeycomb floor panels

MATERIAL E 355 + N

OVERALL L / W / H (mm) 2896 / 1427 / 1338

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1590 / 1210 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 156 / 156

SUSPENSION Double unequal length A-Arm. Push rod actuated spring / damper. Adj. Roll bar.

TYRES (Fr / Rr) 18x6-10 R25B Hoosier

WHEELS (Fr / Rr) 6 inch wide, 3 pc Al Rim, 7mm pos. offset

ENGINE Suzuki GSX-R 600 K7

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 600cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Student designed/built multipoint injection system using Megasquirt ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9790

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE 520 DID chain, 6-speed gearbox

DIFFERENTIAL Drexler limited slip differential

COOLING left side pod mounted student designed cross flow heat exchanger, fan mounted to heat exchanger

BRAKE SYSTEM 4-Disk system, self developed floating rotors with 200mm diameter, ajustable brake balance

ELECTRONICS mechatronic clutch and shifting system, Live-Telemetry System, intelligent DRS

LOUGHBOROUGH

Loughborough University

LUMotorsport, now in its 12th year; is a team of 20 highly passionate Automotive, Aeronautical, Mechanical and Electrical engineers from Loughborough University. LFS14 is an evolution of LUMotorsport's all new car for 2013; bringing significant mass savings, large gains in powertrain performance and, for the first time in our team's history, a wind-tunnel proven aerodynamic package.

Engineering Design Priorities

#Rear Chassis Development
#Advanced Electronics
#Aerodynamic Wings
#Lightweight Drivetrain
#Variable Intake System
#Paddle Shift & Clutch

Car 21
Pit 53

WRL 174

World Ranking List rank at the end of 2013

United Kingdom

FRAME CONSTRUCTION 2 Piece Spaceframe (Main Frame and Rear Suspension Mount)

MATERIAL T45 and CDS Steel

OVERALL L / W / H (mm) 2857 / 1510 / 1116

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1301 / 1181

WEIGHT WITH 68kg DRIVER (Fr / Rr) 139 / 139

SUSPENSION Double Unequal Length A-Arm with Pullrod and Rocker actuated Ohlins Cane Creek Dampers

TYRES (Fr / Rr) Hoosier 20.5"x7.0"-13

WHEELS (Fr / Rr) 2 Piece Aluminium 7" Width 31mm Offset

ENGINE 2009 Honda CBR 600 RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM MoTec M800 ECU, Port Injection with Manifold Vacuum Pressure Regulation

FUEL 98 Octance

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Single 520 Race Chain

DIFFERENTIAL Drexler 2010 LSD

COOLING Side Mounted Radiator Airflow by 2x 610 CFM Axial Fans

BRAKE SYSTEM In house steel rotors (220mm Front, 205mm Rear) with AP Racing Calipers (4 Pot Front, 2 Pot Rear

ELECTRONICS MoTec ECU, Datalogger and Dash Display, electronic gear shift, traction control and launch control

LUND
Lund University

Car 41
Pit 103

WRL 202

World Ranking List rank at the end of 2013

Sweden

For the first time ever, Lund University is competing at Hockenheim. LURacing is competing with 30 highly motivated students from several different fields of studies. Backed by calculations and value driven decisions, the team has decided to go for a very lightweight solution with high downforce and high stiffness. These attributes were realized with a single cylinder 450cc engine, carbon fiber monocoque, an effective wing package and 10" wheels.

Engineering Design Priorities

#Lightweight
#Driveability
#Reliability
#Stiffness
#Downforce
#Simplicity

FRAME CONSTRUCTION Single piece CFRP monocoque

MATERIAL T700 carbon fiber, VTM264 epoxy, 5056 10&25mm thick aluminum honeycomb

OVERALL L / W / H (mm) 3036 / 1406 / 1266

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 107 / 106

SUSPENSION Unequal length A-Arms. Pull rod actuated Cane Creek Double Barrel spring/damper units

TYRES (Fr / Rr) 6.0x18.0-10 LC0 Hoosier / 6.0x18.0-10 LC0 Hoosier

WHEELS (Fr / Rr) 6.5" wide, 19mm et, 2pc wheels / 6.5" wide, 19mm et, 2pc wheels

ENGINE Honda CRF 450X 2006

BORE / STROKE / CYLINDERS / DISPLACEMENT 96mm / 62.1mm / 1 cylinders / 449cc

COMPRESSION RATIO 12:1

FUEL SYSTEM DTA S60 pro control unit, Sequential port fuel injection,350cc@3 bar injector

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Chain and sprocket

DIFFERENTIAL Drexler Formula Student, Salisbury Limited Slip type, adjustable locking torque

COOLING Side mounted two core water radiator, 247 cfm electric fan mounted

BRAKE SYSTEM 4-disc system, ISR 189mm hole drilled steel rotors. 2 piston calipers. Driver adj. bias bar.

ELECTRONICS Solid state controlled electric shifter, custom steering wheel, high speed CAN 2.0b

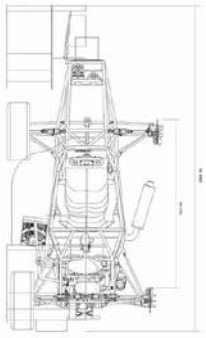
MADRID
Technical University of Madrid (UPM)

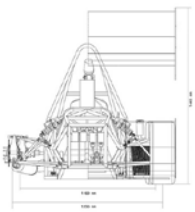
Car 25
Pit 50

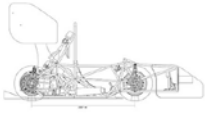
WRL 330

World Ranking List rank at the end of 2013

Spain







UPM Racing is the FSC team of TU Madrid. The team is formed by 25 competitive and racing car lovers students from various degrees. This year UPM Racing sets its eleventh combustion car. With a tight budget, the team struggles to introduce improvements each year, trying to take a leap in the ranking. After being one of the first Formula Student teams using them, this is the year of the Aerodynamic Devices return for our team, and we do it "big". Thanks to our sponsors and supporters!

Engineering Design Priorities

#Reliability
#Aerodynamics
#Knowledge
#Low cost
#Maneuverability
#Performance

FRAME CONSTRUCTION Tubular space frame / Carbon fiber floor and side pans / Aluminium back plate

MATERIAL AISI 4130 Alloy steel round tubing 16mm to 25mm diameter/Carbon fiber/7075 T6

OVERALL L / W / H (mm) 2975 / 1410 / 1434

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1537 / 1230 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 139 / 159

SUSPENSION Front: Double unequal length A-Arm. Push rod actuated spring/damper FSAE specific units / Rear: Doub

TYRES (Fr / Rr) 205x70 R13 Hoosier R25b / 205x70 R13 Hoosier R25b

WHEELS (Fr / Rr) 7.0x13, -33mm offset, 3 pc Al/Mg Rim / 7.0x13, -2mm offset, 3 pc Al/Mg Rim

ENGINE 2003 Yamaha R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,4:1

FUEL SYSTEM Student designed/built fuel injection system using BOSCH MS3-ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 520 roller chain

DIFFERENTIAL Drexler limited slip differential 30Nm preload

COOLING Vertical Crossflow one step radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, steel laser cut rotors, Driver adjustable mechanical bias bar. 17.8mm bore front&rear

ELECTRONICS Electronic cut fuel during gear, traction control, launch control, speed limit

MANIPAL
Manipal University

Formula Manipal is the official FSAE team of Manipal University, Manipal, India. We have participated in six different Formula Student events till date. The team secured second position in the Cost Analysis Event at FSG 2013 and also completed Endurance with electro-pneumatic gear shifting at FS Czech 2013, becoming the only Indian team to do so. We have aimed to make FMX4 a more reliable, faster and ergonomically superior car as compared to its predecessor, the FMX3.

Engineering Design Priorities

#Relaxed seat position
#Electro-pneumatic clutch
#230 kg car weight
#Control of body roll
#Adjustable pedal box
#4-2-1 exhaust system

Car 96
Pit 81

WRL 307

India

World Ranking List rank at the end of 2013

FRAME CONSTRUCTION Front and rear Single piece Tubular space frame

MATERIAL 4130 steel round tubing,16mm to 25.4mm dia

OVERALL L / W / H (mm) 2743 / 1471 / 1269

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 178

SUSPENSION Double wishbone, Unequal type, Pull Rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 205x60 R13 Hoosier R25B / 205x60 R13 Hoosier R25B

WHEELS (Fr / Rr) 6.0x13, 108mm offset , 3 pc Al Rim / 6.0x13, 108mm offset , 3 pc Al Rim

ENGINE Engine: Honda / CBR600RR 2006 model

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Student designed/built;Denso fuel injectors; Semi-sequential fuel injection

FUEL Gasoline

MAX POWER DESIGN (rpm) 8900

MAX TORQUE DESIGN (rpm) 8800

DRIVE TYPE Chain Drive, 520 series X-ring chain

DIFFERENTIAL Drexler Limited Slip Differential, Clutch Type, 3 pairs of torque biasing ratio

COOLING Horizontal, single side-pod mounted 1

BRAKE SYSTEM 4-Disc system , with 240mm diameter in front and 200mm in rear , adjustable brake bias and pedal box

ELECTRONICS Aerograde wiring harness, Electropneumatic Shifting System,self designed DAQ, proper driver feedback

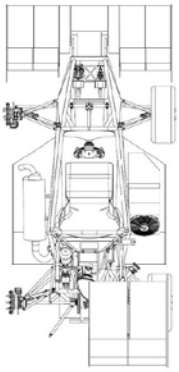
MANNHEIM
University of Applied Sciences Mannheim

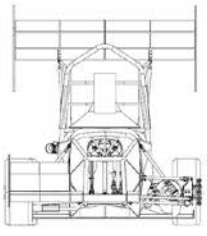
Our home-event in Hockenheim is this year's highlight for the Delta Racing Team. Located 30 km from the track, we are eager to show the performance of the DR14-C to our home crowd. This year, we designed an all-new lightweight concept sporting a lightweight space frame, 10 inch suspension, new KTM EXC 500 engine and a first time aerodynamic package. This season, we strive for reliability and successful on-track action as well as good statics. Come over to our pit and check out our brand-new car!

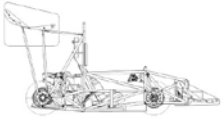
Engineering Design Priorities

#Single
#Less is more
#10inch
#Wings do work

Car 68
Pit 58







WRL 353

Germany

World Ranking List rank at the end of 2013

FRAME CONSTRUCTION Tubular space frame

MATERIAL E235+C

OVERALL L / W / H (mm) 2954 / 1377 / 1500

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 117 / 127

SUSPENSION Double unequal length A-Arm / direct actuation

TYRES (Fr / Rr) 18.0x6.0-10 Hoosier R25B / 18.0x6.0-10 Hoosier R25B

WHEELS (Fr / Rr) 6x10, 5 inch backspacing, 3 pc rim / 6x10, 5 inch backspacing, 3 pc rim

ENGINE Modified KTM EXC 500

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 72mm / 1 cylinders / 510cc

COMPRESSION RATIO 11,8:1

FUEL SYSTEM Student designed fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 520 chain drive with modfied KTM gearbox

DIFFERENTIAL Drexler clutch pack limited slip differential, preloaded

COOLING Side pod mounted radiator with airduct, temperature controlloed electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable break balance, ISR four/two (F/R) piston caliper

ELECTRONICS Adjustable engine mapping and shift timing integrated in steering wheel, electronic activated clutch

MARIBOR
University of Maribor

It is the fourth car for UNI Maribor Grand Prix Engineering. They have entered FS UK, FSAEI and FSG. With monocoque chassis and some simulations they have come up with a lightweight full aero car. Front and rear wing provide almost three times more downforce than in their previous year and the aero-balance is in tune with suspension balance. Their powertrain features a 550 cc big bore kit, variable plenum and an unique quick-shift system with a variable pitch worm gear.

Engineering Design Priorities

#550ccm KTM Engine

#monocoque

#variable plenum

#front and rear wing

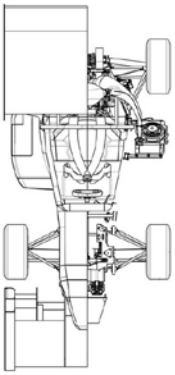
#unique quick-shift system

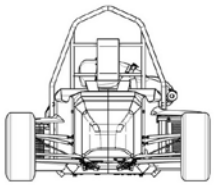
Car 107
Pit 101

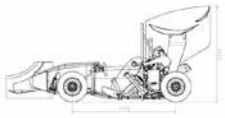
WRL 171

World Ranking List rank at the end of 2013

Slovenia







FRAME CONSTRUCTION CFRP monocoque structure with tubular steel roll bars

MATERIAL Rohacell sendwich panel of thickens 20mm, prep-reg carbon fibers on each sides

OVERALL L / W / H (mm) 2760 / 1370 / 1425

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 110 / 113

SUSPENSION Double A-arm. Pull rod actuated horizontally oriented spring, damper and anti-roll bar.

TYRES (Fr / Rr) Hoosier 6.0/18.0-10 LCO.

WHEELS (Fr / Rr) 7" wide custom CFRP shell aluminium center

ENGINE KTM 450 SX-F with modified 550cc big bore kit

BORE / STROKE / CYLINDERS / DISPLACEMENT 104mm / 64,7mm / 1 cylinders / 550cc

COMPRESSION RATIO 14:1

FUEL SYSTEM Self designed port injection using Bosch injectors.

FUEL E85

MAX POWER DESIGN (rpm) 8400

MAX TORQUE DESIGN (rpm) 5500

DRIVE TYPE Serial 5 gear KTM gear box.

DIFFERENTIAL Drexler limited slip differential

COOLING Side mounted 1 core multipase radiator with 2 fans mounted to frame for engine cooling.

BRAKE SYSTEM 4-Disc system with self designed rotors, adjustable balance bar with AP racing Calipers.

ELECTRONICS Pre-designed wiring in Catia, to obtain best routing and harness length, ECU managed launch control

MELBOURNE
Monash University

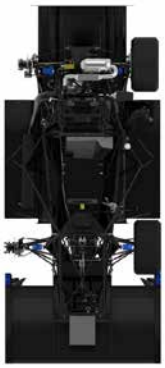
Monash Motorsport is based at Monash University in Melbourne, Australia. The team has competed in FSAE since 2000 with a strong belief in the importance of points simulation, early testing and a heavy focus on aerodynamics. Their latest concept, the M13, is a competition proven clean sheet redesign. It features a turbocharged KTM 450 SX-F, 10" wheels with direct acting suspension and an aggressive aerodynamic package, which was designed around a drag reduction system.

Car 66
Pit 114

WRL 2

World Ranking List rank at the end of 2013

Australia



FRAME CONSTRUCTION Steel tube spaceframe with bonded composite sandwich panels, aluminium rear bulkhead

MATERIAL 1020 mild steel, 4130 chromoly (roll hoops), carbon fibre and nomex honeycomb core

OVERALL L / W / H (mm) 3160 / 1309 / 1424

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1100 / 1050

WEIGHT WITH 68kg DRIVER (Fr / Rr) 136 / 136

SUSPENSION Double Unequal length A-Arm, direct acting, adjustable roll bars

TYRES (Fr / Rr) 18.0x7.5-10 R25B Hoosier

WHEELS (Fr / Rr) 8" wide, 3 piece Al wheels, 3" positive offset / 8" wide, 3 piece Al wheels, 0" offset

ENGINE Turbocharged KTM 450SXF

BORE / STROKE / CYLINDERS / DISPLACEMENT 97mm / 60.8mm / 1 cylinders / 449cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Motec M400 ECU, sequential injection and fuel pressure regulator

FUEL E85

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Single reduction 428 chain

DIFFERENTIAL Drexler clutch pack limited slip, 25Nm preload, 30deg ramp angle on power side

COOLING Side mounted, 28mm core dual pass radiator, 360 cfm fan mounted to radiator shroud

BRAKE SYSTEM Floating bisalloy rotors, 190mm/175mm. Wilwood calipers, Tilton master cylinders, adj. bias bar.

ELECTRONICS Motec M400 ECU, PDM15, ADL. Launch control, gear change ignition cut. Denso 50A alternator.

MITTWEIDA

University of Applied Sciences Mittweida

Since the foundation of TMM in 2006, it has become a meeting point for motivated students from all faculties of the university, from engineering to media. Over 50 highly motivated persons were a part of our team in this season. We are really proud to present you our new racecar with the name HECtor. The car was completed redesigned and is equipped with a powerful Honda CBR600 engine with 95 HP. A highlight is the student designed Impact Attenuator.

Engineering Design Priorities

#Safety

#Weight

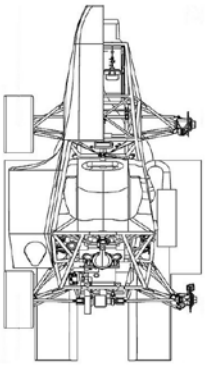
#Ergonomics

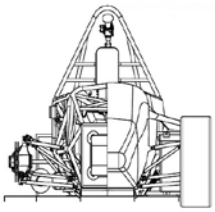
#Functionality

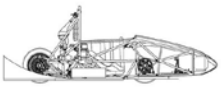
#Performance

Car 84

Pit 113







WRL 162

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Tubular spaceframe

MATERIAL Alloyed Steel

OVERALL L / W / H (mm) 3111 / 1404 / 1112

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 144

SUSPENSION Double unequal length A-Arm

TYRES (Fr / Rr) Continental 205x510 R13

WHEELS (Fr / Rr) Continental 205x510 R13

ENGINE modified Honda CBR600 (PC35)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM student designed fuel tank, with included fuel pump

FUEL 95 octane

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Chain 520

DIFFERENTIAL Drexler Differential

COOLING radiator mounted in sidepods

BRAKE SYSTEM 4 disk system mounted floating

ELECTRONICS Electropneumatic Shifting System

MOSCOW

Bauman Moscow State Technical University

They proudly present the new car which is based on successful predecessor brt-1. The car features many complex self designed solutions such as two-piece space frame with CFRP tubes and composite floor panel, supercharged engine, dry sump system, full aerodynamic package, live telemetry, aluminum wheel hubs with steel tripod inserts, multi-functional steering wheel, electro-pneumatic gear shifting system, modified gearbox. They believe in the success of the concept of their high-power car.

Engineering Design Priorities

#Moscow BMSTU

#BRT

#Bauman Racing

Car 20

Pit 77

WRL 379

World Ranking List rank at the end of 2013

Russia

FRAME CONSTRUCTION Two piece space frame.

MATERIAL Driver cell - round steel tubing. Rear frame - steel-CFRP hybrid.

OVERALL L / W / H (mm) 3275 / 1405 / 1105

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1565 / 1205 / 1165

WEIGHT WITH 68kg DRIVER (Fr / Rr) 136 / 166

SUSPENSION Double unequal length A-Arm. Pull rod actuated in front, push rod in the rear.

TYRES (Fr / Rr) 20.5 x 7.0-13, Hoosier R25B / 20.5 x 7.0-13, Hoosier R25B

WHEELS (Fr / Rr) 7x13 offset 31mm, Aluminium, one piece / 7x13 offset 31mm, Aluminium, one piece

ENGINE Supercharged Yamaha YZF-R6 with dry sump system

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.1:1

FUEL SYSTEM Motec M400

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE #520 chain drive

DIFFERENTIAL Drexler clutch type LSD

COOLING Water cooling system with two sidepod mounted radiators.

BRAKE SYSTEM 4-Disk system, self developed 220mm rotors, adjustable brake balance, self designed pedal box

ELECTRONICS Multifunctional Steering Wheel, Electropneumatic Shifting System, selfdesigned Live-Telemetry System

LOCTITE®

Trouble with a cracked fender, or trying to secure a bolt against intense vibration? High-performance adhesives and sealants from global market leader Henkel can help even when things look just about impossible. Come and discover the power to be everywhere, in every car.

At the Formula Student event, we not only offer you the opportunity to try out our fastest helpers. We also show you how to use them – either in your pit or at our stand. All you need to do is ask! As in previous years, our technical experts will be happy to share their expertise with all contestants and anyone else seeking advice.

And who knows? Making contact here might just be the first step into a career at Henkel. For more than 130 years, we have been among Germany's top employers. A global leader with brands and technologies in three business areas – Laundry & Home Care, Beauty Care and Adhesive Technologies – **Henkel is a great place to work, for young professionals too.**

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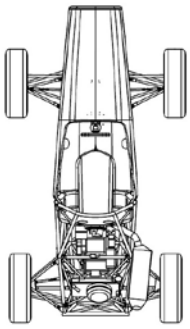
MOSCOW
Moscow State Technical University (MADI)

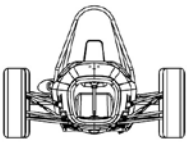
Car 101
Pit 94

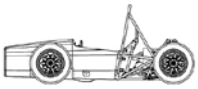
WRL 410

World Ranking List rank at the end of 2013

Russia







FRAME CONSTRUCTION CFRP-monocoque front section / Rear tubular space frame

MATERIAL carbon&carbon-aramid fiber, Al-honeycomb / 0,2%-carbon steel tube(ø16-25mm)

OVERALL L / W / H (mm) 2769 / 1485 / 1026

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1230 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 157

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring/damper. Adj. Roll bar.

TYRES (Fr / Rr) 6.0x13, Hoosier R25B / 6.0x13, Hoosier R25B

WHEELS (Fr / Rr) 6x13, 36mm offset, 4 pc, Mg Rims / 6x13, 36mm offset, 4 pc, Mg Rims

ENGINE 2009, Yamaha YFZ450R

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 63.4mm / 4 cylinders / 499cc

COMPRESSION RATIO 11.6:1

FUEL SYSTEM Yamaha injector, in Yamaha injector body.

FUEL RON 98

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 5500

DRIVE TYPE Chain drive, chain #520

DIFFERENTIAL Quaife, 40 Nm preload

COOLING One radiator with thermostatic controlled electric fans above car rear axle

BRAKE SYSTEM Floating rotor (220mm/205mm outer diam), Wilwood PS-1 calipers, Wilwood master cylinder

ELECTRONICS Yamaha OEM electronics with PowerCommander unit.

Talented, motivated, innovated – all this words characterized members of Formula Student MADI team never better. Our team is the first Formula Student team in Russia. It was founded in 2005. Each car, produced by our engineers, have own innovative advantages. For example, in last car – FSM 5, we designed first CFRP-monocoque in our country. One of the main aims by our team – to popularize Formula Student Project in Russia, and every day we move to it.

Engineering Design Priorities

#Effective
#Cheap
#Balance
#Stiff
#Lightweight
#Safety

MOSCOW
Moscow State Technical University (MAMI)

Car 52
Pit 107

WRL 251

World Ranking List rank at the end of 2013

Russia

FRAME CONSTRUCTION Hybrid tubular spaceframe

MATERIAL 1020 steel, aluminum AlMg5 round tubing 16 mm

OVERALL L / W / H (mm) 2925 / 1415 / 1130

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1542 / 1304 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 132 / 136

SUSPENSION Double unequal length A-Arm. Push rod actuated longitudinally oriented spring and damper

TYRES (Fr / Rr) 457x153 R10, Hoosier

WHEELS (Fr / Rr) Keizer CL-10, 6x10, +25 mm offset / 6x10, 0 mm offset

ENGINE Honda CBR 600F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM DTA S80Pro ECU,sequential fuel injection,190 CC/min Denso injectors

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE #520 chain

DIFFERENTIAL Drexler limited slip differential

COOLING One side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, front rotors - 200mm, rear rotors - 180 mm, AP Racing calipers

ELECTRONICS Steering wheel mounted display, Electropneumatic shifting system

FDR team has taken part at FSG seven times. Last years' experience with combination of new ideas is epitomized in Iguana G7. The Iguana G7 was improved in the following: performance, maintainability, ergonomics and driver's safety. Thanks to efforts of every team member, FDR reached its goals and is ready to demonstrate the result in Formula Student Germany 2014.

Engineering Design Priorities

#umech
#iguanism
#fdr_mami
#racecar
#mami
#iguanag7

MUMBAI
Dwarkadas. J. Sanghvi College of Engineering

Car 77
Pit 69

India

DJS Racing makes entry into its debut season with their first Formula Student car: DJSR-01.With FSG 2014 being its debut competition, the team has been working on building a reliable and a cost-effective car, while focussing on as many student designs as possible, hence staying in the spirit of the competition.The team comes to Germany this year with an intention to learn and grow, as a team and as individuals, and aim to be a very competitive team in the coming years of development.

Engineering Design Priorities

#Student Design

#Reliability

#Cost effective

FRAME CONSTRUCTION Front and rear tubular space frame/ Monocoque mid section

MATERIAL 1020 steel round tubing 25mm dia

OVERALL L / W / H (mm) 3020 / 1580 / 1175

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1400 / 1400

WEIGHT WITH 68kg DRIVER (Fr / Rr) 109 / 201

SUSPENSION Double unequal length A-Arm. Push/pull rod actuated vertically oriented coil over shock absorbers.

TYRES (Fr / Rr) 205x70 R13, Hoosier R25B

WHEELS (Fr / Rr) 7x13, 3pc AL-mg rim

ENGINE 2010 Royal Enfield 500 single cylinder UCE EFI

BORE / STROKE / CYLINDERS / DISPLACEMENT 84.0mm / 90.0mm / 1 cylinders / 499cc

COMPRESSION RATIO 8.5:1

FUEL SYSTEM Stock

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 4500

MAX TORQUE DESIGN (rpm) 5000

DRIVE TYPE 530 chain drive

DIFFERENTIAL Torsen type 1, 1:3 bias ratio

COOLING Air Cooled

BRAKE SYSTEM 4-Disk system, stock bike rotors 220mm diameter, adjustable brake balance, Wilwood 4-piston calipers

ELECTRONICS Basic electronic system as per minimum rules requirement.

MUMBAI
K. J. Somaiya College of Engineering

Car 18
Pit 87

WRL 289

World Ranking List rank at the end of 2013

India

Ever since its inception in 2006, the Orion Racing team has grown significantly in organisation and structure with the increasing international exposure. This year, the team decided to focus more on refinement and evaluation of their subsystems. With early design phases, the team has focused a lot on the testing with the aim of acquiring maximum data and refined tuning. Several new features include rpm shift lights, carbon fibre A-arms, chain tensioning, adjustable pedal box and the under-tray.

Engineering Design Priorities

#ordered by priority

FRAME CONSTRUCTION Tubular space frame

MATERIAL DIN 2391 St 52

OVERALL L / W / H (mm) 3065 / 1442 / 1178

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1222 / 1220

WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 155

SUSPENSION Double unequal A-arm , pull rod actuated front , push rod actuated rear

TYRES (Fr / Rr) 205x510 R13 Continental 34M Front and rear

WHEELS (Fr / Rr) 7 x 13 , 22mm offset , 1 pc Aluminium alloy rims Front and rear

ENGINE Honda CBR 600cc f4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Honda stock fuel rail ,Electronic fuel injection , sequential

FUEL 95 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Chain Drive

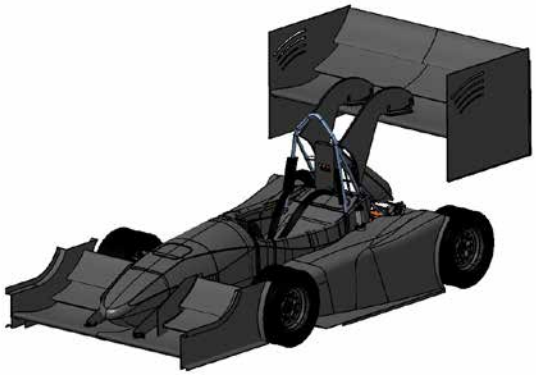
DIFFERENTIAL Clutch pack Limited Slip Differential, 30 Nm preload, 1.5 bias ratio

COOLING Chassis mounted ,single radiator operated by electric fan and water pump, Side pod integrated duct

BRAKE SYSTEM 4-disk system , 4- piston Wilwood calipers and Ap racing spherical bearing mounted master cylinders

ELECTRONICS Onboard data logging via motec M400 ,UDP basd telemetry system via Wlan , Gear position sensor

MÜNCHEN
Technische Universität München

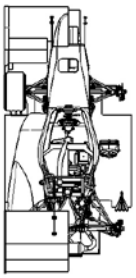


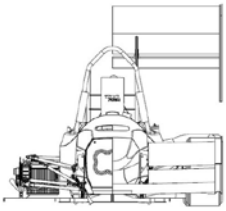
Car 5
Pit 78

WRL 12

World Ranking List rank at the end of 2013

Germany





FRAME CONSTRUCTION Monocoque with tubular steel rear space frame

MATERIAL

OVERALL L / W / H (mm) 3230 / 1430 / 1308

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 113 / 120

SUSPENSION

TYRES (Fr / Rr) Front: Double unequal length A-Arms, pull rod actuated ZF F3 dampers/spring Rear: pushrod

WHEELS (Fr / Rr) 10" Hoosier

ENGINE KTM 500 EXC

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 72mm / 1 cylinders / 510cc

COMPRESSION RATIO

FUEL SYSTEM custom single point injection

FUEL E85

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE

DIFFERENTIAL Drexler torque sensitive limited slip differential

COOLING

BRAKE SYSTEM Front: 4 pistons, 184 mm dia. Rear: 2 pistons, 160 mm dia.

ELECTRONICS

Based on the campus of the Technische Universität München, we are now building our 11th combustion car. As always, the nb014 is going to incorporate a number of innovations compared to its predecessors.The aerodynamic package and the suspensions have been redesigned so that they work in harmony together. The most important evolution is the new engine: After 10 years with a 600cc Kawasaki straight-4, this year's car is powered by a light and efficient 510cc single cylinder engine from KTM.

Engineering Design Priorities

#reliability

#aerodynamics

#drivability

#maintainability

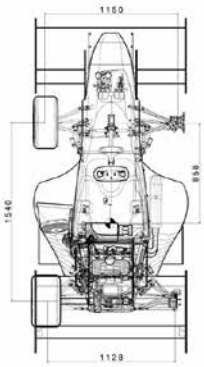
MÜNCHEN
University of Applied Sciences München

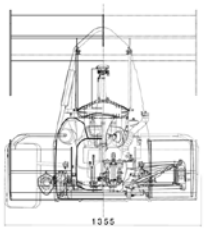
Car 13
Pit 54

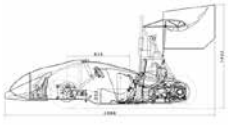
WRL 114

World Ranking List rank at the end of 2013

Germany







FRAME CONSTRUCTION hybrid construction: front CFRP monocoque, rear tubular space frame

MATERIAL Monocoque:CFRP, mild Rohacell core; TSF: Steel tubing 16 to 25mm dia.

OVERALL L / W / H (mm) 2868 / 1355 / 1403

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1540 / 1150 / 1128

WEIGHT WITH 68kg DRIVER (Fr / Rr) 107 / 146

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) Hoosier 18x6 R10/ Hoosier 18x7,5 R10

WHEELS (Fr / Rr) 6 x 10, CFK Rim/ 7,5 x 10, CFK Rim

ENGINE Modified Honda CBR600RR (PC40)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,5:1

FUEL SYSTEM student designed and built, cylinder selective fuel injection with 2 injectors per cylinder

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE chaindrive 428# chain

DIFFERENTIAL Drexler, clutch pack limited slip, 30-35Nm preload, adjustable bias ratio

COOLING one side mounted self designed radiator with ECU controlled electric fan

BRAKE SYSTEM 4 floating Disks (Fr/ Re 190/180 dia.) System, AP Racing Caliper, adjustable brake balance

ELECTRONICS wiring harness IP67, Mosfet-switches, selfdesigned dashboard, electropneumatic shifting, telemetry

PassionWorks – not only the name of our cars but also our guiding principle! The decision to not compete in FSG 2013 in favour of building a two year combustion car wasn't easy for us, but we feel like it will pay off. This year we're back: With a strong car and an even stronger team. Many new solutions can be found on our car with the aerodynamics package being the most obvious one. Combined with an early roll out giving us a lot of time for testing, we hope to be a contender for the podium.

Engineering Design Priorities

#Maintainability

#passionworks

#Teamwork

#Availability

#Simplicity

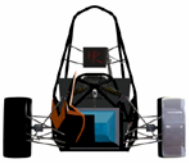
#Serviceability

NAVI MUMBAI

Pillai Institute of Information Technology

Car 34
Pit 109

India



Hyperion Racing is a team comprising of engineering students from Pillai Institute of Information Technology,India with the objective of competing in Formula Student racing events,both nationally and at a global stage. They like to think of their team as a democratic culmination of 30 different thought processes and mind sets into one efficient unit.Hyperion,in Greek Mythology was the Titan of light,and one of the four pillars that held the universe,responsible for the cycles of the sun and moon

Engineering Design Priorities

#expierience
#efficient
#reliability
#testing
#speed
#wheeltoframe

FRAME CONSTRUCTION Total Tubular Spaceframe

MATERIAL AISI 1018 (25.4 mm OD with thickness 1.5 mm to 2.4 mm)

OVERALL L / W / H (mm) 3040 / 1518 / 1318

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1300 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 210

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper (coil-over).

TYRES (Fr / Rr) R2B 13inch-20.5*6 / R2B 13inch-20.5*6

WHEELS (Fr / Rr) 7 inch wide, 1 pc Al Rim, 20mm neg. offset / 7 inch wide, 1 pc Al, 34mm neg. offset

ENGINE Royal Enfield Classic 500 Efi-Twin Spark/ air cool

BORE / STROKE / CYLINDERS / DISPLACEMENT 90mmmm / 90mmmm / 1 cylinders / 572cc

COMPRESSION RATIO 9.2:1

FUEL SYSTEM fuel injection student built manifold

FUEL 98 Octane

MAX POWER DESIGN (rpm) 5250

MAX TORQUE DESIGN (rpm) 4000

DRIVE TYPE Chain Driven (Stock Royal Enfield 500)

DIFFERENTIAL Open Differential

COOLING Air Cooled.

BRAKE SYSTEM 4-Disk System,self developed rotors with 240mm diameter,adjustable brake balance.

ELECTRONICS Selfdesigned Live Telemetry System,Data Acquisition System and Power Distribution Module.

NEVERS

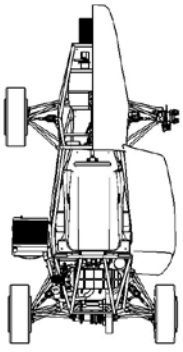
Institute of Automotive and Transport Engineering

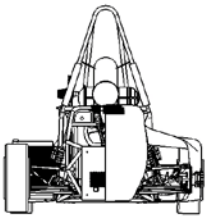
Car 71
Pit 86

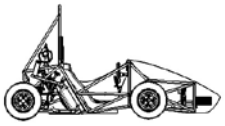
WRL 204

World Ranking List rank at the end of 2013

France







The ISAT Formula Team was created 10 years ago by students at ISAT. This school is the only public school specialized in automotive and transports in France. The Formula Student project is part of our curriculum in third year.This year our main objective is mass reduction, that is why we changed our 13 inch wheels by 10 inch wheels to gain almost 10kg and improve the suspension geometry. Moreover we worked on fuel consumption thanks to the tests we held on our engine test bench.

Engineering Design Priorities

#Bourgogne
#Yamaha
#ISAT Formula Team
#Texense
#ISAT Nevers
#Bosch

FRAME CONSTRUCTION Steel tubular frame

MATERIAL S355 Steel

OVERALL L / W / H (mm) 2600 / 1400 / 1400

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 128 / 145

SUSPENSION Double unequal length A-Arm. Pull rod actuated Ohlins TTX 25 dampers

TYRES (Fr / Rr) 152x62 R10, Hoosier R25B / 152x62 R10, Hoosier R25B /

WHEELS (Fr / Rr) 6.5x10, 10.8 mm offset, 2 pc Al-Mg Rim / 6.5x10, 10.8 mm offset, 2 pc Al-Mg Rim

ENGINE Yamaha XJ6 four stroke in line four

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Bosch fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Chain

DIFFERENTIAL Drexler limited slip differential

COOLING 1200 cm² radiator and 250mm electric fan

BRAKE SYSTEM AP Racing calipers, 180 mm self designed discs

ELECTRONICS Bosch data acquisition, Texense sensors

NEW DELHI

Indian Institute of Technology Delhi

AXLR8R Formula Racing, have got some astounding innovations in their latest car, like carbon fiber reinforced hollow axle, custom tuned electronic control unit, etc... Designing and manufacturing within great financial and technological constraints, the team has been lucky to be supported by Motherson Sumi group, North Street Cooling Towers (P) Ltd, Bosch, Continental, ABC Technologies, Sudershan Measuring and Engg. P. Ltd.. Despite all the constraints, the team still AXLR8s (accelerates).

Engineering Design Priorities

#Weight Reduction

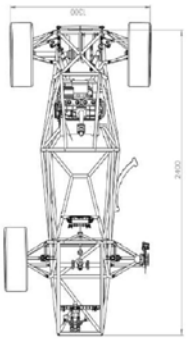
#Reliablity

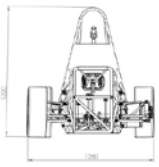
#Adjustablity

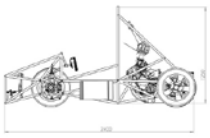
#Drivability

Car 29

Pit 51







WRL 438

World Ranking List rank at the end of 2013

India

FRAME CONSTRUCTION Front and rear Tubular space frame

MATERIAL ASTM 179 2.4 mm thick 25.4 mm dia, ASTM 106 1.7 mm thick 25.4 mm dia

OVERALL L / W / H (mm) 2900 / 1400 / 1380

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1100

WEIGHT WITH 68kg DRIVER (Fr / Rr) 132 / 198

SUSPENSION front:Double unequal length, non parallel A-Arm. Pull rod actuated spring and dampers in vertical

TYRES (Fr / Rr) front:205/510 R13/front:205/510 R13

WHEELS (Fr / Rr) front:6x13, -35mm offset, 1 pc Rim/ rear:6x13, -35mm offset, 1 pc Rim

ENGINE 2004 Honda CBR600RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Pre installed, Fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7800

DRIVE TYPE manual transmission

DIFFERENTIAL Automatic Torque Biasing Limited Slip Differential

COOLING 3.2 lit rear mounted radiator

BRAKE SYSTEM 4-Disk system, SUS410DB rotors with 220mm dia, adjustable brake balance, Dual circuit,4 piston/ cyl

ELECTRONICS Custom build programmable ECU, Electronic actuated pedal shifters

OXFORD

Oxford Brookes University

Oxford Brookes Racing returns to FSG after a difficult 2013 with a stronger team and more motivation than ever. We have worked tirelessly to bring big upgrades to the car this year, focusing on covering more mileage before competition than ever before. The main areas we have focused on are improving the engine torque and driveability, while also increasing the handling without sacrificing overall mass with our lightweight wing package.We aim to finish inside the top 10, & as the top UK team

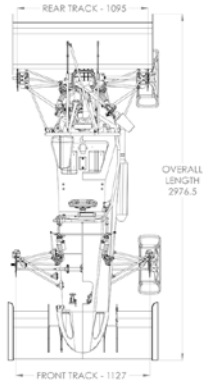
Engineering Design Priorities

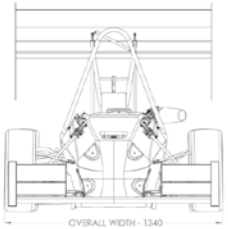
#300km testing mileage

#Mass equal after wings on

Car 92

Pit 80





WRL 93

World Ranking List rank at the end of 2013

United Kingdom

FRAME CONSTRUCTION Hybrid full monocoque, CFRP + Al Skins

MATERIAL Varied thickness CFRP Inner skin, + 0.7mm 6082 T6 Alu Skins. 18.5 & 12.7mm Aluminium Honeycomb

OVERALL L / W / H (mm) 2976 / 1340 / 1285

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1154 / 1095

WEIGHT WITH 68kg DRIVER (Fr / Rr) 117 / 121

SUSPENSION Double unequal length wishbones w/pushrod actuated spring-dampers. U-Bar ARBs

TYRES (Fr / Rr) Avon 6.2x20.0 R13

WHEELS (Fr / Rr) Avon 6.2x20.0 R13

ENGINE 2010 KTM 530 EXC

BORE / STROKE / CYLINDERS / DISPLACEMENT 100mm / 72mm / 1 cylinders / 566cc

COMPRESSION RATIO 11.9:1

FUEL SYSTEM Student designed single point port injection system

FUEL RON 98 unleaded petrol

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 6000

DRIVE TYPE Single 520 Chain

DIFFERENTIAL Drexler Formula SAE Limited Slip Differential

COOLING Side mounted 2r12 core radiator, 850 cfm fan mounted to ducting

BRAKE SYSTEM 4-disk, ISR radial mount, dual opposing piston front callipers, with AP racing radial mount rears

ELECTRONICS Electropneumatic Shifting System, Bosch DDU7 Datalogger

PADERBORN
University of Paderborn

The UPBracing Team e.V. was founded in 2006. It consists of 40 students from different faculties and semesters. This year our car comes with a new aerodynamic package, 10" tires and a hybrid chassis. The main goal was to increase the reliability of our car while maintaining low weight and high efficiency.We have also put a lot of effort in the analysis of the vehicle dynamics with a self-developed measurement system.

Engineering Design Priorities
#Ergonomics
#Reliability
#Efficiency
#Performance

Car 58
Pit 84

WRL 119

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION CFRP monocoque in front, rear tubular space frame

MATERIAL CFRP: UD/BD Prepreg (220g/m²/245g/m²); Steel Roll Hoops 15CDV6

OVERALL L / W / H (mm) 3104 / 1370 / 1445

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1170 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 91 / 124

SUSPENSION Double A-Arm pullrod suspension

TYRES (Fr / Rr) 18 x 7.5 x 10 Hoosier R25B

WHEELS (Fr / Rr) 7.0 x 10 inch 3pc Al Rim

ENGINE Suzuki / GSX-R 600 K9

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.8:1

FUEL SYSTEM original Suzuki fuel pump, student designed fuel rail, Bosch EAT255 fuel injectors

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 13200

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Chain drive

DIFFERENTIAL Drexler FormulaStudent Differential (1.5 Way limited slip differential)

COOLING one side pod mounted radiator, 250 mm fan thermo-static controlled

BRAKE SYSTEM self developed rotors with 180mm diameter, adjustable brake balance

ELECTRONICS Selfbuild, lightweight wiring harness, WiFi interface, Electronic clutch, Electronic anti-roll bar

PADOVA
University of Padova

Race UP Team started participating in Formula SAE ruled competitions in 2003. After a 6th overall place at Formula Student Silverstone 2013, this year the team is coming back to Formula Student Germany with its 9th car. The MG 09.14 is a simple-concept compact car with a steel tubolar spaceframe. The driver is seated in upright-position and is possible to set the pedalbox position. It includes a student-built power-distribution module and a gearbox actuated by an electrical servomotor.

Engineering Design Priorities
#control
#reliability
#low inertia
#integration
#comfortable

Car 85
Pit 75

WRL 85

World Ranking List rank at the end of 2013

Italy

FRAME CONSTRUCTION Tubolar spaceframe

MATERIAL Steel AISI4130

OVERALL L / W / H (mm) 2584 / 1464 / 1252

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1260 / 1230

WEIGHT WITH 68kg DRIVER (Fr / Rr) 131 / 137

SUSPENSION Double unequal length A-Arm. Pull-rod actuated. Longitudinally oriented spring and damper

TYRES (Fr / Rr) 20.5 x 7.0 R13 Hoosier / 20.5 x 7.0 R13 Hoosier

WHEELS (Fr / Rr) 7.0 x 13 / 7.0 x 13

ENGINE Honda CBR 600 RR PC40 2007/2008

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Single injector per cylinder, low pressure

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Original engine gearbox

DIFFERENTIAL Limited slip, 15 Nm Preload, 51% drive - 29% decel interlock value

COOLING left mounted 30 core aluminum radiator, 735 cfm fan assembled to radiator

BRAKE SYSTEM 4 floating disks system, 220 diameter, adjustable brake balance, vented front disks

ELECTRONICS self made power distribution, use of microcontrollers, TE SPEC55 wires, sizes from AWG18 to AWG24

PATIALA
Thapar University

Jaeger (German for hunter) is Team Fateh's seventh car at FS and second time at FS Germany. This year they have rolled out their lightest car yet. To achieve this, Jaeger is equipped with a composite body and A-arms and a single cylinder engine. This has enabled them to achieve their aim of building a car that is competitive dynamically. The team would like to thank all their sponsors and partners. Their help has been essential in getting them to where they are now & they hope to make them proud

Engineering Design Priorities

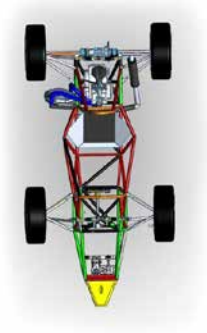
#Reliability
#Data Acquisition
#Fuel Effieciency
#High Performance
#Weight Reduction
#Composites

Car 27
Pit 97

WRL 407

World Ranking List rank at the end of 2013

India



FRAME CONSTRUCTION Steel Space Frame

MATERIAL Steel Pipes

OVERALL L / W / H (mm) 2681 / 1404 / 1084

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1275 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 106 / 147

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper (coil-over).

TYRES (Fr / Rr) 20.5x7 R13, Hoosier R25B/ 20.5x7 R13, Hoosier R25B

WHEELS (Fr / Rr) 7x13, -22mm offset / 7x13, -22mm offset

ENGINE 2013 KTM EXC 500, single cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mmmm / 72mmmm / 1 cylinders / 510cc

COMPRESSION RATIO 11.8:1

FUEL SYSTEM Motec M84 ECU controlled gasoline fuel injection

FUEL 95 octane gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Single 520 Chain

DIFFERENTIAL Drexler LSD Formula Student

COOLING Side mounted single radiator with electronic controlled electric fan

BRAKE SYSTEM 4-Disk system, Tilton master cylinders and bias bar, ISR brake calipers

ELECTRONICS Wiring harness with MOTEC M84 ECU, button operated solenoid gear shiifting,

PFORZHEIM
Pforzheim University

"Rennschmiede Pforzheim" was founded in Sep. 2009 and is now going into its third Formula Student season this year with a motivated team consisting of 40 people.Sticking to the team's motto "leading the pack by quality" and building on previous experiences and skills,"RSP14" will have a more prone seating position,a totally new electronic and a remarkable fuel tank. Furthermore a new chassis was developed and the weight was decreased tremendously.

Engineering Design Priorities

#Intake System
#Fuel tank
#Body work
#Electronics
#Suspension

Car 70
Pit 96

WRL 165

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Tubular space frame, 25mm diameter

MATERIAL S355

OVERALL L / W / H (mm) 2649 / 1400 / 1130

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1990 / 1400 / 1330

WEIGHT WITH 68kg DRIVER (Fr / Rr) 125 / 135

SUSPENSION Double wishbone suspension. Push Rod actuated spring and damper system

TYRES (Fr / Rr) Hoosier 18.0 x 6.0-10 LCO

WHEELS (Fr / Rr) Hoosier 18.0 x 6.0-10 LCO

ENGINE Husaberg 570

BORE / STROKE / CYLINDERS / DISPLACEMENT 100mm / 72mm / 1 cylinders / 565cc

COMPRESSION RATIO 12,2:1

FUEL SYSTEM Self-designed fuel tank with flaps. Bosch fuel pressure regulator.

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 6000

DRIVE TYPE chain drive 520 chain

DIFFERENTIAL Drexler limited slip differential

COOLING Side mounted Radhaus kmk cooler with 200mm lectric fan

BRAKE SYSTEM Floating, tempered steel, hub mounted

ELECTRONICS Electrohydraulic clutch System, self designed gear and RPM display,mosfets for power switching

POMONA

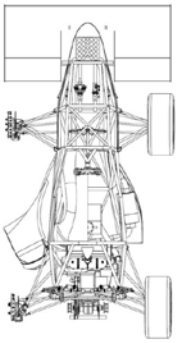
California State Polytechnic University, Pomona

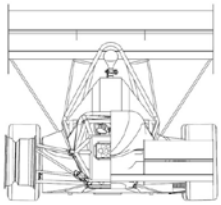
Cal Poly Pomona Formula SAE has been a recognized extracurricular club on campus since 1988. They have competed in over 40 competitions in their history and have taken top honors multiple times. This past year they placed 6th overall in Lincoln Nebraska, and placed second in the endurance event. They are currently ranked 1st in California, 5th in the US and 24th in the world out of over 500 teams

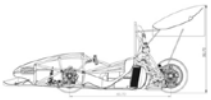
Engineering Design Priorities

#Suspension
#Engine
#Aero
#Cooling
#Chassis
#Drivetrain

Car 17
Pit 62







WRL 24

World Ranking List rank at the end of 2013

United States

FRAME CONSTRUCTION Tublar Space Frame
MATERIAL 4130
OVERALL L / W / H (mm) 2749 / 1422 / 1193
WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1237 / 1211
WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 134
SUSPENSION Double unequal length A-Arm
TYRES (Fr / Rr) 20.5x7 R13 Hoosier R25B
WHEELS (Fr / Rr) 7.5x13 Al
ENGINE 2001-2003 Suzuku GSX-R 600
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 43.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 12.2:1
FUEL SYSTEM fuel injection
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 9000
MAX TORQUE DESIGN (rpm) 7500
DRIVE TYPE Chain Drive
DIFFERENTIAL Torsen T1
COOLING Side mounted single core radiator
BRAKE SYSTEM custom rotors, Tilton 77 series master cylinder, adj. brake bias
ELECTRONICS AEM EMS4 / AIM EV04 / NI SBRIO

PRAGUE

Czech Technical University in Prague

We do our best in order to design and build our car light, fast and with good handling. We learn a lot during the proces, so it is only logical that our cars are gettitng even better each year. FS.06 is extremely hot car you must fall in love with. It will also take your breath by it speed and agility, so be prepared, FS.06 IS COMING!

Engineering Design Priorities

#Performance
#Cheap
#Learn
#Lightweight
#Realiability
#Simple

Car 30
Pit 47

WRL 20

World Ranking List rank at the end of 2013

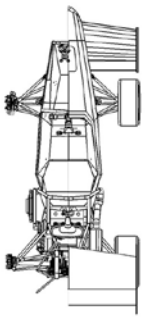
Czech Republic

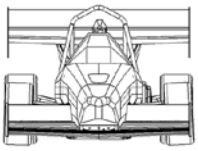
FRAME CONSTRUCTION Hybrid monococque-space frame
MATERIAL
OVERALL L / W / H (mm) 2965 / 1448 / 1283
WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1578 / 1200 / 1180
WEIGHT WITH 68kg DRIVER (Fr / Rr) 119 / 147
SUSPENSION Double unequal length A-Arm. Pushrod actuated transversely oriented spring and damper.
TYRES (Fr / Rr) Hoosier 18x7,5-10
WHEELS (Fr / Rr) Hoosier 18x7,5-10
ENGINE Yamaha YZF R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 13.1:1
FUEL SYSTEM
FUEL RON 98
MAX POWER DESIGN (rpm) 12500
MAX TORQUE DESIGN (rpm) 9500
DRIVE TYPE 520 x-ring chain
DIFFERENTIAL Drexler, limited slip
COOLING Side mounted radiator, 255mm fan
BRAKE SYSTEM Self-developed calipers, adjustable brake balance
ELECTRONICS self-developed shifting system, telemetry system

ROMA
Sapienza University of Rome

Car 19
Pit 76

Gajarda 2014 is the seventh formula student car developed by Sapienza corse. Since 2008 they have participated at the Formula Student Germany competition. Their goal is to have a lightweight car without losing performance and reliability. Many differences have been set since last year, including a brand new aerodynamics package, 10 inches front-rims and a CFRP steering-knuckle. FSG competition is a great opportunity to show technical level our team reached improving Gajarda over and over.





WRL 163

World Ranking List rank at the end of 2013

Italy

FRAME CONSTRUCTION CFRP Monocoque

MATERIAL carbon fiber lay-up with aluminium honeycomb core

OVERALL L / W / H (mm) 3072 / 1400 / 1030

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1595 / 1200 / 1162

WEIGHT WITH 68kg DRIVER (Fr / Rr) 119 / 146

SUSPENSION Double unequal lenght A-Arm. Pull rod actuated spring/damper. Adj. Roll bar

TYRES (Fr / Rr) 18.0 x 6.0 - 10 R25B Hoosier / 20.5 x 7.0 - 13 R25B Hoosier

WHEELS (Fr / Rr) 6.0x10, -10mm offset, 2 pc carbon rim / 7.5x13, -20mm offset, 2 pc carbon rim

ENGINE Modified Honda CBR600F

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,5:1

FUEL SYSTEM Electronic Injection Mectronik MKE6

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10500

DRIVE TYPE 4/8" Chain Drive

DIFFERENTIAL Open Diff., Electronic self-locking control, Dinamically variable bias ratio

COOLING One radiator, mechanic pump, electronc flow controller

BRAKE SYSTEM Disk System, Steel, 212 mm diam. front hub mounted/190 mm diam. rear diff housing mounted

ELECTRONICS Mectronik MKE6 ECU, Electronic Shifting System, Electronic Differential Control

ROMA
University of Rome Tor Vergata

Car 90
Pit 112

After having faced the challenges related to the participation in FSAE competitions for the first time, the team Scuderia TorVergata is back more determined than ever to improve the results achieved the last year. The experience gained during the 2013 events at Hockenheim (Germany) and Varano de'Melegari (Italy) has resulted to be very useful in designing the new vehicle.

Engineering Design Priorities

#Engine Tuning

#Weight Reduction

#Handling

#Electronics Reliability

#Aerodynamics

WRL 268

World Ranking List rank at the end of 2013

Italy

FRAME CONSTRUCTION 1 ,' Welded Tubular steel of three different thicknesses

MATERIAL AISI 4130 (1"x0095", 1"x0049",1"x0.0065)

OVERALL L / W / H (mm) 2610 / 1390 / 110

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1216 / 1176

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 164

SUSPENSION Double unequal length A-Arm. Push Rod actuated.

TYRES (Fr / Rr) 200x72 R13, A45, Avon

WHEELS (Fr / Rr) 200x72 R13, A45, Avon

ENGINE Honda CBR F Sport year 2002

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Injector 60mm before intake valve. Fuel Pressure 5 bar. 3-D map, RPM and Throttle position

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE Electronic shifter

DIFFERENTIAL Drexler Limited Slip Differential V1

COOLING Radiator with ECU controlled fan and water pumo

BRAKE SYSTEM Brembo calipers (P424 Front, P224 Rear), Master Cylinders: Brembo push type

ELECTRONICS Passive Traction Control System, LiPO4 rechargable battery, Launch Control, WiFi Telemetry

SCHWEINFURT

University of Applied Sciences
Würzburg-Schweinfurt

Car 97
Pit 79

WRL 142

World Ranking List rank at the end of 2013

Germany

Mainfranken Racing e.V., founded in 2006 was born out of the idea of some motor sport enthusiastic students. Currently the team consists of 40 motivated students who developed and built the seventh Formula Student racecar, the MF7. The main features are our innovative intake manifold, extraordinarily ergonomical steering wheel, our new adjustable pedal system and the new developed aerodynamic devices. We can look back at an exhausting but also funny and friendly season.

Engineering Design Priorities

#steering

#intake

#aerodynamic

#pedalbox

#economic

FRAME CONSTRUCTION Tubular steel space frame

MATERIAL E355, round tubing

OVERALL L / W / H (mm) 3089 / 1149 / 1293

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1590 / 1210 / 1166

WEIGHT WITH 68kg DRIVER (Fr / Rr) 149 / 161

SUSPENSION Double unequal length A-Arm, Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 20x7.5 R13 Hoosier R25B / 20x7.5 R13 Hoosier R25B

WHEELS (Fr / Rr) 7x13, 22mm offset, 1pc Al Rim / 7x13, 22mm offset, 1pc Al Rim

ENGINE Yamaha YZF-R6 rj05, with modified camshafts

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.4:1

FUEL SYSTEM Bosch injection valves and ignition coils, dual stage sequential injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12500

MAX TORQUE DESIGN (rpm) 8800

DRIVE TYPE Original transmission (Gears: N-1-2-3-4)

DIFFERENTIAL Limited slip differential (Formula student specific differential from Drexler)

COOLING Self developed radiator in left side pod with 210mm electric fan

BRAKE SYSTEM 4-Disk system. Floating self developed brake rotors. adjustable break balance. Calipers: dual piston

ELECTRONICS Wiring harness, electrified shifting system, multifunctional steering wheel, 2D data logger

SEATTLE

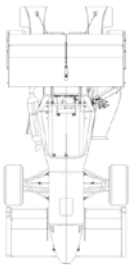
University of Washington

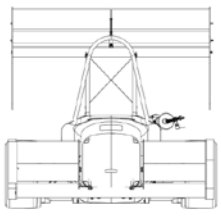
Car 7
Pit 73

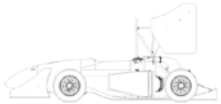
WRL 7

World Ranking List rank at the end of 2013

United States







The UWashington Formula Motorsports team is proud to present a brand new car for the 2014 competition season. The car runs a new single cylinder motor for improved performance, has a unidirectional carbon fiber monocoque chassis, integrated CV/hubs, a full aerodynamics package with a dynamic drag reduction system, a two-way telemetry system for real-time data acquisition, a tightly packaged drivetrain system that focuses on ease of manufacture and assembly, and new carbon fiber wheel shells.

Engineering Design Priorities

#Effective documentation

#Maximize points

#Train student engineers

#Justify design decisions

FRAME CONSTRUCTION Carbon Fiber Monocoque

MATERIAL Torray T700 Unidirectional Fiber, Hexcel Aluminum Honeycomb

OVERALL L / W / H (mm) 2920 / 1410 / 1345

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1537 / 1194 / 1143

WEIGHT WITH 68kg DRIVER (Fr / Rr) 99 / 118

SUSPENSION Double Unequal Length A-Arm. Pull Rod Actuated, Horizontally Oriented Spring and Damper

TYRES (Fr / Rr) 18.0 x 6.0-10

WHEELS (Fr / Rr) 7.0 x 10.0 Carbon Fiber Shell, Al Center

ENGINE 2010 Yamaha YFZ-450R

BORE / STROKE / CYLINDERS / DISPLACEMENT 97mm / 68.4mm / 1 cylinders / 505cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Student Developed Algorithm, Fuel Injection, Dual-Cone Spray Injector, EngineLab ECU

FUEL 98 RON

MAX POWER DESIGN (rpm) 8200

MAX TORQUE DESIGN (rpm) 6000

DRIVE TYPE 520 Chain Drive

DIFFERENTIAL Salisbury Type Differential with Replaceable Ramps

COOLING Single, Center/left Mounted Al Core, 600 cfm Fan Rear Mounted

BRAKE SYSTEM Floating, Cast Iron, Hub Mounted, Student Machined Front Calipers, Adjustable Brake Bias

ELECTRONICS Student Developed Fuel Strategy, Solid State Power Distribution Module

SEVILLA
University of Seville

Car 51
Pit 46

WRL 446

World Ranking List rank at the end of 2013

Spain

FRAME CONSTRUCTION Composite sandwich with tubular steel spaceframe

MATERIAL Carbon fiber aluminum honeycomb sandwich floor

OVERALL L / W / H (mm) 2954 / 1453 / 1174

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 165

SUSPENSION Double unequal length A-Arm. Push rod and pull actuated vertically oriented spring and damper

TYRES (Fr / Rr) Hoosier 20.5 x 7.0-13, R25B/Hoosier 20.5 x 7.0-13, R25B

WHEELS (Fr / Rr) 13x7", 5 mm offset, Al Rim / 16, 13x7", -8 offset Al Rim

ENGINE 2006 Honda CBR600RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Programmed single stage fuel injection

FUEL > 95 Octane gasoline

MAX POWER DESIGN (rpm) 13500

MAX TORQUE DESIGN (rpm) 11250

DRIVE TYPE Chain 525 drive to driven sprocket

DIFFERENTIAL Helical Limited Slip Quaife QDF7ZR

COOLING Custom radiator and 12V electric fan

BRAKE SYSTEM 4-Disk system, rotors with 220mm diameter and AP Racing calipers and master cylinder.

ELECTRONICS Link G4+ Storm Engine Management System

We are ARUS Andalucia Racing, the first team in the South of Spain. The team was born in November 2012 and the first year we focused on learning about the competition and establishing the group in the University. This is our first year in first class and our goal is to build a reliable combustion car which will be able to finish all events, especially the endurance. It's an ambitious objetive but we are working very hard to get it.

Engineering Design Priorities

#Spain
#Affordable
#Combustion
#Basalt fiber
#Rookie
#Reliable

STRALSUND
University of Applied Sciences Stralsund

Car 23
Pit 61

WRL 70

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION tubular space frame

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2573 / 1364 / 982

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 119 / 129

SUSPENSION Double unequal length nonparallel A-Arm. Pull/ push rod actuated front/rear

TYRES (Fr / Rr) 205/510 R13, Continental

WHEELS (Fr / Rr) BBS 3 pc Al-Mg, 7,5x13, 5mm offset

ENGINE 2013 Borossi BT 450 MX 1 cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 96mm / 62.1mm / 1 cylinders / 450cc

COMPRESSION RATIO 11:1

FUEL SYSTEM selfdesigned fuel injection system using Walbro ECU, full sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 7500

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE Chain drive

DIFFERENTIAL Quaife torque sensitive Torsen B; adj. preload, self-designed 7075 T6 hard-anodized housing

COOLING right side mounted aluminium radiator, electronic fan integrated in nozzle of cooling duct

BRAKE SYSTEM 4 disc system; self developed rotors 200mm rotors; ISR brake calipers, APRacing Master Cylinders

ELECTRONICS multifunctional display with live data from various sensors;Highspeed CAN

As we are the first German Formula Student Team we had much time to develop our cars over a long period. And we can justly say: we have achieved a total revolution for us in this year. We've made it from a four-cylinder to a one-cylinder engine. This means a massive loss in weight of about 40kg. That has further consequences for the car, which are more agility and flexibility in driving. This is also supported by an additional loss of weight through the reduction in the length of the car.

Engineering Design Priorities

#high performance
#environmental friendly
#simplicity
#high functionality
#durability
#serviceability

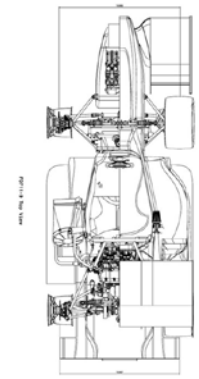
STUTTGART
University of Stuttgart

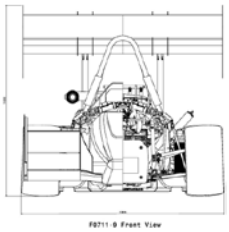
Since the founding in 2005 Rennteam Uni Stuttgart simplifies the way for success in its goals “complete-finish-win”. According to this philosophy the FO711-9 was designed with focus on reliability, lightweight, handling and efficiency. The overall concept is a 10” wheeled car with a powerful 4 cylinder Yamaha R6 engine and an aerodynamic package. The team is looking forward to the Formula Student Germany 2014. We want to thank all our sponsors who gave us the opportunity to build FO711-9.

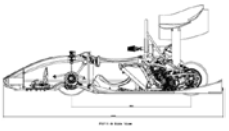
Car 2
Pit 43

WRL 1
World Ranking List rank at the end of 2013

Germany







FRAME CONSTRUCTION Two-part composite monocoque

MATERIAL CFRP with aluminium honeycomb

OVERALL L / W / H (mm) 2976 / 1325 / 1233

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1630 / 1080 / 1067

WEIGHT WITH 68kg DRIVER (Fr / Rr) 118 / 128

SUSPENSION Double unequal length A-Arms, pushrod actuated ZF Sachs TRD, adjustable U-type ARB F3 2-way

TYRES (Fr / Rr) 10x7.5x18 R25B Hoosier / 10x7.5x18 R25B Hoosier

WHEELS (Fr / Rr) 10 x 8.0“ CFRP / 10 x 8.0“ CFRP

ENGINE Modified Yamaha YZF R6 RJ09

BORE / STROKE / CYLINDERS / DISPLACEMENT 65,5mm / 44,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,0:1

FUEL SYSTEM Student build fuel injection system, double point injection

FUEL E85

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE 4-Speed Gearbox with Chain Transmission

DIFFERENTIAL Modified Drexler Differential

COOLING Custom-made single radiator, mounted in left sidepod, thermostatic controlled fan and waterpump

BRAKE SYSTEM Self made 4 disc system using radial mounted ISR calipers, driver adjustable brake balance

ELECTRONICS Self made wiring harness, multifunctional steering wheel, live telemetry system, using CAN bus

TAMPERE
University of Applied Sciences Tampere

We are introducing our 7th car which is a refined version of our FS013 racecar. Featuring the same V2 550cc engine, body and chassis. Everything had to shed weight since this year we’ve made our first aeropackage. To sum it up the focus of this car were the wings, driver ergonomics and electrical components to make the car truly challenge the other teams in Europe. Dozens of students have worked on this project in designing, material testing and various manufacturing tasks.

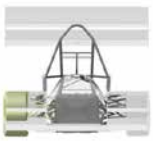
Engineering Design Priorities

#Driverergonomics
#Maintainability
#Reliability
#Aerodynamics
#Lightweight
#Costefficiency

Car 78
Pit 106

WRL 237
World Ranking List rank at the end of 2013

Finland



FRAME CONSTRUCTION Tubular space frame

MATERIAL Ruukki Form 600

OVERALL L / W / H (mm) 3028 / 1520 / 1346

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1560 / 1260 / 1230

WEIGHT WITH 68kg DRIVER (Fr / Rr) 115 / 153

SUSPENSION Double unequal length A-Arm, springs, shocks and anti-roll bars are actuated pushrods with bellcrank

TYRES (Fr / Rr) 18x7.5 -10, Hoosier R25B / 18x7.5 -10, Hoosier R25B

WHEELS (Fr / Rr) 7.5x10 -35,2mm offset 3 pc Al Rim / 7.5x10 -9,9mm offset 3 pc Al Rim

ENGINE Aprilia RXV 550

BORE / STROKE / CYLINDERS / DISPLACEMENT 80mm / 55mm / 2 cylinders / 553cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Tatech engine management, sequential injection and direct ignition

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 7800

DRIVE TYPE 520 Chain

DIFFERENTIAL Torque sensitive limited slip bevel gear differential

COOLING Side mounted 1500cc radiator

BRAKE SYSTEM 4- floating disc, self design rotors, adjustable brake balance and rear inboard brakes

ELECTRONICS Wiring harness, electronic shifting system with automatic mode

THESSALONIKI

Aristotle University of Thessaloniki

Aristotle Racing Team (ART) was formed in 2006 by a group of mechanical engineering students at the Aristotle University of Thessaloniki, Greece. Having gathered knowledge and experience over the past years, ART managed -among others- to achieve a 3rd place overall at FSAEI 2012, with its third car. The current team consists of 18 members and is developing its fourth single-seater for the racing tracks of FSG, FSH and FSAEI 2014 events, with main targets the weight reduction and reliability.

Engineering Design Priorities

#Improved dynamic behavior

#Weight reduction

#Drivability

#Reliability

#Maintaining low CoG

Car 12

Pit 98

WRL 106

World Ranking List rank at the end of 2013

Greece

FRAME CONSTRUCTION Front and rear Tubular space frame

MATERIAL 4130 steel round tubing 12,7mm to 30mm diameter

OVERALL L / W / H (mm) 2920 / 1420 / 1081

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1180 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 152

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper.

TYRES (Fr / Rr) 20.5x7.0-13 / 20.5x7.0-13 Hoosier

WHEELS (Fr / Rr) 7.0x13, +22mm offset, 1 pc Al rim / 7.0x13, +22mm offset, 1 pc Al rim

ENGINE 2007 Honda CBR 600 RR (PC40)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Student designed/built, primary and secondary

FUEL Gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 7700

DRIVE TYPE Chain 520 X-Ring, 4-speed gearbox

DIFFERENTIAL Drexler Limited Slip Formula Student 2010

COOLING side mounted radiator, 844 cfm fan mounted to shroud, electric water pump

BRAKE SYSTEM 4-Disk system, self developed floating, Hardox, hub mounted rotors, AP Racing cylinders, ISR caliper

ELECTRONICS

ULM

University of Applied Sciences Ulm

The Einstein Motorsport Team was founded in 2006. The first car built by students from Ulm started at Hockenheim in 2006. The actual car for 2014 is the eighth car in its history. Starting with the AI'06 (ALbert), every car was a continuous development with adoption of the parts which were proved in former cars. With a new monocoque, a Husaberg single-cylinder engine and a whole new team, the AI'14 will be the lightest car for now - and hopefully the most competitive. #Vodka-Weisswein

Engineering Design Priorities

#Lightweight

#Banana

#Reliability

#Vehicle Performance

#Self-Development

#onetwothreefourfivesix

Car 113

Pit 59

WRL 158

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION integral monocoque (vertical separation), made from carbon composite, injection molding

MATERIAL Basic Lay-Up with foam; Plies: 0/90, +/-45, 0/90, foam, 0/90, +/-45, 0/90, alu.honeycomb crashbox

OVERALL L / W / H (mm) 2600 / 1439 / 1082

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1215 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 115 / 125

SUSPENSION Double unequal length A-Arm, Pullrod actuated air-damper, adjustable in comp./rebound(high/low)

TYRES (Fr / Rr) 20x7-13 R25B Hoosier, 3 pc BBS rim / 7,0x13, 20 mm neg offset

WHEELS (Fr / Rr) 20x7-13 R25B Hoosier, 3 pc BBS rim / 7,0x13, 20 mm neg offset

ENGINE Husaberg FE570,camshaft/gear sensor, mod. cyl-head

BORE / STROKE / CYLINDERS / DISPLACEMENT 100mm / 72.0mm / 1 cylinders / 565cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Bosch, manifold sequential fuel injection,digital electronic ignition, inductive discharge ignition

FUEL unleaded fuel 98 ROZ

MAX POWER DESIGN (rpm) 7100

MAX TORQUE DESIGN (rpm) 5900

DRIVE TYPE chain drive (520 pitch)

DIFFERENTIAL GKN limited slip differential, student built housing, adjustable TBR

COOLING aluminium radiator, temperature controlled fan speed, crank driven waterpump

BRAKE SYSTEM self-developed rotors (steel), 4-piston front, 2-piston rear, Floater 5x7mm diameter (per rotor)

ELECTRONICS self-developed controls(shifting,cooling,telemetry),adjustable via tab,own gear sensor+shifter

VALÉNCIA
Universitat Politécnica de Valéncia

Car 24
Pit 39

Spain

FRAME CONSTRUCTION Front chassis carbon fiber monocoque with steel roll hoops and rear steel tubular frame

MATERIAL Carbon fiber prepreg and aramid honeycomb

OVERALL L / W / H (mm) 3150 / 1390 / 1435

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1200 / 1170

WEIGHT WITH 68kg DRIVER (Fr / Rr) 133 / 147

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 190x47 R13 Hoosier R25B

WHEELS (Fr / Rr) 190x47 R13 Hoosier R25B

ENGINE Honda CBR600RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Link G4+ Storm ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 9750

DRIVE TYPE 520 O-ring chain

DIFFERENTIAL Drexler limited slip differential

COOLING Twin sidepod mounted radiators

BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm diameter, adjustable brake balance

ELECTRONICS Electropneumatic Shifting System

The FSUPV01 is the university´s first Formula Student prototype. The main goal for the first year is to build and consolidate a competitive Formula Student Team able to design, manufacture, test and race a reliable competitive prototype.

Engineering Design Priorities

#Cornering
#Reliability
#Fast
#Lightweight
#Sexy

VELLORE
VIT University - Vellore

Car 54
Pit 74

WRL 293

World Ranking List rank at the end of 2013

India

FRAME CONSTRUCTION tubular space frame AISI 1020 Steel.

MATERIAL AISI 1020 Steel

OVERALL L / W / H (mm) 2610 / 1415 / 1185

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 179

SUSPENSION Double unequal length A-Arm. Push rod actuated coil-over.

TYRES (Fr / Rr) 205/510 R13 Continental 34M/205/510 R13 Continental 34M

WHEELS (Fr / Rr) 7x13, 22.5mm offset, 1 piece Al rim

ENGINE Honda CBR600RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Denso High Impedence sequential Injectors, Bosch External Electric Fuel Pump.

FUEL RON 98

MAX POWER DESIGN (rpm) 9700

MAX TORQUE DESIGN (rpm) 9200

DRIVE TYPE Chain drive, Chain 520, pitch 5/8 inch,

DIFFERENTIAL Quaife (QDF7ZR) Limited Slip Differential, Torque Bias Ratio 1:3.

COOLING Side mounted 28x28cm aluminium radiator with thermostat controlled electric fan.

BRAKE SYSTEM 4-Disk system, self developed rotors with diameter 240 front and 220 Rear, adjustable break balance.

ELECTRONICS Student Built Pneumatic Gear and Clutch Control Unit and Translogic MicroDash.

Four years ago a group of students decided to lend their theoretical knowledge some leverage, by forming Pravega Racing which means „High Speed" in sanskrit and it augurs well with the team's rapid growth in the recent past as they were the 2nd fastest growing team in the world after FSAEI 2013 results. This year they have taken a step forward by integrating DAQ into our testing phase, using carbon fiber extensively to reduce weight, and pneumatic shifting to reduce shift time substantially.

Engineering Design Priorities

#pneumatic
#weight reduction
#Data Acquisition
#carbon fibre
#TTC
#speed

WEINGARTEN

University of Applied Sciences
Ravensburg-Weingarten

The Formula Student Team Weingarten consists of about 45 students, who spent one year to build their own Formula Student car. The main aim of the 2014 car, the „Stinger 14" was to improve the speed and the reliability of the car. All in all the goal was to reduce our weight, but still prevent the stability of the car. To improve our performance on the track a new aerodynamic package was developed and the driving dynamics were improved radically.

Engineering Design Priorities

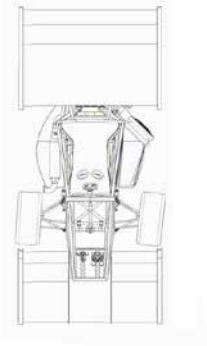
#Suspension

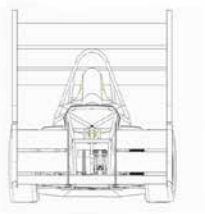
#Aero

#Frame

#Electronics

Car 60
Pit 91





WRL 78

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION tubular space frame

MATERIAL E355 steel round tubing 14mm to 28mm dia

OVERALL L / W / H (mm) 3035 / 1408 / 1336

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1630 / 1200 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 155 / 138

SUSPENSION Independent double A-arm wheelsuspension with pullrod actuated damper

TYRES (Fr / Rr) 20.5x7.0-13 Hoosier R25B

WHEELS (Fr / Rr) 7.0x13, 22mm offset, 1pc Mg Rim

ENGINE Modified Honda CBR 600 RR (PC40)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Student designed/build fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE xw-Ring Chain 520

DIFFERENTIAL Drexler limited slip differential

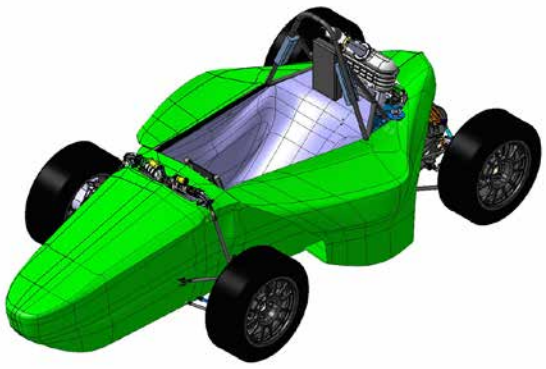
COOLING Side pod mounted radiator, electric controlled fan and waterpump

BRAKE SYSTEM 4-Disk system, adjustable brake balance, ISR calipers

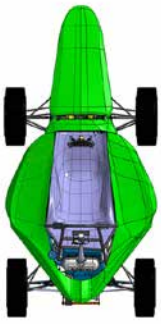
ELECTRONICS wirinf harness sealed to IP67, Electropneumatic Shifting System, CAN-to-Wlan Live-Telemetry System

WUPPERTAL

University of Wuppertal



Car 100
Pit 82



WRL 219

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Tubular steel space frame

MATERIAL E355+N, round tubing 25mm diameter

OVERALL L / W / H (mm) 2818 / 1388 / 1113

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 126 / 154

SUSPENSION unequal length, double wishbones, pushrod front and rear actuated Oehlins dampers

TYRES (Fr / Rr) Dry: 20.5x7 Hoosier R25B, Wet: Avon A15

WHEELS (Fr / Rr) OZ Racing Superleggera 13x7 (front and rear)

ENGINE modified 2008 Yamaha R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.3:1

FUEL SYSTEM student build fuel injection system using Bosch MS4 Sport, fully sequential, variable runner length

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE X-Ring Chain #520

DIFFERENTIAL Torque sensitive limited slip differential with adjustable TBR

COOLING Single side pod mounted radiator with ECU controlled electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 250/200mm diameter (f/r), driver adjustable brake balance

ELECTRONICS Multifunctional display, wireless engine setup/ telemetry, electric shift and clutch system

XIAMEN
Xiamen University of Technology

Car 33
Pit 90

WRL 357
World Ranking List rank at the end of 2013

China

FRAME CONSTRUCTION Tubular space frame

MATERIAL 4130 Chromoly

OVERALL L / W / H (mm) 2680 / 1270 / 1145

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1100 / 1050

WEIGHT WITH 68kg DRIVER (Fr / Rr) 105 / 115

SUSPENSION Double unequal length A-Arm, pushrod actuated nearly horizontally oriented spring and damper ,ARB

TYRES (Fr / Rr) Hoosier 18.0/6.0-10 LC0

WHEELS (Fr / Rr) 3 part hybrid rims (CFRP with Aluminum center)

ENGINE ASIAWING LD450

BORE / STROKE / CYLINDERS / DISPLACEMENT 96mm / 62.1mm / 1 cylinders / 449cc

COMPRESSION RATIO 11:1

FUEL SYSTEM Honda CFR450 fuel pump ,electronic fuel injection

FUEL 98 octane

MAX POWER DESIGN (rpm) 7500

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE 520 chain

DIFFERENTIAL Drexler Differential

COOLING Side mounted water cooler

BRAKE SYSTEM 4-Disc floating rotor,180mm diameter drilled

ELECTRONICS MoTec M400

As one of the most experienced teams in China,Xiamen University of Technology brings the ameliorated Amoy-2014 with great passion and ethusiasm.We are so excited to show our car which runs a single-cylinder engine, a carbon fiber lightweight body, an electro-pneumatic shifting system and a tightly-packaged drivetrain. Endeavor were made on testing and tuning for ultimate performance.Looking forward to the International competition,we will put our great efforts completely and thrive for triumph!

Engineering Design Priorities

#Drivability
#Carbon fiber
#Lightweight
#Electric control
#Lower CG
#Maintainability

WI-FI
WLAN

Instruction for the use of Wi-Fi

FSG participants, registered press and sponsors will get access to the WiFi in the Recreation Tent, FSG Forum & the small stands.

1. Select the **„FSG_Wifi“** network.
2. Log in with your formulastudent.de account credentials.
3. Accept the certificate for fsgctrl.event.formulastudent.de (on some devices only).

If you have any questions or problems so please go to the FSG Info Desk in the FSG Forum near the VIP lounge.

Anleitung zur WLAN Nutzung

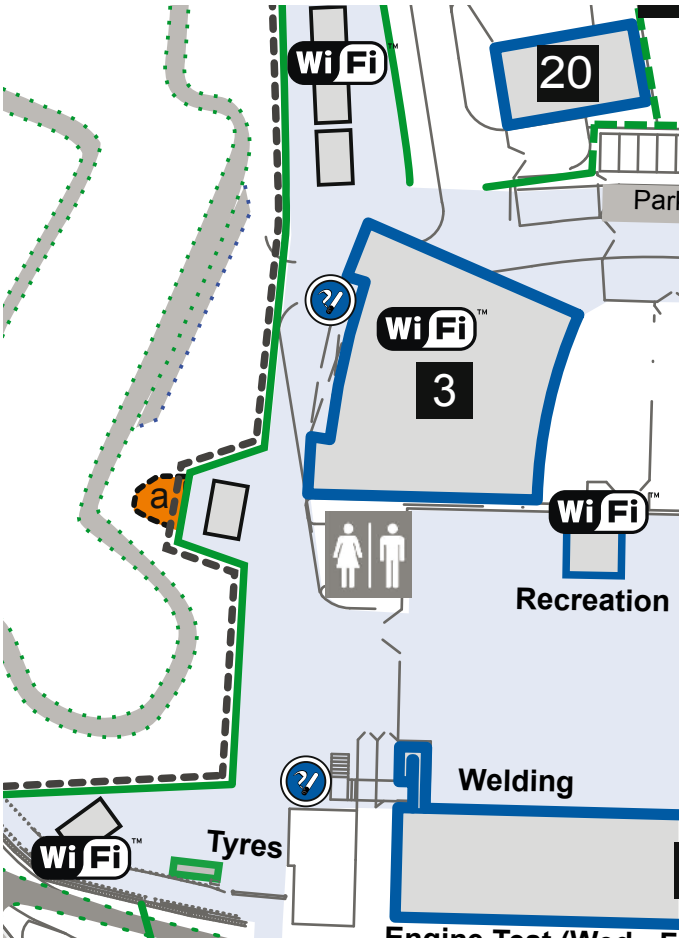
FSG Teilnehmer, registrierte Presse und Sponsoren bekommen Zugang ins WLAN im Recreation Zelt, FSG Forum und an den kleinen Tribünen.

1. Das Netzwerk **„FSG_Wifi“** auswählen.
2. Mit den Zugangsdaten für formulastudent.de einloggen.
3. Akzeptieren des Zertifikates für fsgctrl.event.formulastudent.de (auf manchen Geräten).

Bei Fragen oder Problemen begeben Sie sich bitte zum FSG Info Desk im FSG Forum in der Nähe der VIP Lounge.

Technical details for advanced users

Standard: IEEE 802.11 g/n
Security: WPA2 Enterprise/WPA2 with IEEE 802.1x
Authentication: Tunnelled TLS (TTLS)/Protected EAP (PEAP)
Inner Authentication: MSCHAPv2



AACHEN
RWTH Aachen University

Car E99
Pit 11

WRL 74

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Two piece CFRP structure

MATERIAL aluminium honeycomb and Rohacell core material

OVERALL L / W / H (mm) 2735 / 1440 / 955

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 182

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) Hoosier, 205x70 R13

WHEELS (Fr / Rr) 7x13, -25mm offset, 1 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 42kW

MOTOR TYPE DYNAX 500e: permanently excited trans. flux

MAX MOTOR RPM 10000

MOTOR CONTROLLER MSR Controller

MAX SYSTEM VOLTAGE 453V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7.3kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 7:1 / --

DRIVE TYPE Two stage planetary gear

DIFFERENTIAL Torque-vectoring control

COOLING Sidepod mounted radiator

BRAKE SYSTEM milled steel C45, hub mounted, 240mm outer diam., 186mm inner diam., drilled

ELECTRONICS Live-Telemetry System

Ecurie Aix, the Formula Student Team at RWTH Aachen University, was founded in 1999 as one of the first teams in Germany.The name "Ecurie Aix" is a reference to the team´s international home base in the German city of Aachen, which lies right at the border to Belgium and the Netherlands.Racing has a history in the region around Aachen – race tracks like the famous Nürburgring or Spa-Francorchamps are just a one-hour drive away.

Engineering Design Priorities

#Agile Driveability

#Safety

#Reliability

AMBERG
University of Applied Sciences Amberg-Weiden

Car E23
Pit 24

WRL 6

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION CFRP sandwich structure, full monocoque

MATERIAL CFRP and Aluminium honeycombs

OVERALL L / W / H (mm) 2526 / 1408 / 1234

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1525 / 1210 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 142 / 144

SUSPENSION Double unequal length A-Arms. Pull - Rod actuated Öhlins Spring/Damper Unit

TYRES (Fr / Rr) Hoosier 20.5 x 7.0-13; R25B

WHEELS (Fr / Rr) 13"x7 inch wide; CFRP Rim base; 10mm offset

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / centerless wheelhub / 22.2 kW per motor

MOTOR TYPE watercooled synchronus motor

MAX MOTOR RPM 1200

MOTOR CONTROLLER Unitek Bamocar D3 700/400

MAX SYSTEM VOLTAGE 403V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo - graphite / 6.45 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1 / 1:1

DRIVE TYPE Direct drive without any transmission

DIFFERENTIAL electronic torque vectoring and vehicle dynamic control

COOLING Water cooled heat exchanger on the left and right side, air cooled accumulator

BRAKE SYSTEM 4-disk system, rotors with 185mm diameter, adjustable brake balance, 4 ISR calipers front and 2 rear

ELECTRONICS selfdesigned car controll unit, selfdesigned Live-Telemetry System, vehicle dynamic control

In our tenth year in Formula Student we have created a unique concept to further improve our car, the RS 14. Based on our centerless wheel hub, we were able to develop an electric motor which is mounted in the wheel itself, removing the need for a power transmission. This new concept also helped to reduce the part variety, since all four motors and wheel hubs are identical. To enhance the dynamic behaviour of our car, we developed our own vehicle control system and incorporated torque vectoring.

Engineering Design Priorities

#Monocoque

#Centerless wheelhub motor

#Torque vectoring

#Vehicle control system

#Self-designed telemetry

AUGSBURG

University of Applied Sciences
Augsburg

Due to the big development that we made with our previous car, we are proud to participate again with a significant improved car. The monocoque of our third car is built with a new layer structure and a tailor made nose crash structure. Furthermore we designed our first aerodynamic bodywork. The biggest electrical development is the implementation of torque vectoring and traction control. Thereby we were able to improve our electronic stability control system to a great extend.

Engineering Design Priorities

#Maintainability

#Lightweight

#Internal development

#Reliabilitiy

#Handling control

Car E69

Pit 34

WRL 34

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION One piece Composite monocoque with anti rollbar structures

MATERIAL Carbon fiber with foam / S355 Steel Tubular anti rollbars 25mm diam.

OVERALL L / W / H (mm) 2925 / 1449 / 1151

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 213

SUSPENSION Double unequal length A-Arms, Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 205 / 510 R13 34 M, Continental

WHEELS (Fr / Rr) 205 / 510 R13 34 M, Continental

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Left, Rear Right / 47kW, 47kW

MOTOR TYPE 1FE11082-6W.10 Siemens

MAX MOTOR RPM 9000

MOTOR CONTROLLER Infineon Hyprid Pack 1 Pin Fin

MAX SYSTEM VOLTAGE 403

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6.66

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:5,1 / n/a

DRIVE TYPE One stage transmission gear

DIFFERENTIAL n/a

COOLING One side pod mounted radiotor cooled by airstream

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance

ELECTRONICS Multifunctional Steering Wheel, selfdesigned Live-Telemetry, Torque Vectoring, Traction Control

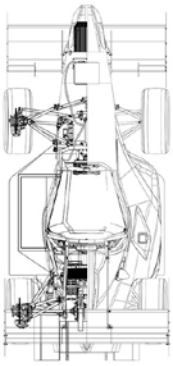
BARCELONA

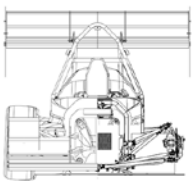
PT University of Catalonia -
Engineering School of Barcelona

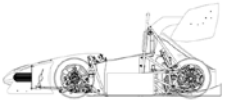
ETSEIB Motorsport is the FS Team of Barcelona. We seek reliability and high performance in our projects. We focus on self-developing our systems, achieving deep understanding of its functioning and collecting broad and useful know-how.The CATO7-e gathers this accumulated knowledge. We have manufactured more parts than ever, including our 3rd CF monocoque and our own motor controllers. We expect it to be fully operative and running at the highest level at FSG, it has been designed to succeed.

Car E54

Pit 2







WRL 37

World Ranking List rank at the end of 2013

Spain

FRAME CONSTRUCTION Front CFRP Monocoque. Rear Steel tubular space frame. Structural CFRP floor.

MATERIAL 245 T2 carbon prepreg. Steel round tubing St-52. Diameter 25 mm.

OVERALL L / W / H (mm) 2863 / 1320 / 1220

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1125 / 1090

WEIGHT WITH 68kg DRIVER (Fr / Rr) 147 / 180

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring and damper. Front and rear anti-roll bar.

TYRES (Fr / Rr) 20.5x7.0 R13, Hoosier R25B

WHEELS (Fr / Rr) 7.0x13, 22 mm offset, Al-Mg Rim / 7.0x13, 22 mm offset, Al-Mg Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Left, Rear Right / 40 kW per Motor

MOTOR TYPE Permanent Magnet Synchronous Machine

MAX MOTOR RPM 6000 rpm

MOTOR CONTROLLER Self-designed

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Polymer Li-ion / 6.67 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:4.5 / n/a

DRIVE TYPE Two independent pulley belt transmission

DIFFERENTIAL n/a

COOLING Motors and inverters watercooled. Batteries aircooling.

BRAKE SYSTEM 4-Disk system, self developed steel rotors, adjustable brake balance.

ELECTRONICS Selfdesigned Dash Panel, LV board, control box and data acquisition. dSPACE main ECU and TC.

BAYREUTH
University of Bayreuth

Elefant Racing e.V. was founded in spring 2004 at the University of Bayreuth. Since season 2010/11 we develop electrically powered vehicles. For our latest race car, the "FR14 Norsu", we focused on weight reduction of the vehicle dynamic units. Therefore we switched from 13" to 10" wheels and developed a 10" hybrid CFRP-Aluminum wheel. Furthermore, our car features a self-developed and programmed electronic control unit. For further information, you are welcome to visit our pit.

Engineering Design Priorities

#low weight

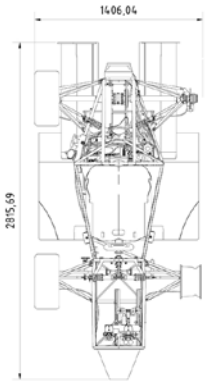
#top 10 ranking

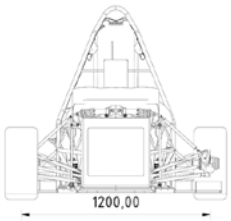
#energy efficiency

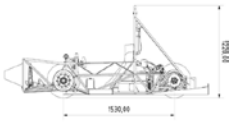
#high driving performance

Car E21

Pit 29







WRL 18

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION One piece tubular steel spaceframe with weightoptimized triangulation

MATERIAL seamless, cold drawn precision steel tubes

OVERALL L / W / H (mm) 2815 / 1406 / 1228

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 130

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper.

TYRES (Fr / Rr) Hoosier 18x6.0-10, R25B

WHEELS (Fr / Rr) 6.0x10, 19mm offset, CFRP Rim, 7075-Al Wheelcenter

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear Mid / 100kW

MOTOR TYPE Enstroj Emrax 228 MidVoltage LC

MAX MOTOR RPM 4800

MOTOR CONTROLLER custom modified Unitek Bamocar D3

MAX SYSTEM VOLTAGE 504

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo with AL and CuNi Tabs / 5,55 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:3.0 /

DRIVE TYPE Belt drive

DIFFERENTIAL Drexler Differential

COOLING Rear mounted radiator and fan attached to a parallel cooling system

BRAKE SYSTEM 4-Disk system, self developed C/C-SiC rotors with 172mm diameter, adjustable brake balance

ELECTRONICS Sensor node system connected via ethernet, steering wheel with smartphone,

BRAUNSCHWEIG
Technische Universität Braunschweig

Established in 2000, the Lions Racing Team from the Technical University of Brunswick is the 2nd oldest FS team in Germany. Consisting of roughly 50 Students from different departments, we are proud to welcome our 3rd electric racecar to our family, the LR14.To reach our goals of becoming faster, lighter, easier to maintain and to reach a place among the Top 10 teams overall, we built in a 80% lighter new motor, compromised the battery package and developdeveloped an all new aerodynamic package.

Engineering Design Priorities

#reliability

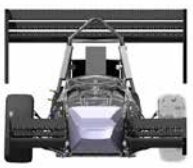
#lightweight

#safety

#maintenance

Car E19

Pit 38



WRL 30

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Tubular space frame

MATERIAL 4130 steel round material; 10mm to 25mm diameter

OVERALL L / W / H (mm) 2896 / 1325 / 1127

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1545 / 1140 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 137 / 186

SUSPENSION Double antiparallel unequal length A-Arm. Push rod actuated spring Öhlins / damper, anti-roll bar

TYRES (Fr / Rr) 205/510 R13 34M, Continental

WHEELS (Fr / Rr) 7,5x13, 10mm offset, 3pc AlMgSi1 Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / rear / 100kW

MOTOR TYPE Enstroj Emrax 228 HV LC

MAX MOTOR RPM 4000

MOTOR CONTROLLER UniTek BAMOCAR-D3-700-400-RS

MAX SYSTEM VOLTAGE 470V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7,056kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:3,5 /

DRIVE TYPE

DIFFERENTIAL Drexler FSAE, clutch pack limited slip

COOLING Single radiator rear mounted with electric fans

BRAKE SYSTEM 4-Disk System, self developed

ELECTRONICS wiring harness sealed to IP55, Multifunction Dashboard, Live Telemetrie & Data Logging System

BREMEN
University of Bremen

Car E72
Pit 14

WRL 56
World Ranking List rank at the end of 2013
Germany

Founded in August 2011 by a small group of motivated students, Bremergy Racing established itself as the biggest students' group on the University of Bremen. Today we cooperate with 13 research institutes with a mere focus on Fibre Reinforced Plastics, electrical driving systems and mechanical construction. The aims of our team are to design a sustainable, simple and high performing race car. Therefore Nature Fibre Reinforced Plastics (NFRP) are a key technology on our design.

Engineering Design Priorities

#efficiency
#simplicity
#sustainability
#cost

FRAME CONSTRUCTION steeltube spaceframe

MATERIAL E355 steel tubes with different wall thickness

OVERALL L / W / H (mm) 3095 / 1440 / 1266

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 167 / 195

SUSPENSION Double A-arm suspension. Pull rod in front, Push rod rear.

TYRES (Fr / Rr) 20.5 x 7.0-13, R25B, Hoosier

WHEELS (Fr / Rr) 7.0x13, 22 mm offset, OZ Racing Al-Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Left/Right, inside / 72 kW

MOTOR TYPE LMC D135 RAGs

MAX MOTOR RPM 4820

MOTOR CONTROLLER Kelly Type KDH12401E with regen

MAX SYSTEM VOLTAGE 110V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 6,6kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:5 / 1:1

DRIVE TYPE Planetary gear implemented in uprights

DIFFERENTIAL Independently driven motors with torque vectoring

COOLING 3D-printed cooling ducts with 2 xxx mm electric fans attached to the motors

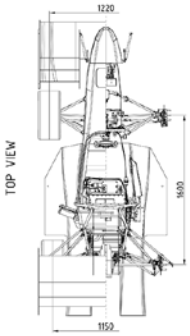
BRAKE SYSTEM 4-Disk system with adjustable brake balance,

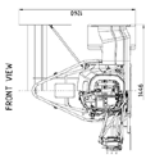
ELECTRONICS Mulit-level based controller, developed using RCP, configurable steering wheel, Live-Telemetry

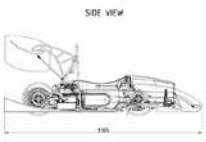
BUDAPEST
Budapest University of Technology and Economics

Car E14
Pit 3

WRL 15
World Ranking List rank at the end of 2013
Hungary







The BME Formula Racing Team from TU Budapest was established in 2007 by several enthusiastic master and postgraduate students. This season though, the team operates with 95 active members. In 2014 the FRT enters the competition with its 9th car, the FREC-004, which is also the 4th electric racecar built by the team. BME FRT's goal for this season is to be a mentionable competitor against the best teams of the world at FS Germany and aims to reach the top 10 in the World Ranking.

Engineering Design Priorities

#maneuverability
#aesthetics
#reliability
#innovation
#adjustability
#wheight reduction

FRAME CONSTRUCTION CFRP sandwich monocoque with tubular steel space frame mounted on the rear

MATERIAL CFRP & S235 JR

OVERALL L / W / H (mm) 3165 / 1446 / 1260

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1220 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 165 / 165

SUSPENSION Double unequal length A-Arm, pull-rod (front) and push-rod (rear) actuated spring and damper unit

TYRES (Fr / Rr) Hoosier 20.0 x 7.5-13 R25B

WHEELS (Fr / Rr) 8x13

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear, inside the chassis / 100 [kW]

MOTOR TYPE Enstroj - EMRAX 228 High Voltage LC

MAX MOTOR RPM 4000 [1/min]

MOTOR CONTROLLER Piktronik SAC-41

MAX SYSTEM VOLTAGE 306.

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 5.6 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2,045 / n/a

DRIVE TYPE Independent chain drive

DIFFERENTIAL Electronic differential

COOLING Liquied cooled motor and motor controller, radiator moundted in the left sidepod

BRAKE SYSTEM Custom heat treaded rotors, AP Racing Calipers, adjustable brake balance

ELECTRONICS CAD designed wire harness, live telemetry via WiFi from 300m distance, self-developed LV units

CLAUSTHAL
Clausthal University of Technology

We are a young team but motivated and strongly connected to our sponsors and the Clausthal Institute Of Technology. We are aiming on a weight reduction of close to 30% compared to our last car, involving an improved design and construction. This acknowledges our ongoing progress. All our work is focused on a successful season 2014 in Hockenheim and Italy and we wish every team a thriving event. And on that bombshell, it's time to end!

Engineering Design Priorities

#wicked gearbox

#30% weight reduction

#nais rims

#fancy suspension

#such speed

Car E42

Pit 4

WRL 53

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION laser cut and welded steel tubes

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2740 / 1400 / 960

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 143 / 175

SUSPENSION Dbl. uneql. length A-Arm. Pull rod actuated diagonal (Fr)/horizontal (Rr) oriented spring and damper

TYRES (Fr / Rr) Hoosier, 18.0 x 6.0-10, R25B

WHEELS (Fr / Rr) Hoosier, 18.0 x 6.0-10, R25B

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / rear center / 75

MOTOR TYPE permanently excited synchronous AC motor

MAX MOTOR RPM 12200

MOTOR CONTROLLER SIMOTION (Siemens power inverter)

MAX SYSTEM VOLTAGE 336V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6.1

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:4.36 / 1:2

DRIVE TYPE planetary gearbox

DIFFERENTIAL Limited slip differential

COOLING rear mounted radiator, water cooled, 2 electric fans

BRAKE SYSTEM 4-Disk, Floating, steel, hub mounted, 200 mm outer diam., 100 mm inner diam, 5 (Fr)/4 (Rr) mm thick

ELECTRONICS Arduino Mega 2560 R3 Microcontroller

DARMSTADT
Technische Universität Darmstadt

Competing at FSG since 2006, in 2014 Dart Racing is taking part with its ninth car. For the third time we are competing in FSE. 2014 focus was set on an overall efficient Design, taking every part of the car to the next level. This includes a new monocoque and suspension design, new electrical motors and an increased accumulator capacity. Our Team members who are working hard on designing, manufacturing and testing the car since late summer 2013 are looking forward to a good competitin at FSG.

Engineering Design Priorities

#56

#DART Racing

#FSE

#thigth is goog

#FSG

Car E56

Pit 12

WRL 24

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Single Piece Monocoque

MATERIAL UD CFRP, Aluminium Honeycomb

OVERALL L / W / H (mm) 2977 / 1416 / 1180

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1525 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 121 / 131

SUSPENSION Double unequal length A-Arm, pullrod-actuated, air-spring

TYRES (Fr / Rr) Pirelli 185/40 R15 low section

WHEELS (Fr / Rr) 6x15, 15mm offset, 2pc AL/CFRP Hybrid Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear, left and right / 110kW

MOTOR TYPE BRUSA/DART PSM

MAX MOTOR RPM 24.000

MOTOR CONTROLLER BRUSA DMC 514

MAX SYSTEM VOLTAGE 420V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7,02kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:18,5 / -

DRIVE TYPE Two stage spur gear transmission

DIFFERENTIAL electronic

COOLING Sidepot mounted radiator, one side

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance

ELECTRONICS Dashboard integrated into monocoque and steering wheel, Live-Telemetry System

DEGGENDORF
University of Applied Sciences
Deggendorf

Car E44
Pit 17

WRL 19

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION CFRP monocoque with roll hoops

MATERIAL Monocoque: preimpregnated fibres; aluminium honeycomb ; Roll Hoops: E355

OVERALL L / W / H (mm) 2963 / 1420 / 1193

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1208 / 1212

WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 158

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring and damper

TYRES (Fr / Rr) Continental C14

WHEELS (Fr / Rr) 7x13, 22mm offset, 1 pc Al OZ-Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / middle-rear / 85 kW

MOTOR TYPE Continental BAS+

MAX MOTOR RPM 19000

MOTOR CONTROLLER Continental REX

MAX SYSTEM VOLTAGE 353

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LIP / 8.7 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:10 / n/a

DRIVE TYPE 2x spur gear

DIFFERENTIAL n/a

COOLING 2 side mounted Setrap radiators

BRAKE SYSTEM 4-Disk system, self developed rotors with 231mm diameter, adjustable brake balance

ELECTRONICS selfdesigned Live-Telemetry System with Raspberry PI

Fast Forest represents the Deggendorf Institute of Technology in Formula Student events. Our sixth season's team consists of 65 active team members. With FF06 we decided to design an entirely new car. The construction contains a CFRP monocoque, a completely revised drivetrain and a new suspension. With our new telemetry system and the integrated Raspberry PI we will be able to control all functions of our car in real time. Many additional changes will make FF06 ready to race in Hockenheim!

Engineering Design Priorities

#Reduced inertia moments
#New cell technology
#Full CFRP Monocoque
#New PE software
#New Suspension design
#New Aero package

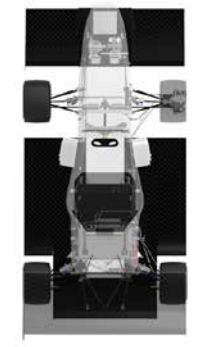
DELFT
Delft University of Technology

Car E1
Pit 31

WRL 2

World Ranking List rank at the end of 2013

Netherlands



FRAME CONSTRUCTION Composite monocoque with integral aluminium front hoop.

MATERIAL Aluminium honeycomb sandwich panel.

OVERALL L / W / H (mm) 2856 / 1383 / 1054

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1150 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 110 / 113

SUSPENSION Double unequal length CFRP A-arms. Push rod actuated vertically oriented spring and dampers.

TYRES (Fr / Rr) 368 x 209.5 R254 Apollo/368 x 209.5 R254 Apollo

WHEELS (Fr / Rr) 8.5x10, 27 mm offset, 2 pc CFRP Rim/8.5x10, 27 mm offset, 2 pc CFRP Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / Inside wheels. / 30 kW

MOTOR TYPE 3 phase synchronous permanent magnet.

MAX MOTOR RPM 20000

MOTOR CONTROLLER 4x AMK KW26-S5

MAX SYSTEM VOLTAGE 580V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiCoO2 - Graphite / 6.3 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:10.29 / N/A

DRIVE TYPE One stage planetary gear system in wheel

DIFFERENTIAL Software actuated electrical differential (active yaw rate control).

COOLING Single water cooling system with two side mounted radiators.

BRAKE SYSTEM Self-developed aluminium matrix composite rotors, modified brake calipers, adjustable brake balance.

ELECTRONICS ECU, AMS, and sensor nodes self-designed. Telemetry using XBee module.

The Delft University of Technology Racing Team consists of 80 team members from eight different faculties. The newest car, the DUT14, can be described as an extremely lightweight four-wheel driven electric car enhanced with aerodynamic devices, a slip ratio controller and a yaw rate controller. All four motors are placed inside the wheels together with an one-stage planetary transmission. With the self-designed tyres the team was able to improve the tyre behavior.

Engineering Design Priorities

#aerodynamics
#low centre of gravity
#lightweight
#four wheel drive
#tyres
#motors in wheel

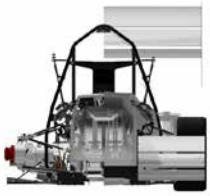
DRESDEN
Technische Universität Dresden

Elbflorace is an association of 70 motivated and committed students of the University of Technology Dresden. We share the passion for motor sport and pursue the common goal to successfully participate in the design competition Formula Student. Our fourth electric race car will pay tribute to what worked well in the past and surprise with new, innovative parts and qualities. This year's highlights are the full aero package as well as the motors which are incorporated into the hub of the wheels.

Car E5
Pit 23

WRL 9
World Ranking List rank at the end of 2013

Germany



FRAME CONSTRUCTION Whole monocoque

MATERIAL Wet lay-up carbon, aramid honeycomb, foam

OVERALL L / W / H (mm) 3062 / 1392 / 1293

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 136 / 152

SUSPENSION Double length A-Arm, Push rod actuated vertically oriented spring and damper

TYRES (Fr / Rr) 205/510 R13 Continental / 205/510 R13 Continental

WHEELS (Fr / Rr) 7x13, 42mm offset, 1 pc Mg Rim / 7x13, 42mm offset, 1 pc Mg Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / At each rear wheel / 24kW per motor

MOTOR TYPE Siemens 1FE1051 synchronous machine

MAX MOTOR RPM 40.000

MOTOR CONTROLLER 2 Siemens SINAMICS S120 T23

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 33:1 / -

DRIVE TYPE 2 level, spur gear and planetary gear

DIFFERENTIAL Electronic differential

COOLING 1 cooling circuit, located under the left sidepod

BRAKE SYSTEM 4 Disk system, self made rotors with 220mm diameter, AP Racing calipers

ELECTRONICS Data logging via National Instruments sb RIO, live monitoring with WLAN, SmartSensor-PCBs

EINDHOVEN
Eindhoven University of Technology

The UREO9 is the fifth electric car of University Racing Eindhoven (URE). This year, URE decided to focus on two key points; reliability and performance. In order to improve the reliability of the UREO9, the race car is equipped with sensor nodes to decrease the influence of EMI on measurement signals. Improvements in terms of performance have been made by the addition of a full aerodynamic package and the improvement of the traction control system and regenerative braking.

Engineering Design Priorities

#Traction control

#Aeropackage

#Reliability

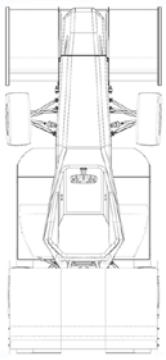
#Sensor nodes

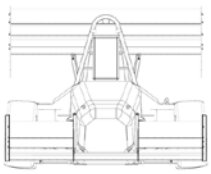
#Performance

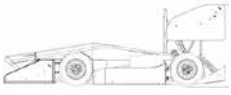
Car E40
Pit 10

WRL 22
World Ranking List rank at the end of 2013

Netherlands







FRAME CONSTRUCTION Full carbon fiber monocoque with steel main hoop and aluminum front hoop

MATERIAL Unidirectional dominated prepreg carbon fibre sandwich panel with aluminum honeycomb

OVERALL L / W / H (mm) 3045 / 1430 / 1117

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1180 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 117 / 161

SUSPENSION Double wishbone unequal length, (Fr: pullrod) / (Rr: pushrod) actuated KONI F1 damper

TYRES (Fr / Rr) Apollo 205/50 R10 40P

WHEELS (Fr / Rr) 10" carbon fibre rims, aluminum center (hybrid)

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear axle / 100 kW @ 1250 rpm

MOTOR TYPE YASA-750, axial flux PMSM

MAX MOTOR RPM 2500

MOTOR CONTROLLER Prodrive Custom Developed

MAX SYSTEM VOLTAGE 398

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Li(NiCoMn)O2 / 7,05

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1.6 / -

DRIVE TYPE Planetairy gear set

DIFFERENTIAL Drexler Formula Student 2010 limited slip

COOLING Dielectric oil cooled motor and motor controller in combination with a single radiator

BRAKE SYSTEM Full floating 180mm, 126mm custom designed, AP Racing CP4227 2x25,4mm, AP Racing CP7854 16,8mm bore

ELECTRONICS Traction control, regenerative braking, dSPACE MicroAutoBox II (ECU), MoTeC ADL3

Audi
Vorsprung durch Technik

A thrilling 24 hours crystallised in that one second when I realised: Audi just made history.

From an early age, I wanted to become an engineer. Even as a little girl growing up in India, I disassembled and then reassembled our radio. I have since become an Audi racing engineer. I blend not only technology but also strategic and organisational skills in the name of Audi. The objective remains the same: ensuring that even the tiniest details are perfect. Doing so allows us to rewrite motorsport history. After all, the Audi R18 e-tron quattro was the first hybrid vehicle to ever win Le Mans.

Leena Gade
Racing engineer for Audi Sport Team Joest
Degree: Aerospace Engineering

FREIBERG

TU Bergakademie Freiberg

With our 8th entry at the FSG we are once again looking forward to a great season. The RTo8 is the 3rd electric race car, combining new ideas like the casted inverter housing or the redeveloped casted rear frame with traditional concepts like the magnesium bodyshell. Our focus on an obvious lighter car than last season despite a new designed aeropackage will hopefully give us the chance to improve our last years results. We are eagerly awaiting the upcoming events!

Engineering Design Priorities

#safety and reliability

#weight reduction

#variety of materials

#improved vehicle dynamics

#variety of manufacturing

Car E76

Pit 7

WRL 8

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION tubular steel space frame with CFRP reinforcements

MATERIAL 25CrMo4 and CFRP

OVERALL L / W / H (mm) 3170 / 1404 / 1240

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 144

SUSPENSION Double unequal length A-Arms, Pull rod actuated spring/damper, ARB with adjustable blades

TYRES (Fr / Rr) Continental C14 205/510 R 13

WHEELS (Fr / Rr) Continental C14 205/510 R 13

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 40kW

MOTOR TYPE Bosch SMG 138/80

MAX MOTOR RPM 15000

MOTOR CONTROLLER Bosch INV 2.2

MAX SYSTEM VOLTAGE 400V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6.5kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 10.1 /

DRIVE TYPE self designed two-stage gearbox

DIFFERENTIAL torque vectoring

COOLING motors and motor controllers are seperatly water-cooled, Twin side pod mounted radiators

BRAKE SYSTEM self designed casted calipers and rotors with 210mm diameter, adjustable brake balance

ELECTRONICS self developed VCU, VDCU, BMS, driver information system

HAMBURG

Hamburg University of Technology

Representing the TUHH the Team e-gnition Hamburg consits of 60 students. Founded in 2011 e-gnition Hamburg developed the third electrical Formual Student race-car of its history. Based on the technical expertise made in the past the egn14 is 50kg lighter. This became possible by using new accumultor cells, motors and doing the bodywork with an environmental friendly material based on natural fibres. At this point we would like to say thank you to all our supporters and Sponsors!

Engineering Design Priorities

#compact package

#reliable

#low center of gravity

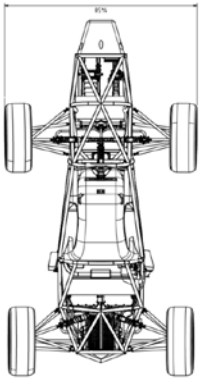
Car E78

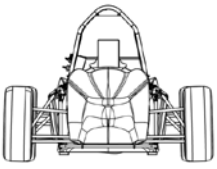
Pit 13

WRL 54

World Ranking List rank at the end of 2013

Germany





FRAME CONSTRUCTION tubular space frame

MATERIAL S355

OVERALL L / W / H (mm) 2772 / 1457 / 1085

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1540 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 150

SUSPENSION double unequal length A-Arms Push rod actuated spring & damper with U-anti roll bar

TYRES (Fr / Rr) 7x13 Hoosier

WHEELS (Fr / Rr) 2pc Al/Mg Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / rear left / rear right / 60kW

MOTOR TYPE Emrax 207

MAX MOTOR RPM 6000

MOTOR CONTROLLER Unitek Bamocar-D3 700/400

MAX SYSTEM VOLTAGE 425

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY / 7kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 4:1 /

DRIVE TYPE

DIFFERENTIAL electrical

COOLING

BRAKE SYSTEM

ELECTRONICS

HANNOVER
Leibniz Universität Hannover

Car E7
Pit 33

WRL 16
World Ranking List rank at the end of 2013
Germany

FRAME CONSTRUCTION Single piece CFRP Monocoque.

MATERIAL Prepreg with rigid foam based on polymethacrylimide

OVERALL L / W / H (mm) 2667 / 1400 / 1128

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1555 / 1220 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 129

SUSPENSION Double unequal length A-Arm, Linear pull rod actuated horiz. orientated air spring/damper.

TYRES (Fr / Rr) 6.0/18.0-10, LCO Hoosier

WHEELS (Fr / Rr) 6.0/18.0-10, LCO Hoosier

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / All wheel drive / 22.5 kW

MOTOR TYPE AMK DT5-12

MAX MOTOR RPM 20000

MOTOR CONTROLLER AMK KW26S

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiMnNiCo / 6.1

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:13.2 / n/a

DRIVE TYPE

DIFFERENTIAL Electric differential

COOLING 2 sidepod mounted radiators, two seperate cooling systems, pump/fan controller

BRAKE SYSTEM 4-Disk system, self developed rotors with 203mm diameter, adjustable brake balance

ELECTRONICS Selfdesigned two way live-telemetry system, selfbuild wiring harness with special contacting,

HorsePower Hannover e.V. was founded in 2007 by a group of 10 engineering students. Our first events were Silverstone and Hockenheim in 2009 with the RacePony09, a combustion racecar. Step by step we learned about building an electric racecar. By retaining the know-how and establishing new structures of organisation, our team of more than 40 interdisciplinary students decided to implement a new concept, which means to develop an all wheel driven racecar with a single piece CFRP Monocoque.

Engineering Design Priorities

#all wheel drive

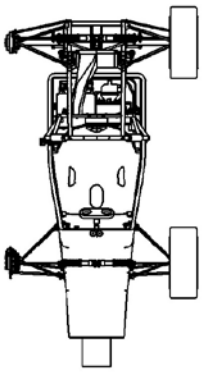
#reduce weight

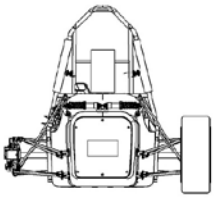
#low center of gravity

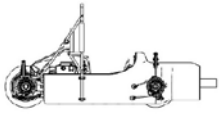
ILMENAU
Ilmenau University of Technology

Car E31
Pit 22

WRL 51
World Ranking List rank at the end of 2013
Germany







FRAME CONSTRUCTION CFRP monocoque, tubular steel front and main hoop

MATERIAL CFRP; structural foam (PMI)/ balsa wood, thickness 10mm and 20mm

OVERALL L / W / H (mm) 2609 / 1417 / 1229

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1545 / 1220 / 1222

WEIGHT WITH 68kg DRIVER (Fr / Rr) 143 / 175

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper (coil-over).

TYRES (Fr / Rr) 175x55 R13, Dunlop A8D / 175x55 R13, Dunlop A8D

WHEELS (Fr / Rr) 7x13, 18mm offset, 2 pc Al Rim / 7x13, 18mm offset, 2 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 45 kW, 45 kW

MOTOR TYPE RR, RL: INA Drives & Mechatronics

MAX MOTOR RPM RR, RL: 1600

MOTOR CONTROLLER Self-designed TSC Motor Controller

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 5,3 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1 / 1:1

DRIVE TYPE Direct drive

DIFFERENTIAL Electronic differential (independently driven rear wheels)

COOLING Single rear top mounted radiator with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disk system, self developed rotors with 200mm/185mm diameter, adjustable brake balance

ELECTRONICS Self-designed motor controller, self-designed CAN-sensor-actor board

Team StarCraft e.V. proudly presents our third fully electrically driven Formula Student car - the TSC-02Evo. About 60 engineering, social studies and economics students of Ilmenau University of Technology build our multidisciplinary team. We transfered all excellent and validated features from our former car into our current concept, e.g. our self-designed power electronics, the well-adapted accumulator box and the self-developed direct drive. Thereby the TSC-02Evo is our most competitve car.

Engineering Design Priorities

#Modularity

#Reliability

#Torque

#Self-development

INGOLSTADT

Technische Hochschule Ingolstadt

Schanzer Racing Electric e. V. (SRe) will participate in Formula Student Electric for the third time. The team of about 70 students of the „Technische Hochschule" Ingolstadt developed its third car in its third Formula Student Season ever. With a weight decrease of about 60kg, a carbon fiber monocoque, aerodynamic devices, torque vectoring and lots of new developments, Schanzer Racing wants to tie in with the really good results of the last two seasons. SCHANZER POWER

Engineering Design Priorities

#weight reduction

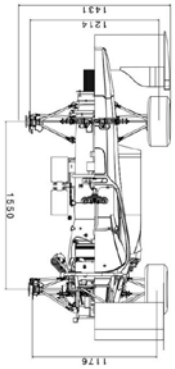
#light weight construction

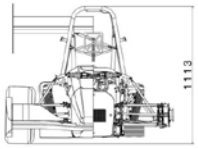
#SRE

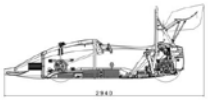
#integral construction

Car E34

Pit 27







WRL 10

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION monocoque

MATERIAL carbon fiber

OVERALL L / W / H (mm) 2940 / 1431 / 1113

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1214 / 1176

WEIGHT WITH 68kg DRIVER (Fr / Rr) 133 / 156

SUSPENSION Double equal length A-Arm. Push rod actuating horizontal orientated spring-damper

TYRES (Fr / Rr) Hoosier 21.0x6.5 R13

WHEELS (Fr / Rr) Hoosier 21.0x6.5 R13

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear / 80kW

MOTOR TYPE Entroj Emrax

MAX MOTOR RPM 4000 1/min

MOTOR CONTROLLER Infineon Hybrid Kit 1 (Pin Fin)

MAX SYSTEM VOLTAGE 360V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePo4 / 6.24kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2.4 /

DRIVE TYPE

DIFFERENTIAL Torque Vectoring

COOLING Rear mounted, two Radiators with two 25w Pumps

BRAKE SYSTEM 4-Disk system, self developed rotors and adjustable brake balance

ELECTRONICS Multifunctional Steering Wheel, wiring harness, selfdesigned Live-Telemetry System, Torque Vectoring

KAISERSLAUTERN

Kaiserslautern University of Technology

The Kaiserslautern Racing Team consists of 34 students from the TU and UAS Kaiserslautern. This year we built our third electric car. It has a carbon-fibre monocoque and is driven by two self-designed electric motors on the rear axle. Our latest innovation is an aero-kit composed of rear wing, front wing and a diffuser. In comparison to last years car we could reduce the weight at 40 kilograms to a total empty weight of 185kg.

Engineering Design Priorities

#Monocoque

#E64

#Leidenschaft

#Aero

#KaRaT

#Kaiserslautern

Car E64

Pit 6

WRL 48

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION monocoque with integrated rear and external accumulator container, tubular steel roll bars

MATERIAL CFRP with aramid honeycomb as core material

OVERALL L / W / H (mm) 2884 / 1350 / 1266

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1150 / 1050

WEIGHT WITH 68kg DRIVER (Fr / Rr) 113 / 140

SUSPENSION double wishbone suspension, unequal A-Arms with pullrods

TYRES (Fr / Rr) 18.0 x 6.0-10 / R25B / Hoosier

WHEELS (Fr / Rr) Selfmade 10x7

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / both rear / 45 kW

MOTOR TYPE VUES AFW507E PESM inrunner

MAX MOTOR RPM 7500

MOTOR CONTROLLER Infineon Hybrid Kit 1 Pin-Fin

MAX SYSTEM VOLTAGE 450

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6.63

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:-5.33 / N/A

DRIVE TYPE Internal spur gear drive, single stage

DIFFERENTIAL electronic torque vectoring

COOLING water cooling, radiator below rear wing

BRAKE SYSTEM Self-designed brake-disks, brake balance adjustable from cockpit

ELECTRONICS

KARLSRUHE
Karlsruhe Institute of Technology

Car E3
Pit 19

WRL 7
World Ranking List rank at the end of 2013
Germany

We are the Formula Student Team of the Karlsruhe Institute of Technology (KIT) - building racecars since 2006. From 2010 on we stand for „One team, two cars" designing, manufacturing and competing with a combustion car and an electric one. The KIT14e comes with a completely self-developed four-wheel-drive drive-train from motors over power electronics to the battery stack. We would like to thank all our supporters for the enormous help throughout the whole season.

Engineering Design Priorities
#Driveability
#Adjustability
#Drivers safety
#Reliability
#Rules compliant
#Using full tyre potential

FRAME CONSTRUCTION CFRP sandwich monocoque, motor-gear-units mounted underneath, integrated battery

MATERIAL HT and HM fibres, twill and unidirectional plies, kevlar-carbon hybrid twill

OVERALL L / W / H (mm) 3027 / 1410 / 1163

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1220 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 133

SUSPENSION Double unequal length A-Arm. Pull rod actuated KAZ damper with coil spring

TYRES (Fr / Rr) Hoosier 18.0x7.5-10 R25B

WHEELS (Fr / Rr) Hoosier 18.0x7.5-10 R25B

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / Mounted on monocoque / 30kW per motor

MOTOR TYPE Self-developed

MAX MOTOR RPM 20000

MOTOR CONTROLLER Self-designed motor controller

MAX SYSTEM VOLTAGE 403

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY n/a / 6.7 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 12.6:1 / n/a

DRIVE TYPE 1st stage: planetary gear, 2nd stage: sp

DIFFERENTIAL n/a

COOLING radiator in side pods, stainless steel pipes, 2 circuits (inverters and motors)

BRAKE SYSTEM Floating Carbon-Steel, hub mounted, 188mm outer- 134mm inner diameter, 2-Piston calipers

ELECTRONICS Live-Telemetry, Traction Control, Active Yaw Control, Torque Vectoring, modular hardware design

KIEL
University of Applied Sciences Kiel

Car E53
Pit 8

WRL 14
World Ranking List rank at the end of 2013
Germany

Raceyard is Germany's northernmost Formula Student team, located in Kiel. This year the team has built its third electrically driven vehicle.We have improved several components of our new car, the T-Kiel A 14 E: The wheel size has been decreased and the motor type has changed. Additionally, we optimized the suspension adhering, the battery chemistry has been altered and we designed a removable rear end which encased the motors and the whole mechanical part of the powertrain.

Engineering Design Priorities
#ergonomics
#vehicle dynamics
#reliability

FRAME CONSTRUCTION One piece tubular spaceframe with aluminium rear end

MATERIAL E355 / Al7022

OVERALL L / W / H (mm) 2994 / 1364 / 1308

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1150 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 150

SUSPENSION Double unequal length A-Arm, front and rear push rods

TYRES (Fr / Rr) 18x7.5-10 Hoosier R25B

WHEELS (Fr / Rr) 7.25x10 inch

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / encased in rear end / 70 kW each

MOTOR TYPE Enstroj Emrax 207

MAX MOTOR RPM 6000

MOTOR CONTROLLER Unitek Bamocar D3

MAX SYSTEM VOLTAGE 450V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7.53 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:3.2 / -

DRIVE TYPE Single spur gear

DIFFERENTIAL electronical torque vectoring

COOLING water coolant system with self-developped radiator on main hoop bracings

BRAKE SYSTEM front 4 piston calipers 190 mm dia., rear 2 piston calipers 175 mm dia.

ELECTRONICS self-designed BMS, telemetry system, torque vectoring, launch control

LANDSHUT

University of Applied Sciences Landshut

At the 2014 event we take part in the FSE with our third car. This year our first goal was to reduce the weight and increase the reliability of our car. We gained a lot of experience with our first and second car and so we tried to improve the car in all components. Our „eR14" has two permanent excited water cooled synchronous motors. The housing of the motors and the planetary gear box is self-developed.

Engineering Design Priorities

#full monocoque

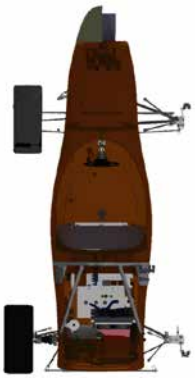
#reliability

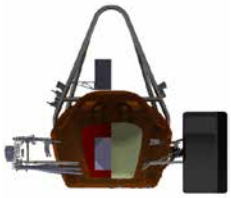
#low costs

#finish endurance

Car E97

Pit 16





WRL 50

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION full monocoque from bulkhead to rear end

MATERIAL carbon fiber reinforced plastic with foam sandwich

OVERALL L / W / H (mm) 2664 / 1410 / 1154

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 169 / 169

SUSPENSION unequal length double wishbone suspension, pullrod actuated horizontal coil spring, anti roll bar

TYRES (Fr / Rr) 20.5x7.0-13 Hoosier R25B / 20.5x7.0-13 Hoosier R25B

WHEELS (Fr / Rr) 7Jx13 H2 ET 22, 1 pc Al Rim / 7Jx13 H2 ET 22, 1 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 80kW

MOTOR TYPE RR, RL: MACCON / RMF-ACI3 / PMSM

MAX MOTOR RPM 10000

MOTOR CONTROLLER Unitek Bamocar D3 700V

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiNiCoAlO2 / 5.4kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:8.00 / n/a

DRIVE TYPE direct drive with a planetary gear

DIFFERENTIAL programmable torque vectoring

COOLING 2 cycle water cooling system (converter/engine) above the engines, self-developed cooling plate

BRAKE SYSTEM front Brembo P4 24 / rear AP CP4226, Bosch ABS M4, Beringer front MC 17.5/rear MC 20.6, Rotors 211mm

ELECTRONICS self-developed AMS, self-developed electric motors, removeable electrical compartment

LEUVEN

KU Leuven - Group T Campus

Formula Group T consists of 22 master students in Industrial Engineering Sciences at the University of Leuven, Campus Group T, Belgium. June will be our third car and several improvements have been made to increase the performance, handling and the efficiency. In comparison to last year, there we achieved a 20% weight reduction. Events 2014: FSUK, FSGermany and FSSpain

Engineering Design Priorities

#Lightweight and Compact

#Ergonomics

#3D-printing

#Aero

#Carbon Fiber Monocoque

#Self-developed

Car E22

Pit 15

WRL 39

World Ranking List rank at the end of 2013

Belgium

FRAME CONSTRUCTION Carbon Monocoque

MATERIAL 5 layers of woven carbon fibre in alternating 0 and 45 degrees patern with 25mm diab core

OVERALL L / W / H (mm) 2700 / 1390 / 1080

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1525 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 147

SUSPENSION Double unequal length A-Arm. Pull rod actuated vertically oriented spring and damper

TYRES (Fr / Rr) Hoosier slicks 20.5 x 7.0 – 13 R25B, 7 inch Keizer 13 Inch Al/ Mg Rim

WHEELS (Fr / Rr) Hoosier slicks 20.5 x 7.0 – 13 R25B, 7 inch Keizer 13 Inch Al/ Mg Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 85 kW

MOTOR TYPE Enstroj Emrax 207/70kW peak axial flux motor

MAX MOTOR RPM 5000

MOTOR CONTROLLER 2X Bamocar D3

MAX SYSTEM VOLTAGE 598

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Melasta SLPBA542124 Lithium polymer / 5,86 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 3,52:1 / 3,52:1

DRIVE TYPE Epicyclic gear reduction

DIFFERENTIAL electronic differential with traction control

COOLING black ice stealth 360 radiator, 3 X 120mm electric fans, Behind the driver located

BRAKE SYSTEM 4-Disk system, self developed 220mm diameter, adjustable bias bar, 4 piston dual circuit caliper

ELECTRONICS Multifunctional steering wheel, self designed PIC 32 ECU, wiring harness sealed to IP65

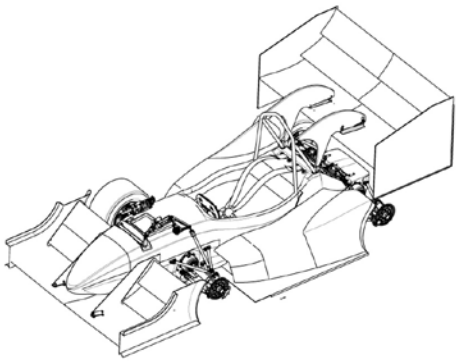
MÜNCHEN
Technische Universität München

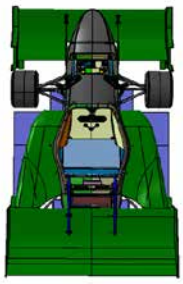
Car E12
Pit 25

WRL 13

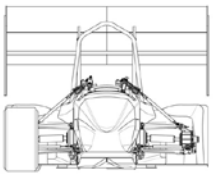
World Ranking List rank at the end of 2013

Germany



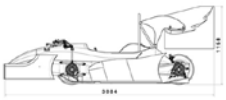


In October 2013 a team of 65 young and motivated students started to develop the 4th electric car of the TUfast Racing Team. The challenge for this year was to develop a four wheel drive car, aiming for less than 200kg with a aero package. Therefore we implemented some innovative designs e.g. for the rims and the driveshafts. The four wheel drive is also the first in TUfast history.



Engineering Design Priorities

#four wheel drive



FRAME CONSTRUCTION One piece prepreg monocoque

MATERIAL CFRP and Aluminium core

OVERALL L / W / H (mm) 3090 / 1430 / 1130

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 128 / 139

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented Öhlins spring/damper unit

TYRES (Fr / Rr) Hoosier R25B

WHEELS (Fr / Rr) SMC shells, aluminium center

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / Chassis mounted / 25

MOTOR TYPE Permanent magnet exited synchronous machine

MAX MOTOR RPM 17000

MOTOR CONTROLLER Self-built, based on Infineon MIPAQ

MAX SYSTEM VOLTAGE 402V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY / 6,713 kW

TRANSMISSION RATIO (PRIMARY / SECONDARY) /

DRIVE TYPE

DIFFERENTIAL N/A

COOLING

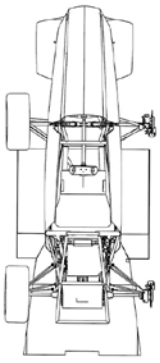
BRAKE SYSTEM

ELECTRONICS

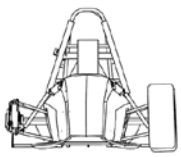
MÜNCHEN
Universität der Bundeswehr München

Car E25
Pit 35

Germany



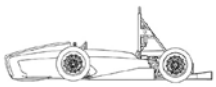
The ATHENE RacingTeam was founded in 2011 and participated the first time in FS Austria 2013. This year we, the ATHENE RacingTeam are proud to present KRATOS, the god of power. Kartos is our first electric car and second in total. We pushed very hard the last year to develop this complete new drive train. Our main target was to engineer a solid lightweight car which easily makes the endurance. Thanks to all our sponsors who gave us the opportunity to build Kratos!



Engineering Design Priorities

#Kratos - God of Power

#electric Car



FRAME CONSTRUCTION tubular space frame

MATERIAL 25mm E235+C steel round tubing

OVERALL L / W / H (mm) 3015 / 1376 / 1102

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1544 / 1287 / 1287

WEIGHT WITH 68kg DRIVER (Fr / Rr) 106 / 198

SUSPENSION Double unequal lenght, steel A-Arms, Push Rod horizontally actuatec spring and damper

TYRES (Fr / Rr) Double unequal lenght, steel A-Arms, Push Rod horizontally actuatec spring and damper

WHEELS (Fr / Rr) Double unequal lenght, steel A-Arms, Push Rod horizontally actuatec spring and damper

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 100 kW,100 kW

MOTOR TYPE Enstroj EMRAX 228 HV

MAX MOTOR RPM 4000

MOTOR CONTROLLER Unitek BAMOCAR

MAX SYSTEM VOLTAGE 336

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo - Copper / 7,1kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 3,08 / n/a

DRIVE TYPE single stage gear drive

DIFFERENTIAL n/a

COOLING radiator with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance

ELECTRONICS dSpace Controllunit, LCD panel for drivers information and quick control system adjustment

MÜNCHEN

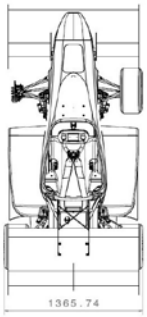
University of Applied Sciences
München

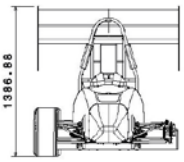
PassionWorks - not only the name of our cars but also our guiding principle! Last season, we took a big step forward in terms of driving performance and reliability of the car. This year, we're happy to announce that we designed a car that signifies a big evolutionary step. Many new solutions can be found on our car with the aerodynamics package being the most obvious one. Combined with an early roll out giving us a lot of time for testing, we want to improve upon last year's results.

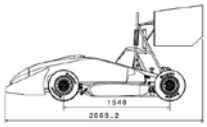
Engineering Design Priorities

#Maintainability
#Energy efficiency
#Ergonomics
#Weight less than 200kg
#Simplicity
#Low Cog and inertia

Car E13
Pit 26







WRL 5

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION full CFRP resin infusion monocoque, external accumulator container

MATERIAL carbon fibre fabric with aluminium fibres for better electric conductivity, rohacell foam core

OVERALL L / W / H (mm) 2835 / 1356 / 1312

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1540 / 1150 / 1128

WEIGHT WITH 68kg DRIVER (Fr / Rr) 128 / 139

SUSPENSION double unequal length A-Arm, pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 18.0x6.0-10 / 18.0x7.5-10 Hoosier R25B

WHEELS (Fr / Rr) 6.0x10, 2pc CFRP-aluminium hybrid rim / 7.5x10, 2pc CFRP-aluminium hybrid rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / rear, inside monocoque / 85

MOTOR TYPE permanent magnet synchronous motor

MAX MOTOR RPM 4000

MOTOR CONTROLLER Unitek BAMOCAR D3

MAX SYSTEM VOLTAGE 403

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiNiMnCoO2 / 6.53

TRANSMISSION RATIO (PRIMARY / SECONDARY) 2.25 / n/a

DRIVE TYPE single-stage transmission with spur gear

DIFFERENTIAL electric torque vectoring

COOLING rear mounted radiator with thermostatic controlled electric fan, 1.2l coolant

BRAKE SYSTEM 4-Disk system, self developed rotors diameter front/rear 190mm/180mm, adjustable balance bar

ELECTRONICS live telemetry system, recuperation system, traction control, removable measurement wiring harness

OSNABRÜCK

University of Applied Sciences
Osnabrück

Infected is not just the name of our new car, it´s also the reason for many overtime hours the team from the UAS Osnabrück made. With the same thoroughness as the last years we constructed and built our new car, but with the ambitious aim to build a solid car and run the first meters in May. For the first time our formula style racecar has a Side Impact Structure and driveshafts out of carbon fiber. And now we are looking forward to the moment, when our car verify all his force on the track.

Engineering Design Priorities

#Carbon fibre driveshafts
#Vehicle Control
#Side Impact Structure
#Compatible steering lever
#Accumulator
#Ergonomics

Car E67
Pit 5

WRL 42

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION ubular space frame with carbon fibre Side Impact Structure

MATERIAL 25CrMo4 and carbon fibre

OVERALL L / W / H (mm) 2884 / 1415 / 1189

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1240 / 1195

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 170

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 20.5x7 -R13, Hoosier R25B/20.5x7 -R13, Hoosier R25B

WHEELS (Fr / Rr) 7x 13, 10mm offset, two piece Al rim / 7x 13, 10mm offset, two piece Al rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear / 100 kW

MOTOR TYPE YASA 750

MAX MOTOR RPM 2000 [1/min]

MOTOR CONTROLLER Sevcon Gen4Size8

MAX SYSTEM VOLTAGE 378V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiCoO2 - graphite / 6,66KWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) -1,86 /

DRIVE TYPE Planetary Gear Drive

DIFFERENTIAL Limited Slip Differential

COOLING Oil Cooling, in one side pod mounted radiator and 98mm electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm diameter, adjustable brake balance

ELECTRONICS Traction Control, Wiring harness sealed to IP67, Multifunctional Steering Wheel, Dashboard with OLED

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RAVENSBURG

Baden-Württemberg Cooperative State University Ravensburg

Global Formula Racing is the first innovative global collaboration of its kind in the history of all Formula Student programs.Both universities - Oregon State University(OSU) and DHBW-Ravensburg - share physical and intellectual resources since 2010: Design, manufacturing and testing occur simultaneously-over 9 time zones and 8600km distance. The team is very proud of its self developed powertrain. We are happy to answer any of your questions, so please stop by at our pit to talk to us.

Engineering Design Priorities

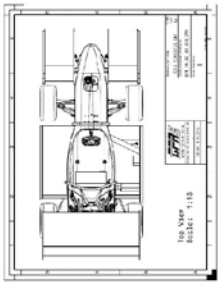
#gogfr

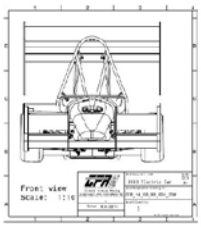
#putawingonit

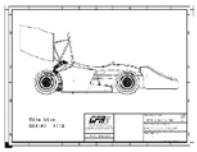
#wearegfr

Car E104

Pit 20







WRL 11

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION CFRP/honeycomb monocoque with laminated aluminum front roll hoop, bolted steel rear

MATERIAL Toray T700 Plain Weave

OVERALL L / W / H (mm) 3034 / 1355 / 1488

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1555 / 1145 / 1145

WEIGHT WITH 68kg DRIVER (Fr / Rr) 115 / 158

SUSPENSION Unequal length non-parallel a-arms, pull/pushrod actuated shock, anti roll bar

TYRES (Fr / Rr) 6.0/18.0-10 LCO Hoosier

WHEELS (Fr / Rr) Kaiser Aluminum 7" wide, 3" offset

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Center / 54kW

MOTOR TYPE Brusa IPM1

MAX MOTOR RPM 24,000

MOTOR CONTROLLER BRUSA DMC 514

MAX SYSTEM VOLTAGE 400V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiCO2 / 7.4 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:12.92 /

DRIVE TYPE Double reduction spur gearbox

DIFFERENTIAL n/a

COOLING Single sidepod, dual loop with temperature controlled fan

BRAKE SYSTEM 4-disk, ductle iron, floating disk, custom balance bar, proportioning valve

ELECTRONICS Self designed BMS, motorsport graded wiring components

SANKT AUGUSTIN

University of Applied Sciences Bonn-Rhein-Sieg

BRS Motorsport is the Formula Student team of UAS Bonn-Rhine-Sieg with 63 students of all faculties, who share their love for designing, developing and manufacturing a race car every year. The team was founded in 2007 and has built 4 combustion-racecars so far. Due to the growing interest in e-Mobility and electric cars the team decided to change from Formula Student Combustion to Formula Student Electric in 2013. Therefore, the team is building their first electric-racecar for this season.

Engineering Design Priorities

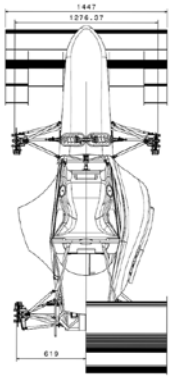
#if in doubt, flat out

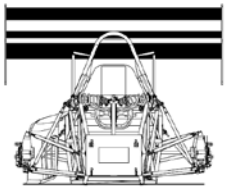
#reliability

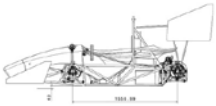
#wings don't work

Car E45

Pit 9







Germany

FRAME CONSTRUCTION Tig-welded steel frame

MATERIAL E355

OVERALL L / W / H (mm) 3090 / 1480 / 1243

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1555 / 1240 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 142 / 149

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) Hoosier 13

WHEELS (Fr / Rr) 13x7,0

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / rear / 100 kW

MOTOR TYPE Enstroj Emrax 228

MAX MOTOR RPM 5000

MOTOR CONTROLLER Sevcon Gen 4 size 6

MAX SYSTEM VOLTAGE 332V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 5,3 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2,65 / n/a

DRIVE TYPE O-Ring-Chain Drive

DIFFERENTIAL Torque sensing limited slip differential (GKN Driveline)

COOLING side pod mounted radiator, electrical water pump

BRAKE SYSTEM 4 discs student designed, different discs front and rear, AP Racing callipers and cylinders

ELECTRONICS Multifunction steering wheel, Can-Bus, Datalogger, self designed data evaluation software

SIEGEN
University of Siegen

Car E57
Pit 28

WRL 26

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Details of your car Frame Construction full composite monocoque

MATERIAL Material Carbonfibre prepregs with aluminium honeycomb

OVERALL L / W / H (mm) 3046 / 1404 / 1395

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 150

SUSPENSION Double wishbone, push rod actuated spring and damper, adjustable in compression and rebound range

TYRES (Fr / Rr) 6x18 R10, Hoosier

WHEELS (Fr / Rr) 6.0x10, 23mm offset, 3 piece aluminium

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right and Left / 40kW per Motor

MOTOR TYPE VUES AFW507M

MAX MOTOR RPM 7500

MOTOR CONTROLLER KEB Combivert C6

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo - aluminium / 6,4 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:5,5 /

DRIVE TYPE one stage spur gear pairing gearbox

DIFFERENTIAL

COOLING one radiator beside the driver with circuits for each motor and frequency converter

BRAKE SYSTEM 4 disk system, self developed rotors with 188 / 184 (F/R) mm diameter, adjustable brake balance

ELECTRONICS self developed, 4rd generation model-based drive control system, system sealed to IP67

With the fourth electric racecar, the s3-14e has been designed from scratch. We remained loyal to the rear-wheel drive, but we replaced everything else to optimize the over all performance. This year we developed for the first time a full monocoque, an aerodynamic kit and a brand new 10-inch suspension system. The total weight is roughly 210 kg, so we were able to deliver a 20 kg weight reduction in comparison to the former s3-13e. Now the s3-14e has to show how strong it can on the racetrack.

Engineering Design Priorities

#downforce

#lightweight design

#stiffness

#reliable

#driving dynamics

SINT-KATELIJNE-WAVER
Thomas More Mechelen - De Nayer

Car E37
Pit 21

WRL 67

World Ranking List rank at the end of 2013

Belgium

FRAME CONSTRUCTION tubular space frame

MATERIAL E355 steel

OVERALL L / W / H (mm) 2950 / 1450 / 1200

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1750 / 1220 / 1220

WEIGHT WITH 68kg DRIVER (Fr / Rr) 167 / 190

SUSPENSION Double A-arm, vertical push rod system / double A-arm, vertical pull-rod system

TYRES (Fr / Rr) 205/510 R13 continental / 205/510 R13 continental

WHEELS (Fr / Rr) 13" x 7" Braid Formrace Al rim - ET: +5 / 13" x 7" Braid Formrace Al rim - ET: +5

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / combined 85kW

MOTOR TYPE RL and RR: Enstroj Emrax 228

MAX MOTOR RPM RL and RR: 4000

MOTOR CONTROLLER RL and RR: Unitec Bamocar

MAX SYSTEM VOLTAGE 504V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7.2kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:3 / 1:1

DRIVE TYPE electric

DIFFERENTIAL electronic differential, steered by steeringwheel angle

COOLING side mounted (left) radiator with 2 fans / parallel left and right circuit

BRAKE SYSTEM 220mm drilled floating discs with APracing calipers (front: double piston / rear: singel piston)

ELECTRONICS electronic differential, launch control, traction control on rear wheels,

„Expect More Drive" pushes Thomas More Innovation to keep improving. We are a small but committed team of 18 students, based in Sint-Katelijne-Waver, Belgium. Our main goals for 2014 is to have a reliable car with high lateral acceleration, high adaptability and a low carbon footprint. Our team is driven by a passion for Formula Student and the end result will make all the late nights, hard work and continuous pressure to perform, more than worth it.

Engineering Design Priorities

#low carbon footprint

#low weight

#very reliable

#low center of gravity

#high adaptability

#in house production

STUTTGART
Baden-Württemberg Cooperative
State University Stuttgart

Our latest car eSleek14 is designed under following general decision. At first we want a reliable car, well-balanced for all events on FSE. Then we want to reduce the weight down to 180Kg. The electrical system should not changed in general compared to eSleek13 to concentrate on mechanical innovation. And at last the center of gravity should be lower, to optimize the dynamics of the car.This is achieved with a CFRP full monocoque and 10" wheels as the most obvious changes.

Engineering Design Priorities

#180Kg
#self-developed datalogger
#CFRP full monocoque
#sidebox accumulator
#10" wheels
#self-developed AMS

Car E66
Pit 41

WRL 21

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION CFRP Monocoque with foam core

MATERIAL preimpragnated high tensile fabrics 200 g/sqm; spread tow fabrics; Rohacell foam

OVERALL L / W / H (mm) 2562 / 1350 / 1031

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1160 / 1110

WEIGHT WITH 68kg DRIVER (Fr / Rr) 112 / 134

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 10x7,5

WHEELS (Fr / Rr) 2 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear right, rear left / 2x42KW

MOTOR TYPE AMK DT5-26-10-POW

MAX MOTOR RPM 16.000

MOTOR CONTROLLER AMK KW 26 S

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6,6kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 7,85 / N/A

DRIVE TYPE two stage spur gear

DIFFERENTIAL Torque vectoring via software

COOLING 2 side mounted radiator for two separate water cooling systems and one electric fan each accumulator

BRAKE SYSTEM 4 self-developed disks with 6 calipers, adjustable brake balance

ELECTRONICS self-developed datalogger with live telemetry, LCD dashboard and communication via two CAN busses

STUTTGART
University of Stuttgart

The GreenTeam is driven by a deep passion to always be one step ahead. We have never only developed the previous car, we revolutionized it! Our 5th generation car was designed to be faster, lighter and more efficient than all our Formula Student cars before. We combined intense hard work and smart ideas into a persuading concept. We freed our minds from earlier developments to design a car without compromises.

Engineering Design Priorities

#lightweight
#adjustability
#performance
#power
#integration
#reliability

Car E26
Pit 42

WRL 4

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION full composite monocoque

MATERIAL carbonfibre prepregs with aluminium honeycomb

OVERALL L / W / H (mm) 3012 / 1304 / 1162

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1190 / 1190

WEIGHT WITH 68kg DRIVER (Fr / Rr) 113 / 119

SUSPENSION double unequal length A-Arms, pushrod actuated, öhlins ttx25 MK II damper, integrated Z-ARB

TYRES (Fr / Rr) Hoosier 18 x 7.5 - 10 R25B

WHEELS (Fr / Rr) 10 x 7.5" CFRP

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / One at every wheel / 25kW

MOTOR TYPE AMK DT5-14

MAX MOTOR RPM 20000

MOTOR CONTROLLER AMK KW26

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6,62

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:13,8 / -

DRIVE TYPE planetary gear

DIFFERENTIAL none

COOLING Undertray radiator, independent cooling cycles, one pump each

BRAKE SYSTEM selfmade steel rotors, diameter 174mm, AP CP7003

ELECTRONICS selfdesigned ECU, telemetry system, sensors and dashboard

TRONDHEIM

Norwegian University of Science and Technology

Car E11

Pit 32

Norway

The car is developed from scratch, featuring the team´s first ever monocoque and electric power train. Weight reduction has been a large focus, reducing the weight with 70 kg compared to the 2014 car. Unsprung mass is also greatly reduced by 3D-printing uprights and titanium and developing 10 inch CFRP rims. All electronics are self developed, including the battery package which offers 7,45 kWh at just 46 kg.

Engineering Design Priorities

#Unsprung mass reduction

#Electronics and data aqui

#Weight reduction

#Downforce

#Electric powertrain

#Driveability

FRAME CONSTRUCTION Full monocoque

MATERIAL CFRP

OVERALL L / W / H (mm) 3095 / 1416 / 1220

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1170

WEIGHT WITH 68kg DRIVER (Fr / Rr) 114 / 135

SUSPENSION Double unequal length A-arm with pull rod actuated spring and damper.

TYRES (Fr / Rr) 6.0/18.0-10 LCO Hoosier

WHEELS (Fr / Rr) 6.0/18.0-10 LCO Hoosier

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear center / 100 kW

MOTOR TYPE Enstroj EMRAX 228 High Voltage, Liquid cooled

MAX MOTOR RPM 5000

MOTOR CONTROLLER Unitek Bamocar-D3-700-400

MAX SYSTEM VOLTAGE 590

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiCoO2 / 7,45 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 3.65:1 / n/a

DRIVE TYPE Two stage straight cut spur gear

DIFFERENTIAL Drexler limited slip differential Formula Student V.1

COOLING Motor and inverter liquid cooled. Radiator placed inside right sidepod. Accumulator pack air cooled.

BRAKE SYSTEM 4-Disk system, self developed rotors 188 mm D front and 182 mm D rear

ELECTRONICS Self developed electronics, telemetry and data acquisition. Self developed analyze software and app.

WIEN

Vienna University of Technology

Car E41

Pit 37

Austria

After 5 seasons powered by a KTM one-cylinder engine, our team continues the successful story of the „EDGE“ series with our first electric racing car, the EDGE6. With lightweight design in every component we were able to further reduce the weight of our car. One-piece CFRP monocoque, 10“ carbon rims, aeropackage, self-developed electric motors and transmission with CFRP drive shafts are just some of the features of our new racer. Special thanks to our many sponsors for their continuous support!

Engineering Design Priorities

#performance

#design

#reliability

#easy to maintain

#lightweight design

#low priced

FRAME CONSTRUCTION One piece CFRP monocoque

MATERIAL Sandwich construction with prepreg carbon (twill & unidirectional) with various thickness honeycomb

OVERALL L / W / H (mm) 2845 / 1395 / 1118

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 110 / 123

SUSPENSION Double unequal length A-Arm, Pull rod actuated, horizontally oriented spring/damper, adj. rollbar

TYRES (Fr / Rr) 18.0 x 7.5-10, Hoosier, R25B

WHEELS (Fr / Rr) 7.0 x 10, 25 mm offset one piece CFRP Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 2x 40kW

MOTOR TYPE TUWR E1

MAX MOTOR RPM 16000 rpm

MOTOR CONTROLLER Infineon Hybrid Kit 1

MAX SYSTEM VOLTAGE 437V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6.23 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:11.88 / -

DRIVE TYPE Two stage spur gearbox

DIFFERENTIAL Electric differential

COOLING Side mounted radiator

BRAKE SYSTEM Self developed laser printed Ti6Al4V calipers, self developed rotors

ELECTRONICS Dashboard & steering wheel display, self developed controls and telemetry system

WIESBADEN

University of Applied Sciences RheinMain

This is the 7th year we compete in Hockenheim in a row. Our goal for 2014 is to build a racecar with competitive driving dynamics and a strong motor. A big focus was set on reliability when designing every part of the racecar. The suspension of the SPR14E features a completely new design of all major parts. Our all-new telemetry allows to monitor the whole racecar in detail whenever it is needed. This is the third year in a row where a self-developed battery pack and BMS is used.

Engineering Design Priorities

#Development

#Reliability

#Driving dynamics

Car E65

Pit 1

WRL 32

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION Steel Spaceframe

MATERIAL S235JR G2

OVERALL L / W / H (mm) 2710 / 1442 / 1157

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1312 / 1218 / 1181

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 146

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper.

TYRES (Fr / Rr) 20.5x7.0-13 R25B C2500 Hoosier

WHEELS (Fr / Rr) 7x13, 28mm neg. offs, 1 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Middle Rear / 100kW

MOTOR TYPE YASA 750

MAX MOTOR RPM 2000

MOTOR CONTROLLER Sevcon Evolution 5

MAX SYSTEM VOLTAGE 403V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 5,63kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1.44:1 / N/A

DRIVE TYPE Electric motor with a selfmade Gear

DIFFERENTIAL Drexler formula student differential

COOLING Rear mounted, continuously bled by swirlpot, air tunnel, no electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm diameter, adj. brake balance, BREMBO calipers

ELECTRONICS Live Telemetry via Wlan or UMTS, Traction control, Dashboard with remaining range

WOLFENBÜTTEL

University of Applied Sciences Ostfalia

The Team wob-racing is now in its second decade and consists of 24 students from different fields of study, e.g. automotive and mechanical engineering, engineering economics as well as social work. The Ostfalia University for Applied Science is located in Wolfsburg, Wolfenbüttel, Salzgitter and Suderburg. 2014 is the year of our new racecar, the WR-X. It has a completely new designed drivetrain and saved ca. 40 kg in comparison to its predecessor. We thank all of our sponsors and supporters!

Engineering Design Priorities

#Self-Made

#Performance

#Maintainability

#Quality

Car E35

Pit 18

WRL 17

World Ranking List rank at the end of 2013

Germany

FRAME CONSTRUCTION tubular steel space frame

MATERIAL steel E355

OVERALL L / W / H (mm) 3008 / 1468 / 1089

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1260 / 1240

WEIGHT WITH 68kg DRIVER (Fr / Rr) 164 / 164

SUSPENSION asymmetric unequal length double A-Arm, push rod actuated, horizontally orientated dampers/springs

TYRES (Fr / Rr) Hoosier 20.5 x 7.0-13 R25B

WHEELS (Fr / Rr) BBS 13x7, zeroset, Magnesium rim star

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear left, rear right / 40 kW each

MOTOR TYPE PSMS SEW Eurodrive

MAX MOTOR RPM 12000

MOTOR CONTROLLER 2x BRUSA DMC514

MAX SYSTEM VOLTAGE 454

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiCo02 / 7,2

TRANSMISSION RATIO (PRIMARY / SECONDARY) 3,27:1 / 3,06:1

DRIVE TYPE Two-staged spur gear

DIFFERENTIAL Independently electronically controlled

COOLING rear mounted radiator, water-cooled motors and inverters, single circuit

BRAKE SYSTEM 4-disk self-designed steel rotors, radial calipers (Behringer 4 pist and Spiegler 2 pist.)

ELECTRONICS self-developed decentralized control-unit system, incl. multifunctional dashboard and telemetry

ZÜRICH

Swiss Federal Institute of Technology Zurich

The AMZ Racing team was founded in 2006 by students from the ETH Zurich and Hochschule Luzern. Nowadays, students of several universities come together to represent Switzerland, forming the „Swiss National Team".After three years with combustion cars, the team switched to electric driven cars in 2010. „grimsel" is the fifth electric car, powered by four AMZ M4 motors, a single piece CFRP Monocoque, DRS and an adaptive damping system.P.S. We will trade in swiss chocolate for beer.

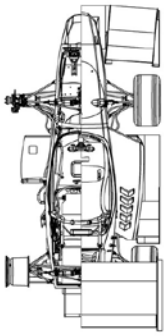
Car E33

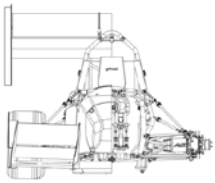
Pit 30

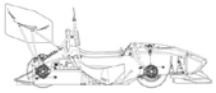
WRL 1

World Ranking List rank at the end of 2013

Switzerland







FRAME CONSTRUCTION Single- Piece CFRP Monocoque

MATERIAL Prepreg Carbon (twill and unidirectional) and aluminium honeycomb with various thicknesses

OVERALL L / W / H (mm) 2904 / 1411 / 1161

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1190 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 114 / 124

SUSPENSION Double unequal Length Double A-Arm. Push rod actuated progressive spring and adaptive damper.

TYRES (Fr / Rr) 18.0x7.5-10 Hoosier R25B

WHEELS (Fr / Rr) 7.5 inches single-piece CFRP Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / One at every wheel / 4*37

MOTOR TYPE AMZ M4

MAX MOTOR RPM 19200

MOTOR CONTROLLER Lenze Schmidhauser Dual DCU

MAX SYSTEM VOLTAGE 470

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 6.46kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:13.57 /

DRIVE TYPE 1.5-stage planetary gear

DIFFERENTIAL None

COOLING Single cooling circuit, two sidepod mounted radiators, one pump.

BRAKE SYSTEM Steel, floating, hub mounted, 190mm dia, drilled, adjustable brake balance

ELECTRONICS Self programmed VCU and telemetry system, parameter

ZWICKAU

University of Applied Sciences Zwickau

Innovation meets Tradition. Zwickau, the birth place of Horch and Audi and home of the legendary Auto Union race cars in the 30's, got 70 years later another passionate race car team. We are the WHZ Racing Team, and designed our 5th full electric car. The FP814e takes the successful lightweight concept of its predecessor to the next level to defend our third position in the World Ranking. We created a faster, more dynamic and reliable car with two brand new self-developed independent motors.

Engineering Design Priorities

#Lightweight

#EfficientDynamics

#Safety

#ReliabilityWorks

#PassionOfFormulaStudent

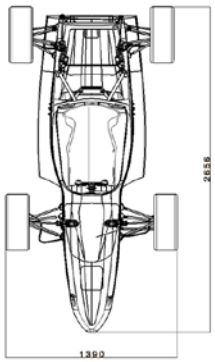
Car E96

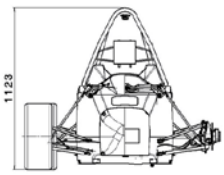
Pit 36

WRL 3

World Ranking List rank at the end of 2013

Germany





FRAME CONSTRUCTION CFRP monocoque with integrated energy storage container

MATERIAL sandwich construction with prepreg carbon and aluminium honeycomb

OVERALL L / W / H (mm) 2656 / 1390 / 1126

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 116

SUSPENSION Double unequal length A-Arm, Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 18.0x6.0-10 R25B Hoosier

WHEELS (Fr / Rr) CFRP aluminium hybrid rim, 6,5" wide

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 2x 56kW

MOTOR TYPE self-designed

MAX MOTOR RPM 19000

MOTOR CONTROLLER Industrial, adapted to the car

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7,7 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:12,8 / -

DRIVE TYPE three-stage spur gear

DIFFERENTIAL self developed vehicle dynamic drive control (VDDC) with traction control and torque vectoring

COOLING radiator mounted centrally behind the driver

BRAKE SYSTEM Cast iron, disc hub mounted, front 190mm, rear 160mm dia

ELECTRONICS Vehicle Dynamic Drive Control (VDDC), BMS, WLAN telemetry system, wiring harness sealed to IP67

WE WOULD PARTICULARLY LIKE TO THANK
THE SPONSORS OF FORMULA STUDENT GERMANY 2014 FOR ALL THEIR SUPPORT

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