

hi-fi news

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& Record Review

Exclusive

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Geek Out USB

Pocket-sized DAC hit



Focal's finest

On fire - the Grande Utopia EM

GROUP TEST

Hi-res streaming
Network players rated

Oppo HA-1

High power headphone amp - and more!



• PLUS 18 pages of music reviews & features • VINYL RE-RELEASE Bob Dylan's *Oh Mercy* on 180g LP
• OPINION 11 pages of letters and comment • VINTAGE REVIEW Sony's TTS-8000 direct-drive deck
• SHOW BLOG We report from California's T. H. E. Show • READERS' CLASSIFIEDS Hi-fi bargains galore

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ABOVE: For our Group Test of £500-£3650 network media players, turn to p41

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FREE! Audioquest's NRG-X3 power cable See page 86

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Powerful Dynamic Natural



New entry level HEGEL H80 integrated amplifier:

More powerful, less additives, more inputs, more possibilities... But still that addictive HEGEL sound.

HiFi+ (UK 2014):

"It's a well-built, deceptively powerful amplifier with an excellent digital audio stage. 'It fights well above it's weight' is a cliché of the highest order, but it really applies here. Excellent!

- Alan Sircom - Editor

The Absolute Sound (USA 2014):

"I hope more people will participate in the deeper enjoyment of music in their homes because products like the H80 make it more accessible. The H80 is the real deal...and a sweet deal, too." - Kirk Midstkog - Reviewer

HiFi & Musik (Sweden 2013):

"It will take a while for me to recover after this. This may be the best value for the money I have reviewed in my career." - Jonas Bryngelsson - Editor

Lyd & Bilde (Norway 2013):

"Home run (klokken inntertier)! To say that HEGEL did it right with the H80 is an understatement. AMPLIFIER OF THE YEAR" - Lasse Svendsen - Editor



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Kent: Igloo Audio

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RIGHT: TechDAS flagship TDC01 now has a titanium body. Is this the ultimate MC? See p30



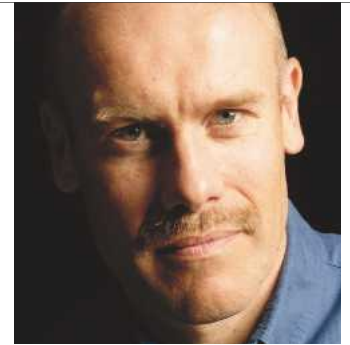
ABOVE: A KT120-equipped tube amplifier that won't break the bank? Discover the Cronus Magnum from Rogue Audio on p58

Plus ça change, plus c'est la même chose' – the more things change, the more they stay the same.

It's a popular enough refrain but one I thought was especially appropriate after enjoying the banter between *Hi-Fi News'* contributors discussing the correlation between amplifier sound quality and measured performance. You can read their thoughts on p124, but these musings were not written in 2014. They were published in our January 1978 issue...

Thirty six years on and the debate about measured versus subjective performance is still just as contemporary, although I like to think we've advanced the state of the technical art somewhat in the intervening period! It's especially interesting to read these learned authors' comments about amplifier performance under peak music conditions.

Today, *Hi-Fi News* is still the only magazine in the world that illustrates the dynamic behaviour of every amplifier it reviews. And we continue to track the development of new audio technologies, creating test regimes to explore their potential. Don't forget that our fellow enthusiasts speaking 'From The Vault' in 1978 could not have imagined the digital revolution that CD would inspire just four or five years later.



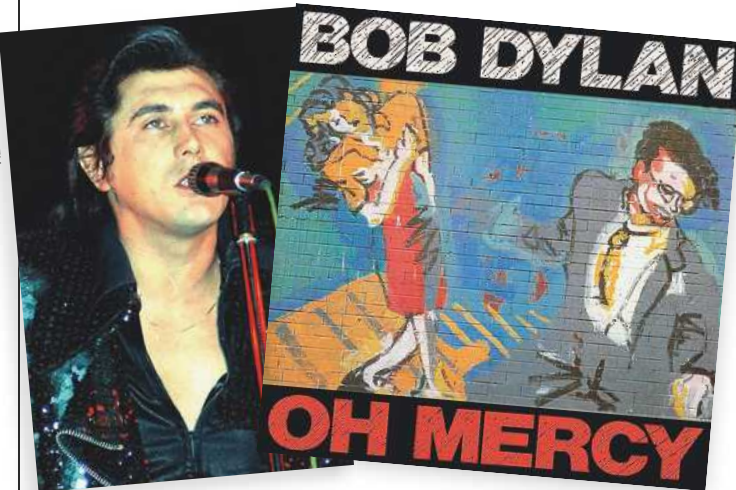
Amplifiers have also got a lot bigger and more powerful in the last four decades. Our vintage contributors were comparing a 15W tube amplifier with a 50W transistorised design, so I'm also bound to wonder what they'd have made of the fabulous 'High Voltage' pre and power amplifiers from Germany's T+A that grace our cover this month.

'The measured vs. subjective debate is still contemporary'

Our exclusive review [p24] also provides clear measured evidence for the performance advantage offered by T+A's optional outboard PS3000HV power supply. Something that would have cheered our old-school authors, even if the computer-based media player and USB DAC used in our listening tests would have seemed the stuff of science fiction back in 1978. As I said, *plus ça change...*

PAUL MILLER EDITOR

KLAUS HILTSCHER

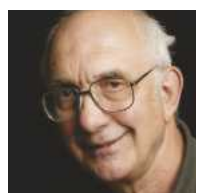


VINYL: Roxy Music's eponymous album, this month's Vinyl Icon (p76), waved a feather boa in the face of rock, while Steve Sutherland rates Bob Dylan's 1989 comeback *Oh Mercy*, on 180g LP (p74)

RIGHT: *Hi-Fi News* & *RR* is the exclusive UK representative of EISA's Hi-Fi Expert Group and editor Paul Miller is EISA's Hi-Fi Expert Group Manager



HI-FI NEWS' EXPERT LINE UP: THE FINEST MINDS IN AUDIO JOURNALISM BRING THEIR EXPERIENCE TO BEAR ON ALL AREAS OF HI-FI & MUSIC



BARRY FOX
Investigative journalist supreme, Barry is the first with news of the latest developments in hi-fi and music technologies



JOHN BAMFORD
JB brings huge industry experience, a penchant for massive speakers and a love of hi-res audio in all its diverse guises



KEN KESSLER
is currently our Senior Contributing Editor and almost singularly responsible for the renaissance in valves and 'vintage hi-fi'



KEITH HOWARD
has written about hi-fi for 30 years, and edited *Hi-Fi Answers* for nine. KH performs our speaker and headphone lab tests



STEVE HARRIS
Former Editor of this very title from 1986 through to 2005. A lifetime in audio and a love of jazz makes Steve a goldmine



JOHN HOWES
Foremost collector and archivist of vintage hi-fi, famous for the UK's bi-annual Audio Jumble, John shares his experience with *HFN*



STEVE SUTHERLAND
Worked on *Melody Maker* and then edited *NME* from 1992-2000, the Britpop years. Steve brings a unique slant to our Vinyl Release pages

Primare 60 Series



SWEDISH SEPARATES TURN ON THE STYLE

Provisionally unveiled at the Bristol Hi-Fi Show [HFN May '14] Primare's new two-tone 60 series has now been finally launched. The £6500 PRE60 is a preamp with onboard DAC and streaming facilities (up to 24-bit/192kHz files from NAS or PC), housed in a heavy-gauge alloy chassis and boasting a comprehensive OLED display. A Primare app for iOS and Android is also available to control the PRE60's input switching and volume while browsing through selections of online and stored media.

The partnering £6500 A60 power amp, beneath, is a fully balanced design rated at 2x250W/8ohm and featuring a pair of Primare's proprietary UFPD Class D modules per channel. Single-ended RCA and balanced XLR inputs are offered alongside high quality WBT 'Nextgen' 4mm speaker terminals.

Primare AB, 01423 358846;
www.primare.net, www.karma-av.co.uk

Electro Vinyl

COMPLETE LP FRONT-END FROM NORWAY

With a three-layer chassis composed of an acrylic/black alloy sandwich, Electrocompanion's debut turntable clearly maintains the brand's aesthetic cues. The £2890 ECG-1 is equipped with a matching acrylic platter, belt-driven via a 24V asynchronous motor and switched via a small cluster of gold buttons – matching those of its electronics separates – on its plinth. The deck is matched with a black-finished Jelco SA-750EB tonearm and MMC (Moving Micro Cross) pick-up produced to Electro's spec. by Soundsmith cartridges in the US. Partnering the deck is the new £1490 ECP-2 phono stage which offers a highly configurable MM/MC front-end and fully DC-coupled gain stages based around instrument-grade op-amps.

Electrocompanion AS, 01285 643088;
www.electrocompanion.com;
www.hifi-network.com



HI-FI NEWS' NUGGETS

ONKYO AND PIONEER

Baring Private Equity Asia has entered into discussions to integrate a portion of Onkyo's and Pioneer's AV business in an effort to increase competitiveness by capitalising on the resources of the two companies
www.onkyo.com; www.pioneer.eu

TRANSFIGURATION

Specialist high-end distributor Decent Audio has announced a new agreement with Japan-based Immutable Music to take over distribution of its high-end cartridge brand, Transfiguration, in the UK.
www.decentaudio.co.uk

TEUFEL HYBRID

Teufel, Europe's largest direct seller of loudspeaker systems, has announced the launch of its £1000 T6 hybrid floorstander. Each loudspeaker is equipped with an integrated active subwoofer – 150W amplifiers driving a pair of 250mm bass units and offering control over high pass frequency and level. Each cabinet also houses a pair of 130mm midrange drivers and a single 25mm tweeter. www.teufelaudio.co.uk

JansZen zA1.1

ELECTROSTATIC HYBRID CUT DOWN TO SIZE

Featuring an electrostatic midrange and treble panel, the zA1.1 is the first hybrid loudspeaker from JansZen designed into a compact, standmount enclosure. Also equipped with a pair of push-pull bass drivers, the £5500 zA1.1 is rated at 8ohm and offers an 85dB sensitivity.

JansZen Loudspeaker Ltd, 01242 506 446;
www.janszenloudspeaker.com,
www.soundsetup.co.uk



Tuning by Trinnov

ACTIVE 'ACOUSTIC SOLUTIONS' FROM FRANCE

Audio calibration/correction solution provider Trinnov has leveraged its professional studio technology into a series of high-end components for the domestic hi-fi market. These include the ST2 DAC and room/speaker optimiser, the Amethyst preamp, media player, DAC and room/speaker optimiser [pictured]; and the Magnitude32 multichannel room/speaker optimiser. Trinnov's range will be distributed in the UK by Anthem AV Solutions. **Trinnov Audio, 01825 750858; www.anthemavs.co.uk**



McIntosh Music

NEW MUSIC STREAMING SERVICE... WITH BLUE METERS!

McIntosh Music is a new music stream aimed at music lovers who want to access high-quality, hand-picked music, direct to their PC, tablet or phone. The service is freely available either as a direct stream from the McIntosh Music website, or via a free app for both Android and iOS devices. The interface is 'Mac' to the core! **McIntosh Labs, 01202 911 886; www.mcintoshlabs.com**



Tonearms to taste

ACOUSTIC SIGNATURE TURNTABLES JOINED BY TONEARM

Available in 9, 10 and 12in versions at £999, £1099 and £1199 respectively, the new TA-1000 tonearm from Germany's Acoustic Signature features a rigid carbon tube with alloy headshell and gimbal bearing assembly. The internal 33-gauge cabling either runs out to RCAs or is terminated in a 5-pin connector at the base. **Acoustic Signature, 01333 425 999; www.audioemotion.co.uk**



Running the GamuT

FLAGSHIP LOUDSPEAKER RANGE FROM DENMARK



Now available direct in the UK via a series of 'preferred dealers', Danish loudspeaker brand GamuT has announced a new series of flagship models dubbed RS or 'Revised Superior'. Like the original S-Series, the RS's curved enclosures are based on an inner structure of laminated Finnish birch

plywood, but now with a five-layer skin of 2mm-thick real wood ash veneer. The range extends from the £11,850 RS3 standmount to the £74k RS9 three-way floorstander [pictured above] weighing 185kg. **GamuT A/S, 01202 630 066; www.gamutaudio.com, www.stoneaudio.co.uk**

HI-FI NEWS? JUST ASK...

If you can't always find a copy of this magazine, help is at hand! Complete this form, hand it in at your local store and they'll arrange for a copy of each issue to be reserved for you. Some stores may even be able to arrange for it to be delivered to your home. **Just ask!**

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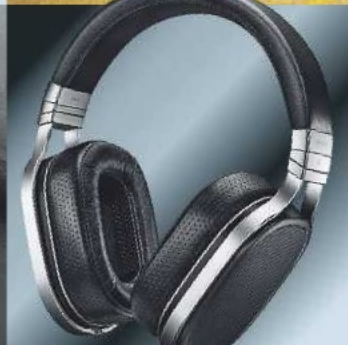
Upcoming Events

IMPORTANT DATES FOR YOUR HI-FI DIARY

- 08-10 AUG** High End Audio Visual Show, Hong Kong
- 05-10 SEP** IFA Berlin, The International Funkausstellung, Germany <http://b2c.ifa-berlin.de>
- 05 OCT** Audiojumble, Tonbridge; www.audiojumble.co.uk
- 17-19 OCT** High End Swiss 2014, Hotel Moevenpick Zuerich Regensdorf, Switzerland; www.highendsociety.de/
- 01-02 NOV** The Hi-Fi Show Live 2014, Beaumont Estate, Windsor; www.hifinews.co.uk/show

Hi-Fi Show preview

THE 'WHO'S WHO' OF PREMIUM AUDIO SET TO EXHIBIT AT THE UK'S ONLY HIGH-END HI-FI SHOW



The waiting is now over as tickets go on sale for the UK's premier high-end audio event – *The Hi-Fi Show* at the Beaumont Estate, Old Windsor on Saturday 1st and Sunday 2nd November 2014. We have a fixed visitor allocation for this event and, if fully booked, sadly, no tickets will be available on the day. Tickets cost £20, or £15 for subscribers. Please call 0844 848 8822 now to avoid disappointment and see www.hifinews.co.uk/show for more details.

Now in its second year, with more rooms, competitions, events and accessible local parking, the UK's only high-end audio show is gathering momentum with the 'who's who' of international hi-fi planning a series of exclusive presentations, listening demonstrations and Q&As.

The 20 Windsor, Wessex and Buckingham suites will be given over to these exciting closed-door demonstrations with individual opening times staggered throughout the day so that visitors can plan their own schedule of experiences. The biggest decision will be knowing where to begin!

The Sandringham and Osborne suites will play host to open-door demos where you can get to grips with the latest specialty audio, cables and power supply conditioning and sample for yourself the sounds of the very best electrostatic, isodynamic and moving-coil headphones on the market.

UK Firsts

EXCLUSIVE SHOW AUDITIONS

A host of UK-firsts will be debuted at the Show. Absolute Sounds will be unveiling the Constellation Inspiration range with Magico loudspeakers, the TechDAS Air Force Two turntable and TDC01 Ti cartridge, D'Agostino Momentum integrated amplifier plus the full Devialet ADH amplifier series, right up to the 800 monoblocks with revolutionary SAM processing.

Kog Audio will demonstrate VTL's long-awaited TL-6.5 series II preamplifier alongside the wonderful MB-185 monoblocks, all driven via a full dCS Vivaldi front-end. BD Audio will be raising the rafters with Tune Audio's Anima horn loudspeaker, complete with its matching bass horn and we'll witness the exciting return of the legendary J.C. Verdier 'La Platine' turntable, featuring its proprietary magnetic bearing technology and Audionote UK tonearm and cartridge. Our website has more teasers!

Hi-Fi News Workshops

TUTORIALS AND LISTENING SESSIONS WITH *HFN* CONTRIBUTORS

At various times throughout the Show weekend you'll have the chance to meet your favourite contributors in a series of *Hi-Fi News* Workshops, hosted by



exhibiting manufacturers and distributors. Come and compare the sound of WAV, FLAC and other music file formats with John Bamford in the T+A room or hear guest presenter Matthias Bode of *Stereo* magazine (Germany's most famous hi-fi reviewer, pictured right) talk about loudspeaker time alignment with Wilson Audio.

We have eight separate Workshops planned for both days of the Hi-Fi Show,



with each topic running once per day. These are not traditional Q&A sessions but interactive demonstrations covering subjects as diverse as how to setup a turntable to auditioning differences in cable sound quality. Details of subjects, rooms and times will be posted on the website.

ELAC

sound lives

[BS 312]

Actual Size.

In 1993 the ELAC Elegant 305 thrilled the listeners at IFA Berlin. In the 20 years since, the speaker itself has not got any larger, but it's performance keeps getting bigger and better.

The extruded aluminium cabinet makes the BS 312 extremely stiff, and allows an almost baffle less design - the speaker disappears into the soundstage.

The acclaimed JET 5 tweeter reveals fantastic detail and the long travel of ELAC's proprietary AS XR driver delivers an astonishing amount of bass from the small cabinet.

"Ye cannae change the laws of physics, Cap'n." ELAC's Line 300 series begs to differ. Because ELAC appears to do the impossible; real, useful bass out of a tiny loud-speaker. - Alan Sircom, HiFi+ Issue 105



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T.H.E. Show, California

Words & pictures: Barry Willis



At the end of May the Newport Beach Hilton Hotel and adjacent Atrium Hotel hosted The Home Entertainment Show, the biggest annual audio event on the west coast. Balmy Southern California weather welcomed thousands of fans eager to ogle hundreds of products. Megabuck systems filled ground-floor ballrooms, with less ambitious products occupying several floors of smaller rooms. Each winter, T.H.E. Show also runs concurrently with CES in Las Vegas.

Peter Noerbaek of PBN Audio with his Groovemaster turntable. Made of laminated ebony hardwood, it's based on a VPI direct-drive, with Dynavector XV1-S cartridge mounted in an SME 312S arm. Total retail price is approximately \$44,750. Noerbaek got excellent sound and prodigious bass from his Montana Sammy loudspeakers, \$30,000 the pair. www.pbnaudio.com



YG Acoustics powered the \$42,800/pair Hailey loudspeakers with Audionet MAX monoblocks (\$30,500/pair), fed by a PRE G2 preamp (\$23,350). Digital source was DNC's streaming DAC (\$10,100); analogue source was a \$40k Kronos Limited Edition turntable with Black Beauty tonearm. Sound was warm, engaging, and expansive. www.yg-acoustics.com



Made in New Mexico, but Japanese in look, feel, fit, and finish, Kabuki horn loudspeakers from dc10audio combine striking looks with a sensitivity said to be 97dB. Full-range 12in drivers cover most of the audio band while modified RAAL ribbon tweeters and high-efficiency woofers deal with the frequency extremes. The design includes a slotted bass horn and rear-mounted dual resonators. The demo music was impressive with the 35W Audio Tekne valve amps used. www.dc10audio.com



Legacy Audio demo'ed two contemporary-looking floorstanders. The larger Focus SE features tightly matched drivers, a floor-firing woofer and user-optional 'sculpting circuit' to adjust bass performance. The smaller Signature SE model features twin 10in woofers in a sealed cabinet, Kimber Silver HF internal wiring, and mechanical isolation via rubber cushions used between its spiked feet and plinth. www.legacyaudio.com



McIntosh Laboratories' time-honoured look extends to the company's magnetically-suspended MT 5 turntable, with illuminated dark glass faceplate. Stacked gear includes MC 601 amps, C 500 controller, and MCD 550 SACD/CD player. The loudspeakers are Focal Maestro Utopia III, with 11in woofers, beryllium tweeters, and separate enclosures for low, mid, and high frequencies. www.mcintoshlabs.com, www.focal.com

Engineer Mark Waldrep of AIX Records shows off his HTC M8 mobile phone – what he called the 'Harman Kardon edition' – loaded with his own high-resolution recordings. Waldrep said that HTC's audio department was 'astounded' by the sound of the device. A commercial version should be available by the time this Showblog appears. www.aixrecords.com



Affordability in Newport Beach was Clayton Shaw's Spatial Hologram M2 open-baffle speakers (\$2000 per pair) driven by Red Dragon monoblocks. Sweet, unassuming, and versatile, the gear in the Spatial room was rare reassurance that some members of the high-performance community are considering music lovers of ordinary means. The source, by the way, was an Apple laptop. www.spatialaudio.us, www.reddragonaudio.com

Xpression Carbon

Xpress your sound,
Xpress your look...



March 2014



February 2014



**NEW UKX VERSION
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platter with Bordeaux
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finishes.

A Classic Made New...

The Xpression Carbon is the latest version of Pro-Ject Audio Systems' original turntable, the Pro-Ject 1. This new model employs a brand new carbon fibre tonearm with an Evolution-inspired support structure. The superior motor, with isolation blobs designed by Ortofon, drives a high-quality platter that can be fitted with either a Cork or Felt mat. The plinth is available in three stunning finishes*, and the arm is rounded off with an Ortofon 2M Silver cartridge to create a comprehensive package that would suit any system.

Available in the UK through Henley Designs Ltd.

T: 01235 511 166

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* Bordeaux finish shown



Walter Liederman shows off his new Emerald Physics EP-X, an open-baffle speaker which boasted one of the most seductive sounds at the show. The complete Emerald Physics system (speakers, amps, source, cabling, and DSPeaker preamp with room correction) topped out at only \$4000, making it a potential bargain. Other offerings in the Emerald Physics suite included an impressive mains cable costing \$249. www.emeraldphysics.com



T.H.E. Show 2014 saw the first public demo of the 101 Extreme, according to exec Jeremy Bryan, who hosted a full house all weekend. Not for the faint of heart (or chequebook) MBL's flagship system was one of three at the exhibit exceeding \$300,000 at retail. In operation were model 9011 amps, 1621 disc player, 1611 processor, and 6010 preamp. www.mbl.de



VPI's Traveler belt-drive turntable was the source of choice in the Liberty Audio room. Available in several colours, it features constrained layers in both its plinth (Delrin/aluminium) and platter (aluminium/stainless steel), adjustable feet, and an arm with low-friction sapphire bearings and twisted lead-out wires supplying anti-skate compensation. The elegant Traveler could be all the turntable many a music lover will ever need. www.vpiindustries.com



Looking like a cowboy with his lariat, ZenSati cable designer Mark Johansen has put in years of research developing what he claims are the world's most transparent-sounding audio cables. His Authentica interconnects retail at \$3500 for a 1m pair while a 2m pair of loudspeaker cables will set you back a cool \$4900. www.zensati.com

Dan D'Agostino has established a solid presence with his own brand. The Momentum integrated amp offers balanced inputs and defeatable tone controls while the power amp stage kicks out a claimed 400W per channel into 4ohm. The separate power supply is said to prevent EMI from besmirching the music. www.dagostinoinc.com



Next month
We reveal the winners of the
EISA Awards 2014-2015

Glow girl, glow...

Ken Kessler talks tubes with EAT's Jozefina Lichtenegger at her Czech HQ

RIGHT: Close-up of a KT88 tube's glass envelope after the top has been sealed by glass-blower Kvetta Perglerova. The EAT logo has been applied and the tube is awaiting finishing and insertion of internal parts

A couple of decades ago, there was a panel discussion held at one of the hi-fi trade shows about women in audio. It was obviously inspired by and addressing a feminist agenda, but it was, too, a celebratory expression of female achievement in the most male-dominated industry one can imagine outside of monasteries, gay bars and illegal dog fights. So sparse was the female presence in hi-fi, of both professionals and enthusiasts, that outside observers often likened the audiophile world to other 'creepy' milieux, such as *Star Trek* fandom.

Twenty or so years later, little has changed. The women present then were few in number, if seriously high-powered, while many are still active, including Sheryl Lee Wilson of Wilson Audio, Transparent's Karen Sumner and others working at executive level.

ATTRACTED TO VALVES

Perhaps most impressive is the fact that – although the number of women participating in audio hasn't increased by much – those involved today run their own companies, such as Gabi van der Kley of Crystal. Silencing male chauvinists, a number of them, including Eveanna Manley (Manley Amplifiers), Heike Becker (AudioValve), and Eunice Kron (KR Audio), not only possess strong engineering backgrounds but are also attracted to... valves.



RIGHT: Jozefina Lichtenegger photographed at 2014 CES with a selection of EAT's latest valves



Just over a decade ago, when the supply of new valves was chaotic but burgeoning, Eastern European tubes were making a stand against then-inferior (but plentiful) Chinese valves. From the Czech Republic, a new line of superior valves appeared under the VAIC name. Costly, hand-built but undeniably desirable, they made a few waves amid a flood of new, high-end tubes that included valves from Russia, as well as US sources including a revived Western Electric and, from the musical instrument sector, Groove Tubes.

Alesa Vaic's eponymous brand no longer exists, but its quality tube ethos lives on because of the peerless tenacity of one Jozefina Lichtenegger, née Krahulkova. At the time, in the late 1990s, as Alesa Vaic's sister-in-law, she represented VAIC, the company, in the West.

NO-BULL ATTITUDE

She wasn't taken seriously when she first arrived. She was young and spoke with a charming, but heavy, accent that Hollywood couldn't better for portraying one of Yeltsin's comrades. But her boundless enthusiasm and no-bull attitude was in marked contrast to

the jaded cynicism of the high-end industry and within five years, having mastered five languages and learned how to deal with male chauvinism like a younger, less-strident Germaine Greer, she would establish EAT (European Audio Team) to make the valves she once sold as VAIC.

The tubes would be followed by something no-one could have foreseen: Jozefina would oversee the creation of a sublime all-tube phono stage, and would create a range of superb turntables. She would even perfect the 'flat' tonearm that showed so much promise when

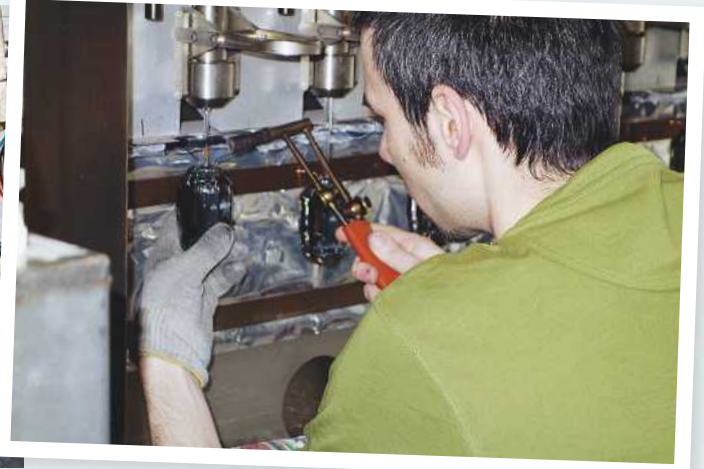
originally dreamed up by NAD.

Still too young to possess gravitas beyond her success and her intelligence, Jozefina is now 'establishment'.

'By May 2006, Jozefina was in a position to purchase Tesla'

Her brand is taken seriously, always present at major shows, and represented by 'A-list' distributors. With EAT's release of new models increasing markedly, doubling in three years, we visited her valve factory in Litovel, near Prague.

Jozefina recounts her growth in the audio industry as relatively uneventful, more cognisant of the learning curve for important matters than of industry politics. Her background in audio, prior



to learning about valves from the ground up with VAIC, was limited to a passion for classical music. Having been exposed to high-end hi-fi by Vaic, she found it interesting enough to pursue as a career.

ALESA VAIC

Recounting her 16 years in audio, Jozefina explained that, in 1998, she started to work with Alesa Vaic, who was part of an audio scene then established in the Czech Republic. This is not the place to recount the tale, but Jozefina explained that the area had a small but active audio community – the area also included JJ valves – at the heart of which was the late Dr Kron, whose KR Audio still makes radical valve amps under the aegis of his widow [HFN Aug '13].

With Kron producing tubes as well as amplifiers, the culture was established, and Alesa Vaic and the company VAIC were part of it.

At the time that she first got into the audio business via VAIC, Jozefina was studying for an MBA at the University of Economics in Bratislava, so it was natural for her to gravitate

toward sales. By this time, VAIC had built up a reputation for rectifiers and triodes, its mainstays being the 300B, 52B and 32B. Within a few years, having absorbed all she could about the 'art' of making valves, in an atmosphere with continuity back to the 1950s, changes in both the political climate of the country and her family life inspired Jozefina to set up on her own.

She had already amassed a roster of customers who wanted her to supply tubes, as Alesa was drifting out of the business. Jozefina says she wasn't actually employed by VAIC, but 'helping out as part of the family.' In 2003, she made her first contact with the company Tesla Vrsovice, with a long history of valve manufacturing, and which had only the 300B and a Gold Lion-inspired KT88 in production.

'I started to buy and sell KT88s and 300Bs, which they produced for me.' By May 2006, she was in a position to purchase Tesla and take over complete control of the entire production of both valve types. The owner of Tesla wanted to retire,

ABOVE LEFT: Valves burning in before fitting of base and pins, connected via alligator clips

ABOVE RIGHT: Martin Orna seals valves with a blowtorch, securing the vacuum

BELOW LEFT: Assorted machinery left over from the original Tesla factory, believed to date from the 1950s

BELOW RIGHT: A bank of modern test equipment devised by Martin Orna

which was the reason he decided to sell the company, despite it being in the midst of a valve 'boom'.

'Tesla was situated in the centre of Prague when he sold it to me. I moved the entire manufacturing facility from its original site in Vrsovice to Hloubetin, north east of the city.' She also kept the skilled crew of employees, adding a young tube wizard, to create the triumvirate that now hand-fashions every EAT valve, using both vintage equipment and heavily-modified test gear dedicated to its own products.

ASTONISHING WOMEN

Retaining these links to the Tesla days are two astonishing women who possess the skills one might have thought died out when the likes of MO Valve shut its doors. Kveta Perglerova actually terrified me with her handling of a blowtorch: British 'elf'n'safety' fanatics would have her imprisoned in moments.

I watched Kveta convert 2m-long raw glass cylinders, of which there were many boxes →



INVESTIGATION



ABOVE LEFT: Finished glass envelopes ready to be fitted with the internal structure



ABOVE RIGHT: These are the raw glass cylinders sourced from an outside supplier, awaiting cutting to length

leaning against a wall, into the valves' glass envelopes. Her primary task is good, old-fashioned glass-blowing, that blowtorch used to heat the glass to the necessary malleability after she cuts the long extrusions to length.

Next to her work space was an old-fashioned wooden stool, which had the same patina as a bar counter where countless drinkers had rested their cigarettes. The burn marks in this case came from the still-lit blow-torch, which she nonchalantly rested on its seat between uses. The action was mind-boggling, as if showing two-fingers to a health inspector.

GLASS BLOWING

Like a maestro in Murano, she blows the glass stems and glass envelopes for the valves in the old-fashioned way, with lung-power through a mouthpiece. She hand-rotates each glass envelope, producing absolutely faultless domes at the top of each valve's envelope, where she closes the cylinders, shaping them as well for the bulges of the relevant valve. She also burns the EAT logos into the

BELOW RIGHT: Kveta heating the glass before blowing to seal the end

BELOW LEFT: Miluse Rösslerová assembling the internals by hand 'with a watchmaker's skills'

glass and prepares the black valve bases with their gold-plated pins, to accept the complex innards.

Assembling the internals is handled by her long-time co-worker, Miluse Rösslerová, who builds the entire active component of every valve: the grids, anodes, cathodes, the lot. Jozefina is quick to point out that Miluse's skills are not unlike those of a master watchmaker because valve assembly involves working with ultra-fine parts at exceptional levels of precision, especially in terms of alignment. Miluse was also inspecting the arrival of a shipment of EAT

Cool Dampers when I visited.

Completing the trio is young blood Martin Orna, who does all the design work and development, including the devising of new machinery, developing new tooling and adapting test equipment as required for the manufacturing process. He has university degrees in both chemistry and electronics.

Martin takes the completed valves and tests them numerous times, first without the black bases or pins attached, then after fitting. All valves are measured, burned-in and measured again. He also matches every pair or quartet of valves after extensive measurement.

FORTUITOUS MEETING

EAT's tubeworks, which occupies a number of large rooms in a multi-storey building houses sufficient machinery to expand, but a natural limitation for producing valves of this calibre will always be finding

workers with the right skills. EAT also supplies new-old-stock Czech-made ECC88 and ECC803S signal tubes, outsourced to EAT specification, and these new-old-stock Czech tubes are used in the E-Glo.

In 2003-2004, with her business growing, Jozefina began searching for distributors, among them Absolute Sounds in the UK, and

"We listened until 2am, just comparing the components"





Music Hall in the USA. When looking for a distributor to handle nearby Austria, she met Heinz Lichtenegger. This would prove to be doubly fortuitous, firstly because he owns Pro-Ject, which would eventually be the enabler of EAT's growth into another area – turntables and electronics – and secondly because Heinz would eventually marry her.

Both are happy to explain how they have created 'battle lines' to delineate between the two companies, for Jozefina's EAT and Heinz's Pro-Ject are most definitely separate brands and do not share distributors nor sales networks. The connection beyond the conjugal is that Pro-Ject manufactures EAT's Forté, E-Flat and C-Sharp turntables and the E-Glo phono stage, for which there are no direct equivalents in Pro-Ject's catalogue [see 'Investigation', *HFN* Aug '14].

IRREPRESSIBLE SMILE

Jozefina, like Heinz, is overburdened with too many new ideas. Certainly, she's maintaining the production of 300B and KT88 valves, within the constraints of hand-manufacture and the demands it imposes, while turntables and tonearms have become the dominant product line.

'The main reason I'm here,' she say, 'is my passion for music. Classical – every week Heinz and I attend concerts. The other day, my New Zealand distributor was here, and we were listening to the system until 2am, just comparing the components Heinz and I have at home.' Said with her irrepressible smile, reminding me of the joy that gets us into audio in the first place, she makes you wish more women made the decisions in the high-end audio industry. ☺

ABOVE: Finished valves awaiting testing and matching; sets are prepared as both pairs and quads for absolutely identical values

ABOVE RIGHT: A young Jozefina in 2002, then representing VAIC abroad thanks to her command of English, seen here with the 300B

RIGHT: Anode/ Cathode assembly at mid-stage of production. The entire unit has been assembled by hand

EAT: KEEPING A TRADITION ALIVE

Jozefina, though as pro-active as one can be, acknowledges the role of fate in the saga of EAT. Her sister's then-marriage to Alesa Vaic and meeting Heinz Lichtenegger are the most obvious manifestations, but there are parallels to Heinz's discovery of a turntable factory about to close, which led to the birth of Pro-Ject.

'The valves I chose were already in production,' she says, 'and fortunately they were the two most in-demand output tubes: the KT88, based on the Gold Lion, and 300B. Basically, these still are the most important valves for hi-fi enthusiasts.'

Promoting her tubes – which typically sell for £500 per matched pair of KT88s, or £400 for a 300B – was not easy. 'It was difficult to explain because, in some cases, people didn't want to believe that we really were hand-producing the tubes. They wanted to believe we were having them made by a big company like JJ and relabelling them. But the more clever customers – trade and private customers – understood the difference in quality in the sound of my tubes.

'I explained how we always use expensive materials – the anodes use 99.98% pure nickel – and that we produce gold-plated grids and so on. And while there's a lot of money spent inside the valves, it's also the collected knowledge of the people who work for EAT.

'When I took over the factory, I took the people with me, craftsmen who have a lifetime of experience – these are the only jobs they have been doing for the whole of their lives. You need the experience. You can't produce a tube from a manual.'

"We make around 2000 KT88s and 2000 300Bs a year"

Making the transition to turntables was smooth because of Heinz. 'When the first Forté was shown, it was so well-received that one thing led to another. It

was natural that we would follow turntables with a phono stage, because we had access to Pro-Ject's electronics factory in Slovakia.

'We have been concentrating lately on turntables, but now that is up and running, we are renewing our efforts in promoting the valves. I have to approach people again the way I did ten years ago and remind them of what we are actually doing. We make around 2000 KT88s and 2000 300Bs a year. It takes a long time to finish one tube, checking the measurements the integrity, the vacuum.'

As for the future, Jozefina hints at very little, save for the possible appearance of a state-of-the-art, all-tube headphone amplifier.

'Maybe a streamer, maybe a CD player.' She's also attuned to the need to maintain and grow a workforce in the valve works.

'Our main guys are very young, and we have already started training candidates because the ladies want to retire. It is still possible to find people who can work with glass. Different schools in Prague train people who can do these jobs. Czech people want to work; this is our main advantage. You don't need to micromanage them, or control them. They are honest, hardworking people.'



T+A P3000/A3000/PS3000HV

Following the success of T+A's first 'HV' series components comes the company's promised pre/power amplifier combo – with an optional power supply upgrade too
 Review: **John Bamford** Lab: **Paul Miller**

When German audio specialist T+A Elektroakustik introduced its MP3000HV media player and partnering PA3000HV integrated amplifier [*HFN* June & Sept '13] its design engineers hinted that there were more components to come in its new HV, High Voltage, series. (For more on T+A's HV design methodology, whereby its components' various amplification stages are driven at unusually high voltage, readers might refer to our Sept '13 appraisal of the PA3000HV.)

THREE NEW COMPONENTS

And now here are *three* new HV components: a preamplifier, a two-channel power amp, and an additional power supply to 'beef up' the power amplifier's performance [see Lab Report]. Each is housed in an all-aluminium chassis identical in size and appearance to the previous units. And each boasts the same extravagant attention to detail and immaculate fit 'n' finish that has made its high-end integrated amp and media player such runaway successes [see boxout].

All are 'double mono' throughout, the left and right channels both electrically and mechanically separated, with power supply sections, audio circuits and control electronics housed in shielded chambers.

Given a cursory glance, the new P3000HV preamplifier (£9500) might easily be mistaken for the PA3000HV integrated (£9900) with its large VFD dominating the fascia, the display flanked in identical fashion by a rotary source selector and volume control. It's a tantalising combination of 'purist' audio exotica and comprehensive functionality that includes an *analogue* tone processor module to provide bass/treble adjustment, a user-variable 'loudness' control which can be adjusted to suit your loudspeakers' sensitivity and how far you sit from them,

RIGHT: Inside the P3000HV preamplifier separate L/R channel analogue tone processor modules sit above the main audio PCB. Power supply is concealed below in a shielded chamber

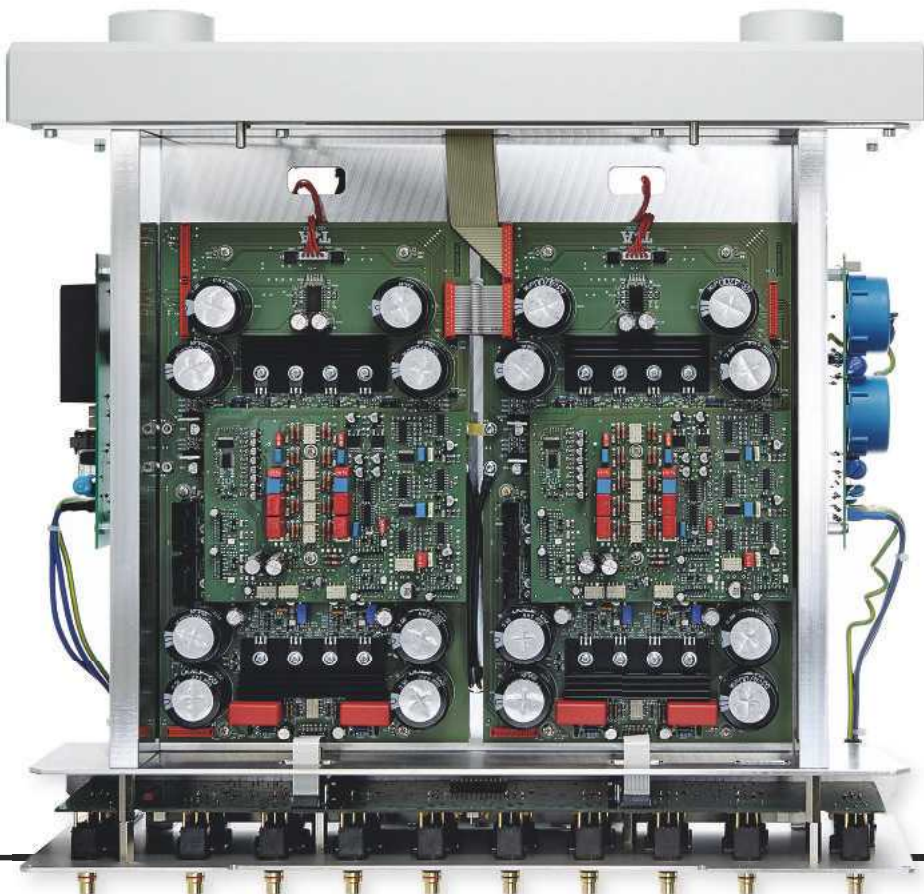
and three narrow-band parametric equalisers (per channel) working in the 20-500Hz range for tuning your speakers' bass performance to your listening room.

T+A provides a CD of audio signals and a free Windows PC utility on its website (with instruction manual) to aid accurate setup, although keen hands-on hobbyists will need to invest in a calibrated USB microphone. Settings can be entered manually or sent to the preamp via Ethernet from your PC. Or, of course, you can play around to your heart's content simply setting everything by ear to taste.

Illuminated touch-sensitive controls below the display window allow access to the preamp's configuration menu; inputs can be named; and the tone, loudness and parametric EQ functions can be individually enabled or bypassed. A headphone amp is built in as well, which

similarly can be turned on/off via the front panel. The preamp's source selector and volume control knobs have needle roller bearings to provide a luxurious operational feel, the electronic volume control employing discrete resistors and gold-contact relays to provide gain adjustment in 1dB increments. All input switching is carried out by sealed gold-contact relays incorporated within the circuits to keep signal paths as short as possible.

At the rear there are six line inputs, inputs 1-4 being switchable between single-ended (RCA) and balanced (XLR) operation. Furthermore, input 4 can be configured as a pass-through for integrating the preamp with a surround decoder. An optional MM/MC phono stage can be fitted by dealers, priced £990. And the preamp's microprocessor and display circuitry, and its critical analogue





audio circuits, are driven by completely independent power supplies – all the way to two AC inlet sockets. Oh yes: powering up the preamp requires two mains leads.

A SERIOUS STATEMENT

The partnering A3000HV power amplifier (£11,900) features a larger display window sporting two deliciously retro-looking power meters. Naturally these can be dimmed or turned off if you find them distracting. And you'll know it's a 'serious' power amp the moment you try to lift it – although its 2x300W/8ohm specified rating (and 38kg weight) is actually identical to that of the integrated PA3000HV. A rear switch converts the power amp to 'high current mono' mode.

Voltage and current amplifier sections are on discrete PCBs in separate case sections and galvanically isolated, while the fully symmetrical output stage employs MOSFET drivers and 'thermal tracking' bi-polar output transistors with integral temperature monitor diodes. Says T+A: 'We maintain the power transistors at a

constant operating point, regardless of temperature, which allows us to control the circuit's distortion behaviour regardless of the momentary load.'

There are two sets of rhodium-plated speaker terminals machined from pure brass which can be turned on/off via the front panel and used for bi-wiring or driving a second pair of speakers.

The A3000HV's linear power supply features a whopping 1000W transformer and is extremely 'stiff', nevertheless to further increase voltage and current stability to the amplifier's output stages the supplementary PS3000HV power supply unit can be added. Containing a 1200W transformer and a reservoir capacity of 240,000µF, it is hooked up via an umbilical cable terminated at each end with substantial M23 multi-pin connectors. At £7900 the PSU takes the price of the power amp to £19,800 – but it *does*

ABOVE: Two huge rotaries flank T+A's familiar operational display, governing input and volume as well as navigating through the set-up menu. In this picture, T+A's media player is selected

transform it into something altogether different [see Lab Report, p29]. The supply's huge VU meters can be switched to indicate operating voltage, current drain, or interference from the mains! Both the power amp and PSU employ IEC C20 inlet sockets rated at 16A, each unit supplied with a mains lead fitted with the requisite C19 female plug rather than a typical C13/C15 'kettle plug'.

All key functions are controlled via the chunky aluminium handset supplied with the preamplifier, and the three-box system becomes 'unified' for single button on/off switching once the units are daisy-chained via supplied 'E-Bus' CAT5 cables terminated with Neutrik RJ45 plugs.

Partner the amp combo with the MP3000HV media player and you're bound to prefer controlling your entire system with the company's FD100 handset supplied with the media player. This is a splendid bi-directional RF handset incorporating a small LCD screen displaying album artwork when streaming music files over a network – it comes with a charging base where it can be parked at night.

LIQUID POWER

I began listening to the P3000/A3000HVs as a two-box pre/power combo (£21,400). As with the PA3000HV integrated tested last year, I was greeted by a subjectively 'fast' and vivid sound with tight, punchy and fearfully powerful bass. I'd expected ↪

'I soon concluded the combo was far superior to the T+A integrated'

THE HIGHER HIGH-END

So enamoured were we of T+A's MP3000HV media player and PA3000HV integrated amp they got *HFN's* vote for being the best high-end audio component introductions of 2013-14. Other specialist hi-fi magazines throughout Europe agreed wholeheartedly – and the combo consequently won a prestigious EISA Award last autumn. 'To be honest, we designed our HV components primarily for the luxury audio markets of Asia and Russia,' T+A's head of development, Lothar Wiemann, tells us. 'We've been astonished – and delighted – by the demand for them among European audiophiles. Sales in our home German market alone have pretty much equalled our expectations for the whole world! Meanwhile our distributors have been clamouring for this more elaborate pre/power combination, which was always in our development plan but quickly became a priority to finalise.' Extreme high-end audio is thriving. Money, we're told, doesn't buy happiness but for those who can afford supremely luxurious products it has never been a better time to smile.



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ABOVE: T+A's classic 'fishbowl' meters are bang-on accurate, revealing power output into a 4ohm load, not 8ohm. **BELOW:** T+A's 'supplementary' PS3000HV PSU replaces the A3000HV's 1000VA supply with a 1200VA powerplant solely for its bipolar output stage

it to be revealing, yet was struck more by its effortless liquidity that resulted in a less 'stark' and rather more forgiving nature than I'd witnessed from T+A's integrated.

I was feeding CD-quality and hi-res audio from my computer into T+A's £1990 DAC 8 converter [*HFN* Oct '12]. When I'd used this identical source into the HV integrated I'd thought the DAC not *quite* good enough for such a revealing amp, yet with this pre/power combo I harboured no such concerns.

Returning to Stravinsky's *Rite of Spring* with the Cleveland Orchestra under Lorin Maazel [Telarc CD-

82001] the three-dimensional picture of a recording venue was palpable, woodwind and strings clearly separated, and the overall tonality frankly 'beautiful' – without appearing artificially sweetened.

Even with pretty standard quality pop fare such as Daryl Hall and John Oates' 'She's Gone', from the duo's *Greatest Hits: Rock 'n' Soul Part 1* compilation CD [RCA PD84858], the presentation was surprisingly smooth and civilised, with

good control of sibilants. Meanwhile clarity was excellent, allowing the singers' close harmonies to be easily assimilated even as the dynamics of the recordings became 'crushed' during the song's chorus sections.

I soon concluded this pre/power combo is far superior to T+A's nonetheless fabulous PA3000HV integrated. It delivers detail a-plenty, while appearing relaxed

and unforced. Adding the PS3000HV PSU to the A3000HV increases its power output capability by a good few watts while offering a substantial reduction in noise [see Lab Report, p29]. The increased

sense of ease and effortlessness it provided to music replay represents a major upgrade in sound quality – transforming a beautiful pre/power amplifier into a world-class combo of which hi-fi dreams are made. It sounded both immediate and exquisitely refined, and dynamic contrasts were startlingly lifelike.

I got one heck of a fright from its explosive bass power while swimming in the ambience of the experimentally

'Bass clarinet was described in all its deliciously chocolatey detail'



LOTHAR WIEMANN

'I first came to work at T+A Elektroakustik as a student in 1978,' recalls Lothar Wiemann.

'Working here helped finance my engineering studies, after which I worked for a few years in a patent office. This might not sound particularly glamorous – I guess it wasn't anything like as rewarding as working in audio.

'But looking back I consider it an important part of my education, as it gave me many useful insights into the rapid technological developments that were occurring during the 1980s. I returned to T+A in 1989, when I was offered the post of Head of Development. It certainly doesn't seem like 25 years ago... so it must be true that time flies when you're having fun!'

Forthcoming from T+A will be a high-end SACD/CD player with digital inputs, including USB, so that other sources can utilise its on-board D-to-A converter section. A prototype was revealed at the Munich High End exhibition in May. It will provide an alternative source option to the MP3000HV media player that includes a CD drive and UPnP network client, but which *doesn't* include SACD functionality. It's expected to launch later this autumn, priced at around £13,000.

Intriguingly, it will feature two sets of analogue outputs for connecting to two line inputs on an amplifier via two stereo interconnects – as the player will have completely independent replay chains and reconstruction filters for PCM and DSD sources!



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T+A P3000HV / A3000HV / PS3000HV



ABOVE: Preamp has six line inputs, four with balanced (XLR) options, a recorder in/out, and balanced and single-ended pre-outs. Power amp has two sets of speaker terminals for bi-wiring or can be switched to 'high current mono' mode

dissonant 'New Moon At Deer Wallow' from *Rain Tree Crow* [Virgin CDVX 2659]. The pre/power/PSU combo's seemingly unfettered low frequency power and definition plunges wa-ay down into the infrasonic region with ease, while the timbre and texture of Mick Karn's bass clarinet was described in all its deliciously chocolatey detail.

Similarly David Paich's bass synthesizer embellishments on Boz Scaggs' seductive 'Thanks To You' from *Dig* [Virgin 10635 2 1] were described immaculately by the HV amp combo, adding immense gravitas to the track's lusciously creamy recording quality.

STRIDENCY IN CHECK

I've not witnessed my Townshend Sir Galahad speakers so thoroughly 'gripped' and controlled since driven by Mark Levinson No53 monoblocks [HFN Jan '11], or so open and transparent to fine details buried in recordings. Moreover, voices and instruments always appeared realistically fleshed-out thanks to the combo's richly voiced midrange and natural high frequency reproduction.

With hi-res audiophile recordings I enjoyed holographic musical images, but also revelled in plenty of high-adrenalin hi-fi fireworks even when my system was challenged to reproduce less-than-stellar CDs.

One such was Michael Jackson's *Dangerous* [Epic 465802 2]: a cacophonous mess of a recording that sounds harsh, lean and scratchy

on any hi-fi system. But T+A's combo made the best of the rumbustious opening track 'Jam' and the only slightly less jarring 'In The Closet'.

The amplifier's dynamic prowess delivered the music's attacking rhythms with aplomb and its uncommon civility made a pretty good stab at keeping stridency in check. As the preamp has tone controls even the most unpalatable of recordings can be tweaked to sweeten them.

As a trio this pre/power/PSU combo is the price of a new car, so I wouldn't dare call it 'affordable'. Yet I'm already turning a shade of green, as there will doubtless be audiophiles ordering 'five-packs': mono-ing two of the power amplifiers and adding a power supply to each! ☺

HI-FI NEWS VERDICT

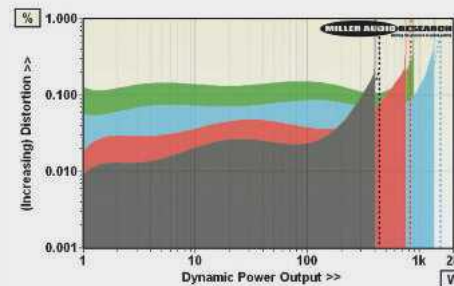
T+A's 'no compromise' HV series components are designed for the luxury audiophile market. In that context, this latest amp combo is sensational value. We've said this so often of T+A's separates there's a danger of it becoming tedious: if they were made by a boutique audio manufacturer they'd come with price tags two or even three times larger. Little wonder the German company is selling them hand over fist.

Sound Quality: 89%

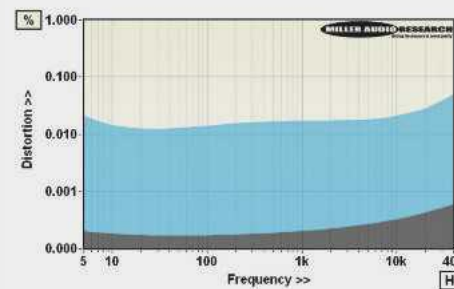


The technical prowess of this pre/power is beyond doubt with the P3000HV preamp the more 'linear' device offering a maximum +14dB gain (balanced), fabulously low distortion of 0.00007-0.00025% [20Hz-20kHz re. 0dBV – see Graph 2, below], a wide 102dB A-wtd S/N ratio and response flat to -0.45dB/100kHz. T+A's custom volume control acts in 1dB steps over a 60dB range with ±0.1dB overall accuracy, over an 80dB range with ±0.2dB accuracy and 90dB with just ±0.3dB variance – an incredible result!

The partnering A3000HV amplifier benefits substantially from the optional PS3000HV outboard PSU. There's obviously no change in the overall +26.5dB gain and only a fractional reduction in distortion from 0.01-0.043% to 0.0089-0.039% (1-300W/8ohm at 1kHz) and from 0.013-0.027% to 0.011-0.024% (20Hz-20kHz at 0dBW). The response is flat from 1Hz-50kHz (-0.5dB), reaching 100kHz at -2.3dB. Noise and power output are another matter, however. Disabling the A3000HV's main internal PSU reduces residual noise by 6dB and improves the A-wtd S/N ratio from 81.5dB to 88.8dB (re. 0dBW) with the PS3000HV connected. Continuous power output increases from an already substantial 350W/620W to 385W/700W into 8/4ohm while the dynamic output improves from 405W, 760W and 1.37kW into 8, 4 and 2ohm loads to 445W, 845W and 1.59kW [see Graph 1, below]. The output stage is protected above 890W (29.8A) into 1ohm with or without the PS3000HV. Readers may view extensive QC Suite test reports for the T+A P3000HV preamp and A3000HV power amp with/without PS3000HV PSU by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green). Dashed traces with PS3000HV PSU



ABOVE: THD vs. extended frequency; P3000HV (1V out, black trace) vs. A3000HV (10W/8ohm, blue)

HI-FI NEWS SPECIFICATIONS

| | |
|--------------------------------------|-----------------------------------|
| Power output (<1% THD, 8/4ohm) | 350W (385W) / 620W (700W) |
| Dynamic power (<1% THD, 8/4/2/1ohm) | 445W / 845W / 1.59kW / 890W |
| Output imp. (20Hz-20kHz, pre/power) | 45ohm / 0.051-0.061ohm |
| Freq. resp. (20Hz-100kHz, pre/power) | +0.0 to -0.45dB / +0.0 to -2.28dB |
| Input sensitivity (for 0dBV/0dBW) | 200mV (pre) / 133mV (power) |
| A-wtd S/N ratio (re. 0dBV/0dBW) | 101.9dB (pre) / 88.8dB (power) |
| Distortion (20Hz-20kHz, 1V/10W) | 0.00007-0.00025%/0.011-0.024% |
| Power consump. (pre/idle/rated o/p) | 45W (An)/5W (Dig) / 160W/960W |
| Dimensions (WHD All units) / Weight | 460x170x460mm / 28, 38, 38kg |

TechDAS TDC01 Ti

A mere six months after releasing its debut moving-coil cartridge, the TDC01, TechDAS has issued a titanium-bodied sequel. So how do they compare?

Review: **Ken Kessler** Lab: **Paul Miller**

Because of the résumé of TechDAS's Nishikawa-san, the company – known best for its sublime Air Force One and Two turntables – is certain to be delivering other than LP spinners in the future. I suspect a tonearm is in the offing, while an own-brand phono stage is not implausible, given that the company produced electronics before it unleashed its record decks. Transducers, too, loom large in Nishikawa-san's history, thanks to his days at Stax [see *HFN* Apr '14].

Inspired by the business model that affects a number of turntable manufacturers, which is the inevitable drive to produce one's own tonearms and cartridges, few were surprised at the Tokyo High End Show in November 2013 [*HFN* Feb '14], where TechDAS released the TDC01 moving-coil cartridge. Although its launch was overshadowed by the earth-shattering news that a second turntable had been completed and would sell for a third of the cost of the Air Force One, some of us were privileged enough to spend time with the TDC01, which turned out to be blindingly good.

TITANIUM LIVERY

In short order, TechDAS has now unveiled a second moving-coil, the TDC01 Ti, its suffix denoting the use of titanium for the body. Its price of £8750 represents an increase of around £800 over its sibling, the extra money paying for different materials, but absolutely nothing else about the TDC01 looks to have changed [see box out].

This makes it an ideal candidate, then, for those audiophiles who are captivated by the audible differences wrought solely by materials, when all else remains constant. Think of

RIGHT: TechDAS specifies a 'pure boron' rod for the cantilever of its Ti-bodied moving coil, the 3x30µm line-contact diamond both beautifully polished and mounted, free of excess glue, at its tip

the two in tandem as your old school 'lab experiment'. However, comparing them is also an exercise in masochism, because we are dealing with subtleties so fine that isolating these audible differences is inherently frustrating. But this has always been the case for moving-coil cartridges joined by new models that add to the mix a new cantilever, or revised wiring.

One imagines that this also plagues potential Koetsu owners, who are free to specify many of the ingredients in their own 'bespoke' purchases, which are customisable to the degree that it's hard to know what is the definitive version of a given type.

Luckily, I was able to install both the TDC01 and the new Ti simultaneously on two SME turntables, both auditioned

through the EAT E-Glo phono stage. It was a simple matter of swapping the cartridges to account for the differences between SME 30 and SME 30/12. Aside from the need to re-balance the Series V and V-12 tonearms, I could leave the E-Glo settings intact thanks to the MCs' identical specs.

It's not just titanium that captured the attention of the cartridge's designer: the cantilever is now pure boron, chosen for 'super high strength and light weight'. The lower mass relative to the TDC01's super duralumin cantilever is negligible vis-à-vis the 5g increase in cartridge weight but the reduction in *moving mass* may be key.

SUPERLATIVE TRACING

The use of solid titanium accounts for the entire egg-shaped carcass of the Ti, a blob vaguely reminiscent of other almost-amorphous forms such as the late, lamented Mr Briar/Goldbug. Unfortunately – and although the surface between cartridge and headshell is a massive plate made of the same material as the body (like the TDC01's) – it follows the same egg shape, so alignment is a touch tricky compared to parallel-sided MCs.

Like the TDC01 on which it is based, the Ti features a magnetic circuit that combines a healthy output voltage with low internal resistance, and it fed the E-Glo with sufficient signal to enable me to experiment liberally with the EAT's abundance of settings, while also allowing me to lower the gain on my Audio Research REF 75. This in turn fed a D'Agostino Momentum Stereo power amplifier, driving Wilson Alexias [*HFN* Aug '12 and Mar '13], the entire system wired with Transparent Reference.

As for the rest of the Ti's details, it carries a semi-line contact stylus tip with (claimed) superlative tracing ability, and ample clearance between body and LP surface to ensure that the remainder of the set-up regimen – curvy body aside – was painless. I set the VTA so the line along the SME V's arm tube was absolutely parallel to the LP.





LEFT: The exposed cantilever makes for easy cueing but while the solid titanium body promises a secure fit to all substantial tonearms, its curved profile is no aid to initial alignment

Anti-skating proved to be less of an issue than one might imagine with so high resolution a transducer as this. Equally, the cartridge responds vividly to even the slightest changes in tracking force, as does the 'normal' TDC01.

Fortunately, the TechDAS cartridges arrive with a full and generous complement of accessories, including a hyper-accurate digital electronic stylus force gauge for tracking force setting to satisfy the most fastidious of users – to 0.01gm, as well as a set of excellent 8N lead wires, should your tonearm feature detachable types, non-magnetic tweezers, titanium screws for mounting the cartridge and a non-magnetic screwdriver.

Aside from making use of the SME V's alignment protractor, this was the first

time I recall not having to dig out my trusty cartridge tool kit. (Yes, I still have my Technics stylus balance...)

COMMANDING PRESENCE

With last month's LPs to hand, I put the two MCs through their paces – having first equalised the amount of usage, because I respect run-in times. I had played but a dozen LPs with the TDC01, so I ran a dozen with the Ti (burn-in grooves on various test LPs). I did not, however, listen

while the Ti was bedding in, because I know the inescapable impact of a first impression – and I wanted these to be on an equal footing.

This review's repertoire included Chuck Jackson's *I Don't Want To Cry* [Sundazed LP5426] for its pure

'TechDAS has voiced the TDC01 Ti to exhibit little or no coloration'

SPECS COMPARED

Choosing between the TDC01 and the Ti may boil down to the tonearm/MC resonant frequency, because the main difference is weight. The solid titanium-bodied Ti weighs 17g, compared to the 12g of the TDC01's super duralumin body. The Ti's housing gets its finish from a 'special processed hard surface treatment', while the original's finish is stated specifically as 'DLC', short for 'Diamond-Like Carbon'. The only visual clue (Ti logo aside) is the original's black finish compared to the metallic grey/silver of the Ti. Cantilevers differ, too, the Ti's pure boron, but both are fitted with the same 3x30µm semi-line contact stylus. Factory (electrical) specs are identical, including the stated frequency response of 10-50kHz, internal impedance of 1.4ohm, recommended load impedance (I preferred 200ohm), output voltage (0.45mV), channel balance and separation. The recommended tracking force is 2.0-2.3g – I found 2.1g best suited the Ti, while the earlier TDC01 needed a marginally higher 2.2g.



analogue brilliance and his distinctive vocals, Daryl Hall & John Oates' *H₂O* [Mobile Fidelity MFSL 1-413] as an example of (then) state-of-the-art modern sound that still delivers the goods. *The Lowdown Back Porch Blues* by Louisiana Red [Pure Pleasure PPAN R25200] I chose for its sparseness; and – although the sonic qualities are hardly audiophilic – The Savoy Brown Blues Band's *Shake Down* [Decca Deram 375 066-5].

It was clear from the outset that TechDAS has voiced the TDC01 Ti to exhibit little or no coloration, blinding attack and the ability to retrieve the smallest details, as if given a brief that said: 'deliver a cartridge so transparent that vintage hardware guys will hear the unsullied "personalities" of their valves and horns, while modernists with "high-res" systems possessing limitless dynamics can exploit all their amplifiers and speakers can muster.' If this sounds schizophrenic, you'll understand why TechDAS has released the Ti in the wake of the original.

Masochism isn't my preferred attitude, but I couldn't resist that Savoy Brown debut, if for no other reason than my own love for the blues being a by-product of the British revival. What characterised every blues band of the era was a slavish adherence to the original techniques, such that Great Britain delivered – in what was an unbelievably short time – a generation of stunning guitarists, including Savoy Brown's Kim Simmonds.

Throughout the LP, his playing possesses both speed and fluidity, the latter surviving what could be a clinical portrayal by refusing to exhibit any brittleness. The liquidity worked in tandem with the attack, the earlier cartridge favouring the former and the Ti revelling in the latter. This also worked with the piano on 'I Ain't Superstitious', which tinkled with authenticity without acquiring any kind of ragtime piano-type glassiness.

Considering that my first listening to the two in a 'duel' revealed this characteristic so consistently, I was provided with a form of shorthand that remained true regardless of the recordings: the TDC01 is the 'gentler' of the two, while the Ti is the more commanding. That probably sounds ☺



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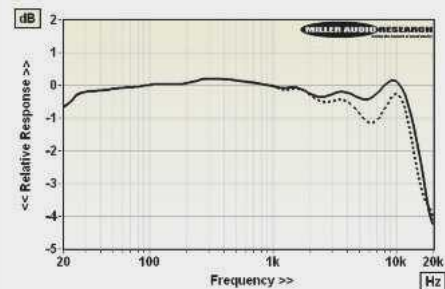
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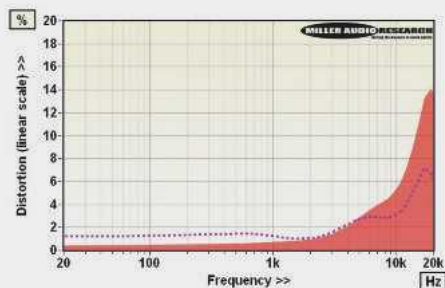
TECHDAS TDC01 TI

With a recommended tracking force range of 2.0-2.3g and tested at 2.2g, this heavyweight MC proved to be a more than adequate tracker, surmounting the 70µm groove pitch while just showing signs of mistracking on the right channel at +12dB (315Hz lateral cut, re. 11.2µm). As befits its 17g bodyweight, the TDC01 Ti's dynamic compliance is low and reasonably symmetrical at 11/14cu (vertical/lateral) although tonearms with an equal or higher effective mass than SME's Series IV/V are most appropriate if the arm/cartridge resonance frequency is to be held around 9Hz. Matching TechDAS's spec. almost precisely, this medium output MC offers 440µV (re. 1kHz/5cm/sec) into 100-200ohm loads with an acceptable channel imbalance of 0.53dB but slightly weak 26dB stereo separation.

Distortion is low through bass and midrange, achieving an unequalised 2-2.1% (re. 1kHz/5cm/sec) – a healthy 1% lower than typical and almost purely 2nd harmonic in character. Distortion does increase sharply at high treble frequencies however, in line with the MC's response above 10kHz, reaching 14% (lateral) and 9% (vertical) at 20kHz [-8dB re. 5cm/sec; see Graph 2 below]. Despite the very slight loss in energy through the presence band and -4dB drop from 10kHz-20kHz, the *symmetry* between lateral and vertical cuts [see Graph 1, below] is clearly excellent and augurs well for consistently solid stereo imagery across the soundstage. Meanwhile, it's the peak in output at 10kHz that gives the TDC01 Ti its subjective 'bite'. Readers may view a comprehensive QC Suite test report for the TechDAS TDC01 Ti MC pick-up by navigating to www.hifinews.co.uk and clicking on the red 'Download' button. **PM**



ABOVE: Frequency response curves (-8dB re. 5cm/sec) lateral (L+R, solid) versus vertical (L-R, dashed)



ABOVE: Lateral (L+R, solid) and vertical (L-R, dashed) tracing and generator distortion (2nd-4th harmonics) vs. frequency from 20Hz-20kHz (-8dB re. 5cm/sec)

RIGHT: Another view of TechDAS's precisely aligned boron cantilever. The cartridge pins are silver-plated and well spaced to accommodate most tonearm leads/tags



so emphatic that I must apologise and provide a caveat.

In practice, the sonic chasm between these two cartridges is so small that one could probably find two identical products with consecutive serial numbers that differed more due to quality variations within the test parameters.

SO WHICH TO CHOOSE?

So will you get to hear the two side-by-side, to hear the £800-or-so difference? I have no idea what retailers keep on demonstration, so let me move on to the words of Messrs Hall and Oates, who managed to produce gloriously 'natural'-sounding recordings even in an era of studio excess.

The most expressive part of the portrayal is probably the artifice, rather than those glorious voices: the synth-y sounds, the crisp bass – we've all heard 'Maneater' so often that it's part of the collective consciousness, but via the TechDAS cartridges, it acquires a new gloss.

Trouble is, which gloss do you prefer? Bear in mind that I use an all-valve phono amp, a valve/hybrid preamplifier and a solid-state amp, so my set-up should provide an ideal middle ground. Thankfully, it's revealing enough to make me cautious. While the Hall & Oates recordings favoured the TDC01 for the slight tempering of the album's coolness, the Ti added a slight sense of increased airiness.

What the pure analogue of Chuck Jackson and Louisiana Red brought to the sessions were older recordings and distinctive voices. The former is slick, uptown soul, the latter a form of the blues somewhere inbetween urbane and rural. Jackson's material begs a layer of polish, Red's is raw, but both are gutsy. The original TDC01 maintained a commonality to

both, giving each recording equally convincing soundstages, natural and extended bass, and lifelike vocals.

Switching to the Ti, it was possible to hear *slight* variations in the recordings' absolute purity that were not exposed with the same brazenness as through the TDC01. The Ti is scalpel-like in its precision, and this manifests itself in a more warts'n'all manner.

At this level, and for well-heeled music lovers, the price difference is negligible. But then so are the sonic details that the extra money and the alternative materials deliver. To be blunt: you could mask them with a change of cables. To decide if the TDC01 Ti is a better choice than the 'vanilla' TDC01, you'll need the same mind-set you exercise when going for a hearing test. ☺

HI-FI NEWS VERDICT

If a division exists between classic moving-coils such as Koetsu and Denons versus the 21st century school, TechDAS's TDC01 Ti decisively falls under the latter heading. It is super-precise, ear-openingly detailed and blindingly fast. Warmth is not as big a part of its sound as for old MCs, the Ti eschewing romance. But it is a perfect mate for valve phono stages, behaving as should a true reference cartridge.

Sound Quality: 88%



HI-FI NEWS SPECIFICATIONS

| | |
|-----------------------------------|---------------------------------|
| Generator type/weight | Moving coil / 17g |
| Recommended tracking force | 2.0-2.3mN (2.2mN) |
| Sensitivity/balance (re. 5cm/sec) | 440µV / 0.53dB |
| Compliance (vertical/lateral) | 11cu / 14cu |
| Vertical tracking angle | 26 degrees |
| L/R Tracking ability | 65µm / 70µm |
| L/R Distortion (-8dB, 20Hz-20kHz) | 0.55-13.5% / 0.56-15.8% |
| L/R Frequency resp. (20Hz-20kHz) | +0.2 to -4.2dB / +2.1 to -1.1dB |
| Stereo separation (1kHz / 20kHz) | 26dB / 21dB |

Focal Grande Utopia EM

Boasting a 400mm sub-bass driver and adjustable time alignment, this flagship speaker is as grand as they come
 Review: **John Bamford** Lab: **Keith Howard**

Seldom has a loudspeaker looked so striking. Focal's Grande Utopia EM is the French speaker specialist's statement model, a *tour de force* which, even in a large listening room, looks fearsomely imposing. Standing over 2m tall it even overshadows Wilson Audio's mighty Alexandria XLF [HFN Oct '12]. It has a slightly larger footprint as well, and weighs only 20kilos less than a Steinway Model O living-room grand!

So it's hard not to drool over this granddaddy of Focal's top-line Utopia III model range, whose lineage dates back two decades to the introduction of the first Grande Utopia in 1995. Now in its third generation, it's been described by some as an 'acoustical sculpture' thanks to the uniquely shaped articulated enclosure, which Focal calls Focus Time.

The speaker actually consists of a plinth and five separate enclosures: a tweeter section in the centre is flanked by two conjoined cabinets above (one containing a 165mm midrange driver and the uppermost a reflex-loaded 270mm bass driver) and two fixed cabinets below it (a further 165mm midrange driver and, at the bottom, a whopping 400mm/16in sub-bass driver that operates below 50Hz).

Separate, stacked enclosure modules might not be revolutionary in loudspeaker design, several companies employing this approach to fine-tune driver placement and arrival time relative to the listening sweet spot, but in the Grande Utopia Focal's implementation is nothing short of fabulous! A crank handle, parked behind a drop-down flap at the rear [p37], fits into a socket in the back of the tweeter cabinet. Each turn of the handle adjusts the position of the tweeter relative to the midrange and bass drivers below it, while simultaneously

raising or lowering the upper two cabinets by exactly twice as much as the tweeter enclosure – thus preserving the correct 'arc' of the baffles. A numerical counter allows you to set the angles precisely and repeatedly in just a matter of moments.

SETTING A BALANCE TO TASTE

Also at the rear are a series of jumpers for fine-tuning the speaker *in situ*. Three-step settings provide tweaking of the crossover slopes between midrange and treble as well as tweeter and midbass levels and sub-bass Q. The Grande's sub-bass woofer employs an electromagnetic motor system

[see boxout], whose separate power supply unit furthermore has six level-settings for balancing the overall performance to taste.

Focal supplies a seven-track CD to aid setup, with useful

listening notes to help the process; for example: 'It is easy to fall into the trap of boosting the level of the EM woofer to make up for deficiencies in recordings... And there's no point in trying to reproduce a 16Hz organ pedal in a 25ft room. It ain't gonna happen.'

Focal manufactures everything in-house. The company owns a substantial cabinet works, builds its own drivers, and even boasts a clean room in which it fabricates its beryllium foil tweeters. The company's 27mm IAL2 – 'infinite acoustic loading' – inverted dome tweeter is mounted on a precision-machined metal sub-baffle and the rear of the dome and its surround

RIGHT: Articulated cabinet can be adjusted to time-align the drivers to the hot seat. A 27mm beryllium tweeter is flanked by two 165mm midrange drivers, with a 270mm woofer on top and 400mm EM sub-bass unit at the base

'These Focal flagships showed no signs of stress whatsoever'



ELECTROMAGNETS

Before there were permanent magnets, the first loudspeakers utilised electromagnets. A large 'field coil', energised by hundreds of volts of DC through a second pair of connections to the driver, created a temporary magnetic field. It wasn't until after World War II that advances in permanent magnet materials, and their subsequent affordability, saw the decline of field coil drivers for consumer audio applications – although recent years have seen a resurgence of interest among audiophile hobbyists, with various driver models available for DIY speaker builders from the likes of Feastrex, Supravox, Voxativ and Lowther America. Focal's 400mm electromagnetic sub-bass driver in the Grande Utopia EM weighs 24kg, 22kg of which is the motor unit alone. You want deeper bass and better efficiency? Turn up the power to the coil.

operate into free air behind, loaded by a tuned cavity.

Boasting a claimed bandwidth of 1kHz-40kHz, its motor system employs a neodymium 'focus ring' magnet assembly to provide a high field strength. Meanwhile the midrange, bass and sub-bass drivers feature Focal's third-generation 'W' composite sandwich cones formed of Rohacell foam and varying thicknesses of adhesive-impregnated glass fibre material, trimmed by a laser cutter for precise termination with their surrounds.

The company claims that by controlling the thickness of the foam and the layers of glass fibre tissue it can dial in the characteristics it requires for any given design, optimising a cone's behaviour for the desired operating frequency range.

The motor system in the 270mm midbass driver features a multiferrite magnet, while the two 165mm midrange drivers employ Focal's familiar 'Power Flower' arrangement where seven small-diameter ferrites form a ring around the voice coil. Regarding its 400mm EM driver (in which 7kg of copper wire replaces a 'traditional' permanent magnet) the company says

that, compared to the driver featured in the previous Grande Utopia, it offers an 80% increase in available

magnetic field, an 88% increase in the force applied to accelerate the cone, increased sensitivity, a lower resonant frequency, and a reduction in distortion by a factor of almost four. The speaker's four-way network is divided into three separate blocks, with crossover points at 80Hz, 220Hz and 2.2kHz.

The multiple-enclosure cabinet is a work of art, formed of 5cm-thick MDF panels heavily lacquered to an immaculate gloss finish. Stock colours are white carrara, imperial red, hot chocolate and black lacquer, with custom colours to order.

AN ENORMOUS SPREAD

Oh boy... it's impossible not to be overwhelmed by the scale of the sound image produced by these beautiful behemoths. Hearing them conjured up memories of seminal experiences from my youth – such as my first encounters with ceiling-high Beveridges and Infinity's awe-inspiring IRS system of yore.

In the modern era they stand comparison with the aforementioned Wilson Alexandria XLF, Sonus faber's Aida [*HFN* Apr '12] and a select group of statement designs which anyone able to contemplate owning needs to hear for themselves before whipping out their platinum Amex cards.

Driven by a Devialet 800 dual-mono amplifier system in the editor's media room [www.hifinews.co.uk/news/article/meet-the-team;-paul-miller/9952] and fed a healthy diet of CD-resolution and hi-res digital music files, the pair of Grande Utopia EMs threw up an *enormous* sonic picture, creating life-sized images of musicians with consummate ease. And they sure as heck could move some air! We found ourselves pumping the gas as much as we dared, creating rock concert sound pressure levels, and these Focal flagships showed no signs of stress whatsoever. ➔





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Chris Thomas, Hifi+ Issue 113

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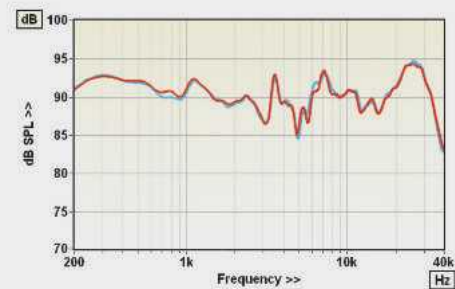
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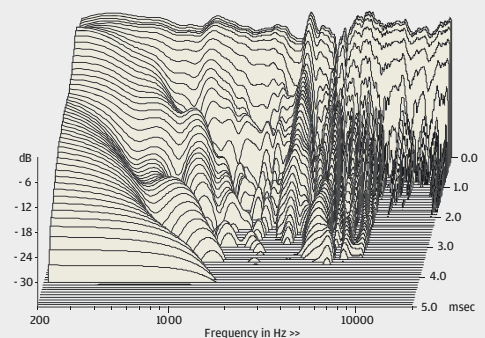
FOCAL GRANDE UTOPIA EM

Focal claims a very high 94dB sensitivity for the Grande Utopia EM but our measured pink noise result of 90.7dB suggests that this is around 3dB optimistic. Low impedance is used to help achieve this figure, Focal's specified nominal impedance of 8ohm making little sense given that it also states a minimum value of 3.0ohm. We measured the lowest impedance to be 2.9ohm at 90Hz. While impedance phase angles are quite well controlled, the EPDR (equivalent peak dissipation resistance, which takes into account phase angle) drops to a low of 1.6ohm at 216Hz. For a speaker of this size and cost, that rates as relatively amplifier friendly, being little worse than most smaller, cheaper floorstanders.

Frequency response, measured on the tweeter axis [Graph 1, below], is highly uneven about a convex trend, with errors of ± 4.2 dB (200Hz-20kHz). This measurement was taken, as usual, at 1m distance but repeating it at 2m elicited little improvement, so the irregularities are not caused by time misalignment of the midrange drivers and tweeter. Pair matching over the same frequency range was poor at ± 1.8 dB but the largest disparities were narrow-band between 5kHz and 6kHz – everywhere else the matching was to within ± 1.0 dB. Despite the beryllium tweeter the response peaks at a low 26kHz before rolling off steeply beyond. The diffraction-corrected near-field bass response reached 34Hz (-6dB re. 200Hz). The reason for the ragged response is obvious from the cumulative spectral decay waterfall [Graph 2], which shows a series of prominent high-Q resonances above 3kHz, presumably caused by breakup modes in the midrange cones. KH



ABOVE: Forward response is surprisingly uneven – the broad trend convex, dipping through the midrange



ABOVE: Cumulative decay waterfall reveals a series of modes above 3kHz, presumably from the mid drivers

LEFT: Base plate has two sets of binding posts and an input socket for the Electromagnetic driver's separate DC power supply. Drop-down flap reveals jumpers for fine-tuning. Note the crank!

agile. Indeed with certain music we actually found them a little too sharp-edged, even 'stark'.

Of course, when hearing familiar recordings through such a massive 'window' it's all too easy to become critical of poor microphone quality and shoddy recording production. But with some 'reference' material we were surprised by some spikiness and a degree of coarseness.

For example, with the Hoff Ensemble's *Quiet Winter Night* acoustic jazz project [2L-087] played from a 192kHz/24-bit file, despite the speaker's agility the sound appeared very slightly hazy, the instruments' leading-edge transients mildly blurred.

Of course, we enjoyed many delightful surprises. The Beatles' 'And I Love Her' from the 2009 44.1kHz/24-bit remaster of *A Hard Day's Night* sounded delectably intimate – as if Macca had popped in to grant us a personal rendition – and when switching to party mood the pumping bass lines of Nelly's 'Pimp Juice' and 'Hot In Here' from his classic *Nellyville* [Universal 017 747-2] brought grins of satisfaction all round.

Our test measurements reveal that there remains room for further refinement in this ambitious and innovative speaker design. But in a large listening room and partnered with cost-no-object ancillaries they can sound mighty grand. ☺

HI-FI NEWS VERDICT

Any loudspeaker this expensive has to be compared with its peers – which is something any prospective purchaser would endeavour to do when about to spend as much as a house on a high-end audio system. Needless to say it will also require careful partnering with state-of-the-art amplification and ancillaries. Privileged indeed are those audiophiles able to contemplate such high-end audio esoterica.

Sound Quality: 80%



Playing the hypnotically infectious 'Dreaming' from 2011's *Duo* collaboration [Jazzland Recordings 060252770419] by Norwegian Jazz pianist Bugge Wesseltoft and German techno producer Henrik Schwartz on synthesizers, showcased the Focal speaker's startling dynamic capability as the pulsing music moved ever upward. It handled the explosive bass thwacks seemingly with contempt, as the music rattled our ribcages.

FAST ON ITS FEET

While many monster monitors capable of delivering oodles of bass down to subsonic frequencies can sometimes appear subjectively 'slow' and ponderous, the Grande Utopia EM sounds tremendously fast and

HI-FI NEWS SPECIFICATIONS

| | |
|--|-----------------------------------|
| Sensitivity (SPL/1m/2.83Vrms – Mean/IEC/Music) | 90.1dB/90.7dB/90.3dB |
| Impedance modulus min/max (20Hz–20kHz) | 2.9ohm @ 90Hz 15.1ohm @ 2.1kHz |
| Impedance phase min/max (20Hz–20kHz) | -17° @ 79Hz 44° @ 1.2kHz |
| Pair matching (200Hz–20kHz) | ± 1.8 dB |
| LF/HF extension (-6dB ref 150Hz/10kHz) | 34Hz 39.2kHz/38.2kHz |
| THD 100Hz/1kHz/10kHz (for 90dB SPL/1m) | 0.2% 0.4% 0.1% |
| Dimensions (HWD) | 2012x654x880mm |

"The P10 will have an effect ranging from positive to positively startling".

Hi-Fi News



P S A U D I O

Pioneering world class audio products

"The P10 improves the sound in all aspects. I couldn't live without it in my system".

Mr Sheridan, Belfast

40 years in the making, PS Audio's range of mains regenerators give you complete control of your mains for the sound you aspire to.

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P3

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P5

- 1kw of continuous regenerated power (1.2kw on peak)
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- Touchscreen display
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P10

- 1.25kw of continuous regenerated power (1.5kw on peak)
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All products in the range provide stable mains to your system, reduce incoming harmonic distortion to virtually nil, and have the ability to step up/down the incoming voltage to provide regenerated mains at the level you require. The result will be obvious to you: improved dynamics, far better base and a much bigger soundstage - always.

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String Suspension Concept

Mini Base Platforms



Helping you achieve the perfect sound



hi-finews

GROUP TEST

With the rise of computer-based hi-resolution audio, the enthusiast is faced with USB DACs of every description. But what of the alternatives? This month, it's networked media players

NETWORK MEDIA PLAYERS £500-£3650

TESTED THIS MONTH

| | |
|--------------------------|-------|
| CYRUS STREAM X SIGNATURE | £1450 |
| LINDEMANN MUSICBOOK 20 | £3650 |
| MUSICAL FIDELITY M1 CLIC | £1399 |
| NAIM AUDIO ND5 XS | £1975 |
| PIONEER N-50 | £500 |



Cutting-edge gear, cherry-picked by the *Hi-Fi News* editor



The pinnacle of sound quality within its peer group



Great sound, great value and a cut above its rivals

• AMPLIFIERS • TURNTABLES • CARTRIDGES • DACS • NETWORK PLAYERS • HEADPHONES • SPEAKERS •

You've only to visit a high-end audio show to appreciate that computer audio playback has well and truly come of age. When manufacturers want to demonstrate their amplifiers and speakers at their best they will play state-of-the-art recordings either pushed directly from a computer to a hi-res-capable DAC (usually via an asynchronous USB interface) or 'streamed' across an Ethernet LAN and rendered by a network audio player.

Streaming was once limited to lossy MP3s and rips of 44.1kHz/16-bit compact discs at best, and the player's functionality varied enormously from model to model. But the technology has matured: 192kHz/24-bit compatibility and gapless playback of segued tracks is now the norm rather than the exception. This month's five units represent a variety of choices.

The Cyrus Stream X Signature is a dedicated network player 'transport' (albeit with digital inputs so it can act as a 'hub') with only a digital output. We've partnered it with a matching XP Signature DAC from Cyrus. Naim Audio's ND5 XS is a

network player with built-in DAC, a suite of digital inputs, and it can be fitted with a DAB+FM tuner module as well. Similarly Pioneer's N-50 is a network player and DAC – but it also includes an asynchronous USB input for direct connection to a computer.

Meanwhile Lindemann's Musicbook 20 and Musical Fidelity's M1 CLiC function as system preamplifiers as they feature analogue and digital inputs and variable outputs. We've tested the Pioneer and Musical Fidelity players before and rated them highly. Do they still stack up today?

SYSTEM AND MUSIC

A library of FLAC and WAV files was placed on a laptop PC (Windows 7) and JRiver Media Center software running as a UPnP server. Each player was connected in turn via Ethernet cable and auditioned 'blind' by a panel of three audio enthusiasts, the volume levels of the players carefully normalised.

We used a high-end playback system comprising the luxurious amplifiers from T+A Elektroakustik reviewed on pages 24-29 and Townshend Sir Galahad speakers so

that our listeners could observe even subtle changes in sound quality.

Tracks included 'Fall' by jazz combo Melphi from *Through The Looking Glass* [SnipRecords; 96kHz/24-bit download], Boz Scaggs' beautifully produced 'Thanks To You' from his album *Dig* [Virgin 10645 2 1] and the track 'Mosaic' by former Wings guitarist Laurence Juber, recorded at 96kHz/24-bit on a 2003 DVD-Audio entitled *Guitar Noir* [AIX Records 80018]. For an orchestral recording with wide dynamic range we used the first of Rachmaninov's *Symphonic Dances* with the Minnesota Orchestra under Eiji Oue, recorded at 176.4kHz/24-bit by Reference Recordings and issued on one of the label's 'HRx' DVD-ROMs [HR-96].

And to further rattle the rafters we played Daft Punk's 'Lose Yourself To Dance' from the 'studio master edition' of *Random Access Memories* [Sony/Columbia; 88.2kHz/24-bit download]. Read on to see how each model fared in our listening tests and how they measured. ↻

REVIEWS BY JOHN BAMFORD
LAB TESTS BY PAUL MILLER

• AMPLIFIERS • TURNTABLES • CARTRIDGES • DACS • NETWORK PLAYERS • HEADPHONES • SPEAKERS •

Cyrus Stream X Signature

Cyrus Audio's portfolio of components might appear bewildering, since they're all housed in the company's familiar diecast casework. CD transports, CD players, DACs, DACs with preamp functionality, various amplifier options... there are myriad ways to assemble a Cyrus Audio system depending on required features and your ultimate performance goals.

And so it is with the company's network audio players: it has several models based around its current (v2) 'Stream X' core which offers 192kHz/24-bit playback across a wired LAN, and internet radio via the Tuneln portal. We tested the Stream XP2 Qx in *HFN* Aug '13. That model is a digital-input-only preamp with on-board DAC and network player.

This time we're looking at Cyrus's latest Stream X Signature, a minimalist network player *transport* which simply has an S/PDIF (RCA) output. Less is more, claims the company: 'This separation produces a much clearer and deeper sound quality because the power source isn't being shared by multiple components.' For our tests we partnered it with a DAC XP Signature DAC/preamp. As a combo costing £4200 this makes the Cyrus the most expensive in our test group.

All Cyrus network players are priced with the company's lovely n-remote, a bi-directional RF handset with colour screen that displays album artwork and parks in a re-charging dock. But if you'd rather control everything via a tablet or smartphone the Cyrus Cadence app

(iOS and Android) is also first-class – and you can save £200 without the n-remote.

DETAIL HAZY

Our listeners were initially impressed by the Cyrus combo's fulsome bass reproduction: the deep synthesizer bass notes underpinning Boz Scaggs' 'Thanks To You' were positively seismic via the Stream X Signature player and partnering DAC XP.

Tonality was 'rich' and high frequencies seductively smooth, but we soon noticed that fine details were masked and images somewhat hazy, particularly in this group context. Laurence Juber's acoustic guitar playing appeared mellow and mellifluous, yet this high resolution recording lacked its authentic 'snap' and familiar pristine clarity. Similarly the Melphi jazz combo appeared soft-focused and veiled. The contribution from the acoustic bass player was noticeably woolly and indistinct in the soundstage.

The Cyrus combination created a massive sonic picture of the Minnesota Orchestra, with good depth and sense of three-dimensionality. But again, timpani and basses were boomy and inarticulate, which spoiled instrumental specificity and image focus. Our listening panel assumed this to be the cheapest player in the group rather than premium-priced.

Sound Quality: 70%

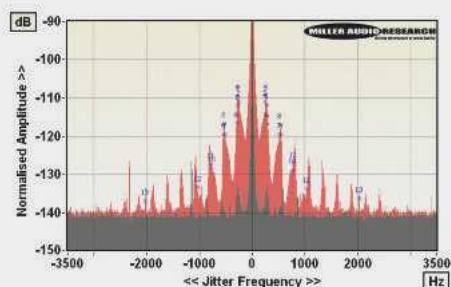


ABOVE: File navigation is easy via the rotary control, despite simple display. You can also use the n-Remote or Cadence app

HI-FI NEWS LAB REPORT

While the Stream X Signature's network connectivity performed flawlessly, the test results necessarily reflect the performance of the partnering DAC XP Signature 'digital preamp' connected here via a box-to-box S/PDIF link. Maximum output is a very high 8.3V/54ohm via its balanced XLRs, and distortion, even at this peak level, is very low indeed at 0.00025% through bass and midrange, increasing to a still impressive 0.0015% at 20kHz and 0.0025% at 30kHz with higher sample rate files. The 111.4dB A-wtd S/N is wide but could have been wider still bearing in mind the high maximum output. Noise-related jitter clearly increases from 48kHz through to 192kHz rates, up to a debilitating 7450psec [see Graph, below].

The DAC XP Signature also has a slightly uplifted treble response, amounting to +0.17dB/20kHz (44.1/48kHz media), +0.52dB/40kHz (96kHz media) and +0.55dB/50kHz (to -4dB/90kHz with 192kHz files), while low-level linearity is good to -90dBfs becoming around ±1dB drift at -100dBfs. Stereo separation is better than 78dB from 20Hz-20kHz. **PM**



ABOVE: High resolution jitter spectrum with 24-bit/48kHz (black) and 24-bit/96kHz data (red) over a wired network

| | |
|-------------------------------------|------------------------------|
| Maximum output level/Impedance | 8.3Vrms / 54ohm |
| A-wtd S/N ratio | 111.4dB |
| Distortion (1kHz, 0dBfs/-30dBfs) | 0.00025% / 0.0007% |
| Distortion (20kHz, 0dBfs/-30dBfs) | 0.0015% / 0.0029% |
| Freq. response (20Hz-20kHz/45kHz) | -0.00dB to +0.17dB / -0.18dB |
| Digital jitter (48kHz/96kHz/192kHz) | 20psec / 1550psec / 7450psec |
| Resolution @ -100dB | ±0.5dB |
| Power consumption | 20W |
| Dimensions (WHD) | 220x70x360mm |



LEFT: Two Toslink and three RCA digital inputs make the Stream X Signature a digital hub and the USB socket works with iDevices. Output is S/PDIF (RCA) only



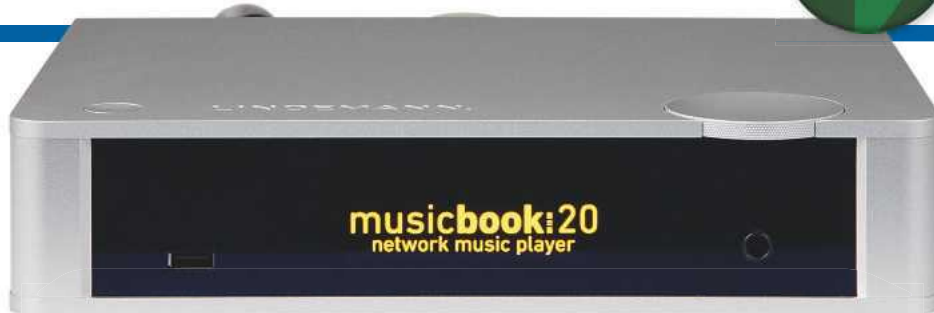
Lindemann Musicbook 20

Lindemann is a boutique brand founded in 1992, and situated near Munich. While its stock in trade has been high-end components, the company is now producing a range of compact products dubbed Musicbook, targeting what is seen as a trend for smaller audio systems.

There are four Musicbook source components, all of which are preamplifiers with two single-ended (RCA) analogue inputs and four digital inputs (two RCA, two Toslink). The MB20 featured here and the £3890 MB25 [HFN Jun '14] have on-board network music players, the latter also including a slot-in CD player mechanism. The MB10 and MB15 feature asynchronous USB inputs instead of network players. Also in the range is an identically-sized Class D power amp, to make a complete Musicbook system.

While expensive, these bijou MB components are extremely handsome, housed in beautifully finished 6.5mm-thick aluminium cases and featuring classy OLED displays. They also have discrete Class A headphone amplifiers built in. Output is governed by a resistor network to control volume in 1dB steps. Channel balance, display brightness and fixed/variable output modes are set in the configuration menu, using the supplied IR handset. But you *must* own a tablet or smartphone to navigate music files, as this is the only way to select music on the network. Lindemann's Musicbook app (iOS and Android) is excellent: it even allows you to custom-name the MB's inputs.

FABULOUS DEPTH
 Demonstrating a pleasingly 'warm' midband character and with a



silky smoothness to its treble, the MB20 proved to be a charming and seductive music player. It was also highly transparent to variations in the quality of recordings – yet more forgiving of shortcomings than the more matter-of-fact Pioneer, perhaps because of its subjectively 'sweeter' high frequencies. It was judged more akin to the Musical Fidelity CLiC in this respect.

The adrenaline-fuelled electronic 'creation' by Daft Punk sounded full-bodied and infectiously uplifting – without any stridency – while the 96kHz/24-bit audiophile recording of guitar virtuoso Laurence Juber sounded noticeably 'hi-res': percussive leading edges were sharply-etched and the sound image was brimming with fine detail.

It couldn't match the Naim in terms of dynamic shading, especially with Melphi's 'Fall', where the jazz combo increase the tension and singer Lotte van Drunen lets rip, nevertheless the MB20 was highly commended by our panel. The Minnesota Orchestra's performance of Rachmaninov's *Symphonic Dances* had us transfixed thanks to its supremely 'deep' silences and fabulous sense of sound stage depth and instrument placement.

Sound Quality: 76%

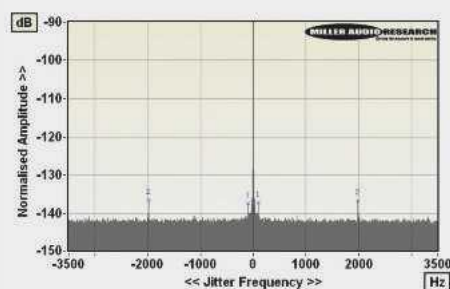


ABOVE: Rotary wheel controls volume and selects inputs. OLED display shows track info, but file selection is only via app

HI-FI NEWS LAB REPORT

To all intents and purposes Lindemann's 'Musicbook' 20 is the same core network media player and DAC as the MB25 [HFN Jun '14], minus the latter's slot-loading CD drive. The DSP and analogue section is based around an apodising digital filter solution from Anagram with Wolfson WM8742 24-bit/192kHz DACs, the responses obviously 'shaped' with high sample rate files, rolling away to -3dB/26kHz and -10dB/30kHz with 96kHz media and -3dB/49kHz to -12dB/60kHz with 192kHz media.

Tested at volume '78' for a maximum undistorted output of 3.95V/97ohm (THD is as low as 0.0005-0.0009% through mid and high frequencies but increases to 0.004% at low bass frequencies), the MB20's 107.5dB A-wtd S/N ratio is a little lower than possible but still perfectly acceptable. Distortion is also very low indeed at ~0.0004% through the crucial -10dBFs to -30dBFs range, where much of the musical action resides. Importantly, Lindemann's digital path is very clean with jitter held to exceptionally low levels of just 10-20psec for all 24-bit digital input sample rates. PM



ABOVE: High resolution jitter spectrum with 24-bit/48kHz data delivered over a wired network connection



ABOVE: There are four S/PDIF and two RCA analogue inputs, Toslink and RCA digital outputs, and both single-ended (RCA) and balanced (XLR) analogue outputs

| | |
|-------------------------------------|-----------------------------------|
| Maximum output level/Impedance | 3.95Vrms / 97ohm |
| A-wtd S/N ratio | 107.8dB |
| Distortion (1kHz, 0dBFs/-30dBFs) | 0.0009% / 0.0004% |
| Distortion (20kHz, 0dBFs/-30dBFs) | 0.00045% / 0.0005% |
| Freq. response (20Hz-20kHz/45kHz) | +0.0dB to -0.3dB / see lab report |
| Digital jitter (48kHz/96kHz/192kHz) | 12psec / 15psec / 18psec |
| Resolution @ -100dB | ±0.1dB |
| Power consumption | 10W (1W standby) |
| Dimensions (WHD) / Weight | 280x65x220mm / 3.5kg |

Musical Fidelity M1 CLiC

When we first reviewed Musical Fidelity's M1 CLiC [HFN, Jun '11] its streaming capability was limited to playback of 96kHz/24-bit files, however a firmware update soon enhanced the functionality of its Stream Unlimited core 'engine' to accommodate 192kHz playback via wired LAN.

It subsequently ran off with a 2011/12 EISA Award due to its fine performance and fabulous value, as this so-called 'universal music controller' is actually a full-function preamplifier as well as a network audio player and D-to-A converter.

It has three analogue inputs with pure analogue paths through to its output, three S/PDIF inputs (two RCA; one Toslink) and both fixed and variable output sockets at the rear. The CLiC's Type B USB input is a 'legacy' type restricted to 16-bit media with a maximum 48kHz sampling rate, but its coaxial S/PDIF inputs accept data up to 192kHz/24-bit. Musical Fidelity does of course have its V-LINK₁₉₂ USB-to-S/PDIF converter for pushing music directly from a computer's USB socket.

The D-to-A section of the CLiC is based on MF's excellent-value M1 DAC, employing 24-bit Delta-Sigma dual differential DACs with 8x oversampling. Wi-Fi is built in should you want to connect the CLiC to a WLAN; there's an A Type USB socket on the front for memory sticks and another at the rear for digital connection/control of an iPod/iPhone. MF's iOS app is a tad basic, however many users may appreciate

its simplicity. Android users will need to use a third-party app.

RICH TEXTURES

The CLiC sounded really excellent given its less than high-end price. The fulsome bass of Boz Scaggs' 'Thanks To You' was rendered with plenty of weight and power, if not with quite the authority and control displayed by the Naim ND5 XS, while its gentle high frequency quality made it appear smooth and refined. Its performance was especially praised with our challenging Daft Punk track, the CLiC's 'civilised' demeanour obviating any uncomfortable HF graininess – although one listener did accuse it of robbing the music of some of its vitality as a consequence.

Its subjective softening also 'darkened' the hi-res recording of Laurence Juber's 'Mosaic', the vibrancy of the plucked guitar strings and percussive accompaniment missing some of the sparkle delivered by some of the network players in the group.

Playing the 176.4kHz/24-bit Rachmaninov recording showed how the MF could satisfactorily deliver a richly-textured sonic picture of an orchestra in full flight. Soundstage depth was excellent, as was the CLiC's tracking of the recording's immense dynamic contrasts.

Sound Quality: 85%

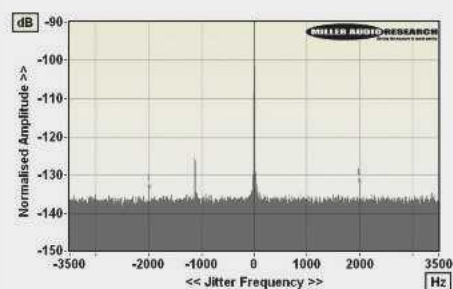


ABOVE: 320x240mm full colour QVGA screen shows cover art and file info. Navigation and control is via RCU or MF app

HI-FI NEWS LAB REPORT

Arguably the first media player to bring network functionality within easy reach of the progressive audiophile [HFN Jun '11], Musical Fidelity's CLiC still puts up a fine performance, handling 192kHz WAVs as both 24-bit and 32-bit floating point files. The single-ended RCAs deliver 1.97V from a moderate 147ohm source impedance and benefit from a full 108.8dB A-wtd S/N ratio. The superior DACs offer a massive >120dB rejection of digital images (65dB with 96kHz media), crystal clock selection is held to within ±25ppm while digital jitter is suppressed to levels comparable to that of the newer Lindemann and Naim players at <15psec for all 44.1kHz-192kHz sample rates [see Graph].

Musical Fidelity employs a fixed roll-off filter, so the CLiC's response stretches out to +0.13dB/20kHz (48kHz media) but rolls gently away beyond 30kHz, reaching -2.5dB/40kHz (96kHz files) and -15dB/80kHz (192kHz files). Distortion is close in 'character' to the Pioneer N-50 at <0.003% over the top 40dB of its dynamic range through bass and midrange frequencies and 0.0016-0.013% at 20kHz. Still fresh after all these years! PM



ABOVE: High resolution jitter spectrum with 24-bit/48kHz data delivered over a wired network connection

| | |
|-------------------------------------|------------------------------|
| Maximum output level/Impedance | 1.97Vrms / 142ohm |
| A-wtd S/N ratio | 108.8dB |
| Distortion (1kHz, 0dBFS/-30dBFS) | 0.0025% / 0.0010% |
| Distortion (20kHz, 0dBFS/-30dBFS) | 0.014% / 0.0047% |
| Freq. response (20Hz-20kHz/45kHz) | -0.00dB to +0.13dB / -4.50dB |
| Digital jitter (48kHz/96kHz/192kHz) | 13psec / <10psec / 15psec |
| Resolution @ -100dB | ±0.4dB |
| Power consumption | 6W |
| Dimensions (WHD) | 220x100x300mm |



LEFT: Type A USB input is for iPod. Type B USB plus four S/PDIF and three analogue inputs make the CLiC a complete control-centre/preamp, with both fixed or variable outs



Naim ND5 XS

Naim Audio has a range of UPnP streaming network players to suit a variety of different budgets and requirements. This ND5 XS comes from the company's slimline XS Series, a step up from the Salisbury firm's entry-level i-Series products but less expensive than its Classic Series components.

It's a DAC as well as a network audio player, with three S/PDIF inputs for connecting other digital sources, an S/PDIF (BNC) output and a single-ended analogue output on Naim's customary DIN connector and a pair of RCAs, selectable via the unit's setup menu. In the bottom left corner of the fascia is a USB A-Type socket that provides a digital connection to iDevices as well as playback of files directly from USB storage or memory sticks. And a multi-pin Burndy socket allows connection of an optional XP5 XS power supply (£1595) said to upgrade the player's performance. A factory-fitted DAB and FM tuner module is a further option, which raises the price to £2250.

Fully 192kHz/24-bit compatible, the ND5 XS employs digital technology derived from the Naim DAC. A SHARC digital signal processor is used for Naim's proprietary 16-times oversampling, buffering and digital filtering; the player's various sections are galvanically isolated from each other to reduce interference; and D-to-A conversion is courtesy of a Burr-Brown PCM1791A DAC.

Everything can be controlled by illuminated buttons on the front panel or the supplied IR remote control handset. Naim's n-Stream app for iOS is particularly noteworthy. It can control a



complete Naim system when components are connected via their 3.5mm remote in/out jack sockets; moreover, pressing the info icon when a track is playing brings up supplementary album data courtesy of Rovi entertainment metadata.

VERVE AND BITE
 Sounding crisp and notably vivid, the ND5 XS was highly praised by our listeners. Daft Punk's 'Lose Yourself To Dance' had immense verve and 'bite' thanks to the Naim's taut and punchy bass delivery, while Melphi's 'Fall' similarly benefited from the player's tremendous bass alacrity.

Vocal diction was also first-rate, although on Boz Scaggs' 'Thanks To You' his vocal appeared a little more forward than our listeners were accustomed to with the test group. Nevertheless the Naim sounded extremely 'tidy', with elements of the production always remaining sharply focused in the soundstage.

Where the Musical Fidelity, Lindemann – and the Cyrus in particular – appeared to blunt the leading-edge transient attack of Laurence Juber's guitar strings in AIX's hi-res recording, the ND5 XS sounded highly explicit. Here the performance truly sounded 'alive'.

Sound Quality: 82%

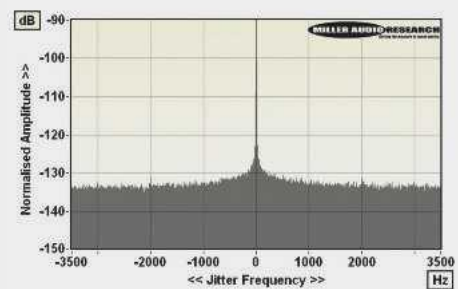


ABOVE: OLED screen offers good legibility. Playback is via fascia buttons, the supplied RCU, or Naim's n-Stream iOS app

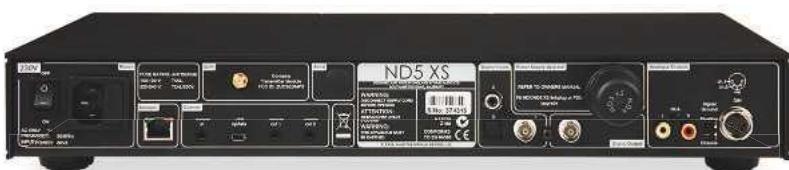
HI-FI NEWS LAB REPORT

Naim's proprietary upsampling IIR filter, first seen in the Naim DAC [HFN Jun '10], also defines the time domain and response behaviour of the ND5 XS. A reduced attenuation of stopband artefacts with 48kHz recordings (just -43dB at 26kHz re. 22kHz) and a restriction of the response of both 96kHz and 192kHz media to a -3dB point of 27kHz is traded for the virtual elimination of all pre-ringing, or pre-echo, in the impulse (time) response. Unlike the Naim DAC, however, distortion increases more obviously at high frequencies through the ND5 XS's analogue stage from 0.0006% (1kHz) to 0.009% (20kHz) although these figures could never be described as 'high'. Output impedance increases at bass frequencies to 203ohm.

The A-wtd S/N is about 2-3dB shy of that offered by the MF and Pioneer players at 106dB but low-level linearity remains tightly controlled at ±0.1dB over a full 100dB dynamic range. Stereo separation is superb at >110dB from 20Hz-20kHz while jitter is up (more correctly, down) with the best here at a fabulously low <20psec over all sample rates [see Graph]. PM



ABOVE: High resolution jitter spectrum with 24-bit/48kHz data delivered over a wired network connection



ABOVE: There are three S/PDIF inputs – RCA, BNC and Toslink – and a digital output (BNC). Burndy socket is for additional PSU. Analogue output is on DIN and RCAs

| | |
|-------------------------------------|-----------------------------------|
| Maximum output level/Impedance | 2.01Vrms / 22-203ohm |
| A-wtd S/N ratio | 105.8dB |
| Distortion (1kHz, 0dBFS/-30dBFS) | 0.0006% / 0.0010% |
| Distortion (20kHz, 0dBFS/-30dBFS) | 0.009% / 0.005% |
| Freq. response (20Hz-20kHz/45kHz) | +0.0dB to -0.3dB / see lab report |
| Digital jitter (48kHz/96kHz/192kHz) | <15psec / 25psec / 200psec |
| Resolution @ -100dB | ±0.2dB |
| Power consumption | 10W |
| Dimensions (WHD) | 435x98x330mm |



Lars & Ivan

THA-8



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Pioneer N-50

Pioneer has two network players: the super-budget-priced N-30 [*HFN* Aug '13] and this better-spec'd N-50 that we first tested in Aug '12. Such is its feature set and cost/performance ratio that it won an EISA Award for 'best streaming product 2012/13'.

Where the 'baby' N-30 is simply a network player, this N-50 also functions as a standalone DAC. It features a 192kHz/32-bit capable asynchronous USB input at the rear as well as two S/PDIF inputs (one Toslink and one RCA), plus a front panel USB A-type socket providing a digital connection for iDevices and direct playback of local storage and memory sticks. Subsequent to our 2012 review a firmware update rectified our initial criticisms: gapless playback is now supported, as are ALAC, AIFF and files with a 176.4kHz sample rate.

Although its wrap-over bonnet is decidedly mass-market, the N-50 is deceptively heavy. It has a sturdy chassis with reinforced base plate and independent power supplies feeding its digital and analogue sections. It has the BridgeCo DM860 chip that's employed in Stream Unlimited's client, and D-to-A conversion is via twin AK4480 32-bit/128x oversampling DACs in dual differential mode. On-board DSP adds Pioneer's 32-bit Hi-Bit upsampling and 'sound retriever' processing designed to enhance compressed media, while a Pure Audio function bypasses the DSP.

A 2.4in colour LCD screen shows a tiny thumbnail of album cover art and displays details of file type/sampling frequency. Control apps for iOS and Android are available, Apple's AirPlay is built in, but Wi-Fi



and Bluetooth adapters are £50 optional extras.

GREAT FOR DETAIL

Does it still stand up as a fine-sounding network player despite its age? You bet! Totally unaware they were listening to a network player costing *considerably* less than the others in the test group, our 'blind' listeners found its open-mouthed and vibrant sound highly rewarding.

When playing the Boz Scaggs and Daft Punk tracks it couldn't hold a candle to the Naim ND5 XS in terms of bass detail and clarity – although it sounded very well extended at low frequencies. Nor did it offer the refined treble sweetness of the Lindemann Musicbook or Musical Fidelity CLiC.

In the Rachmaninov, while appreciating the player's openness and soundstage ability, our listeners complained of a coarsening 'electronic sheen' to the orchestra's strings and brass during *ff* passages.

But where the Cyrus was 'soft and mellifluous' and the MF slightly 'muted' with our 'Mozaic' track, the N-50 sounded incredibly fast and explicit. There was no blunting of transients, the player proving highly revealing of fine details.

Sound Quality: 85%



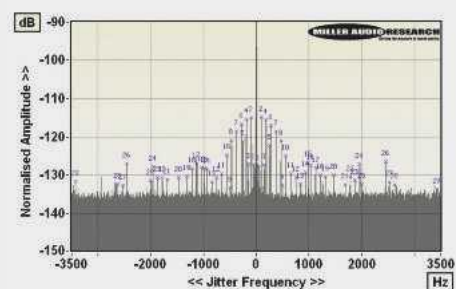
ABOVE: Optical and coaxial S/PDIF inputs and outputs are provided alongside asynchronous USB in and ports for connecting external Wi-Fi and Bluetooth adapters

ABOVE: Colour LCD display is a nice touch, if impossibly small to read from a distance. Silver or black finish is available

HI-FI NEWS LAB REPORT

Network DSP horsepower is advancing at a sufficient pace that Pioneer's N-50 player is now available at £100-150 less than its £500 introductory price [*HFN* Aug '12]. It remains capable of streaming content up to 24-bit/192kHz and distortion is both low and impressively consistent over the top 30dB of its dynamic range at some 0.0015% (midband), increasing to 0.004-0.015% at 20kHz. The A-wtd S/N ratio is also usefully wide at 108dB and the output only fractionally higher than the 2V 'standard' at 2.12V, although the output impedance is just a little higher than I'd prefer (100ohm or less) at 435ohm.

Into a 47kohm preamp load, the N-50's response(s) are very extended, right out to -0.75dB/45kHz with 96kHz media and -3.7dB/90kHz with 192kHz media. The latter is handled with great security, free of dropouts and enjoying the same, low 200psec jitter as recorded for lower-rate 96kHz and 48kHz/24-bit media [see Graph]. Stereo separation is good to 100dB (midband) to 75dB (20kHz) while low-level resolution is in the top flight at ±0.5dB over a full 100dB dynamic range. PM



ABOVE: High resolution jitter spectrum with 24-bit/48kHz data delivered over a wired network connection

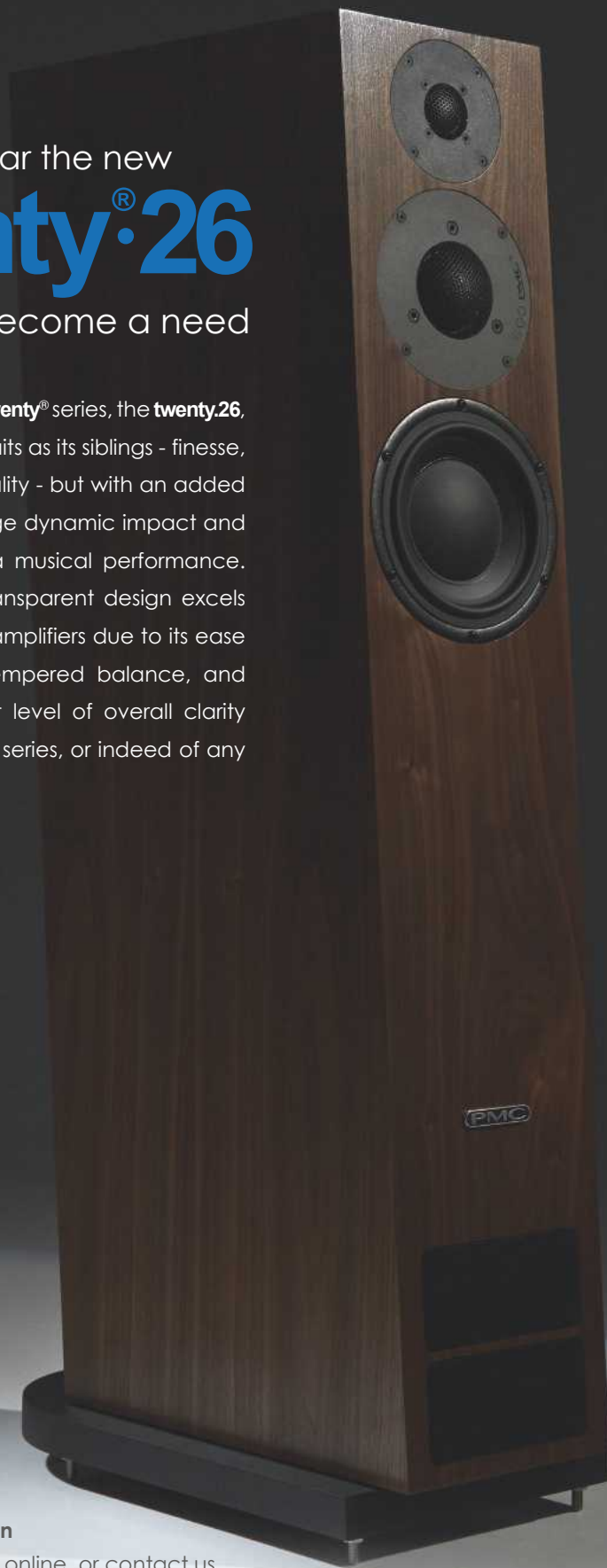
| | |
|-------------------------------------|------------------------------|
| Maximum output level/Impedance | 2.17Vrms / 435ohm |
| A-wtd S/N ratio | 107.6dB |
| Distortion (1kHz, 0dBFS/-30dBFS) | 0.0013% / 0.0010% |
| Distortion (20kHz, 0dBFS/-30dBFS) | 0.015% / 0.010% |
| Freq. response (20Hz-20kHz/45kHz) | +0.01dB to -0.04dB / -0.75dB |
| Digital jitter (48kHz/96kHz/192kHz) | 200psec / 200psec / 200psec |
| Resolution @ -100dB | ±0.5dB |
| Power consumption | 10W |
| Dimensions (WHD) | 435x98x330mm |



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GROUP TEST VERDICT

• AMPLIFIERS • TURNTABLES • CARTRIDGES • DACS • NETWORK PLAYERS • HEADPHONES • SPEAKERS •

Summing up this group of network players isn't entirely straightforward, since they offer such a broad range of features. And remember: our subjective score ratings are based on 'sound quality for the money'.

So we're not saying the Pioneer N-50 sounds better than Naim Audio's ND5 XS. It doesn't. It's higher score reflects the fact that it's less than one quarter the price. We also judged sound quality solely on each player's network streaming functionality using a wired Ethernet connection. They might perform differently via WLAN – and different again when used as standalone DACs with a computer or disc transport as a source.

THE ONE DISAPPOINTMENT

Clearly the most perplexing network player in our blind listening tests was Cyrus Audio's 'purist' Stream X Signature transport (which some enthusiasts term an 'Ethernet-to-S/PDIF converter'), partnered with the company's highly-specified DAC XP Signature DAC/preamp. Both components are supposed to represent trickle-down technology from Cyrus's glossily-encased 30th Anniversary system which graced the front cover of our May '13 issue.

However, our listeners were underwhelmed by the combination's subjectively blurred bass delivery, hazy imaging and veiling of detail. It was the one disappointment of this month's group test.

Whether you prefer the sonic character of Pioneer's ultra-vivid N-50 or the less forthright demeanour of Musical Fidelity's M1 CLiC will most likely depend on the tonal balance of your system. When hearing our selection of music tracks played by the Pioneer our listeners had no idea they were listening to a network player/DAC costing so little. In fact you'll find it for as

little as £350 if you shop around. It might not sound as dynamically forthright or all-of-a-piece as the Naim, or as smoothly sophisticated as Lindemann's Musicbook 20, nevertheless it's a stellar buy for the money and remains just as outstanding a product today as when we first heard it three years ago. It represents the epitome of budget esoterica, especially when one considers it's also a 32-bit/192kHz-capable USB DAC and it features Apple's AirPlay. Remarkable!

Musical Fidelity's M1 series components might be a little utilitarian in appearance but they deliver fine

sound quality for the money. The M1 CLiC offers outstanding value given that it's a complete preamplifier with three analogue inputs. It sounds a tad softer and 'sweeter' than the Pioneer N-50, as it's more relaxed and easy-going.

Lindemann's Musicbook components are wa-ay more expensive. But they *look* expensive in their all-aluminium livery, and sport

lovely OLED front panel displays which add a touch of class. The MB20 sounded extremely refined and 'tidy', with silky high frequencies and a tube-like midrange purity that was beguiling.

SOUNDS TREMENDOUS

I'm not sure I'd want to spend this much simply to 'stream' – but, like the CLiC, it *is* a preamplifier that can form the basis of a high quality system. Just don't forget you *must* own a smartphone or tablet, as Lindemann's control app is the only way to navigate and select the music files served on your network.

Judged purely on sound quality Naim's ND5 XS was the most engaging network audio player of this test group. It delivers music with verve and panache, its bass noticeably extended, tuneful and informative. Alongside Linn Products, Naim Audio can claim to have pioneered audiophile-quality audio streaming. And it shows: the ND5 XS sounds tremendous. Ⓞ

'The Lindemann Musicbook OLED displays add a touch of class'



ABOVE: Naim Audio's ND5 XS delivers the musical goods in spades. Pioneer's EISA Award-winning N-50 is bargain-priced and remains the epitome of budget esoterica

• AMPLIFIERS • TURNTABLES • CARTRIDGES • DACS • NETWORK PLAYERS • HEADPHONES • SPEAKERS •

Oppo HA-1

Hot on the heels of the PM-1 planar magnetic headphone, here's the headphone amplifier that Oppo would like you to drive it with. It does a lot more besides...

Review: **Keith Howard** Lab: **Paul Miller**

When I wrote in the course of our recent review of the Oppo PM-1 planar magnetic headphone [*HFN* Jul '14] that Oppo was launching a headphone amplifier at the same time, I rather sold the HA-1 short. Because, in what is an obvious trend in this product sector, the HA-1 is a headphone amplifier – and then some!

I suppose it was Benchmark that began this trend by equipping its compact, high-value DACs with a capable headphone amplifier. They became, in effect, an amalgam of DAC, headphone amplifier and simple preamp, and the HA-1 is from the same mould. Only whereas the Benchmark products are, as I've just said, compact, the HA-1 is at the other end of the size-scale for an item of this type. But Oppo isn't selling you fresh air: the HA-1 is crammed with circuitry, as the photo below shows.

HI-RES RATES

Much of this electronics, you won't be surprised to hear, derives from Oppo's widely-lauded BDP-95EU and BDP-105 universal disc players [*HFN* May '12 and Jan '13]. The HA-1 uses the same ESS 9018 Sabre DAC and the same output circuitry downstream of it. But the headphone amplifier and preamplifier stages are new. Key feature of the former is a Class A output stage specified as delivering up to 0.5W into low-impedance (32ohm) headphones or 0.2W into high impedance (600ohm) models via the unbalanced path from phono input to ¼in jack out, rising to 2W and 0.8W respectively via the balanced path from XLR inputs to four-pin XLR output, for those headphones equipped for balanced drive.

To translate this into voltage, 0.5W into 32ohm is equivalent to 4Vrms, sufficient to drive many low impedance 'phones to levels approaching or even exceeding 130dB SPL. These, note, are the rated

RIGHT: The HA-1's packed interior includes a hefty linear PSU, an ESS 9018-based '32-bit' DAC stage culled from Oppo's BDP-105D [*HFN* Jan '13] plus a bespoke Class A analogue output

outputs per channel for low levels of distortion (<0.01% THD); quoted maximum outputs are considerably higher at 3.5W/0.6W and 3W/2.4W [see Lab Report p53]. Output impedance is low (quoted as 0.7/0.5ohm unbalanced/balanced), so whatever frequency response was designed into a headphone is what you'll get via the HA-1 even if its impedance varies widely.

Conventional headphone amplifiers have only analogue inputs so if you want to construct a minimalist hi-fi system using a computer as music source you will need to buy a DAC to go between them. Not so in the case of the HA-1 which, alongside an unbalanced analogue input on phono sockets and a balanced input on XLRs, provides for unbalanced digital input via phono socket, optical input via Toslink, AES/EBU balanced digital input via XLR and an asynchronous USB input via the usual B-type socket.

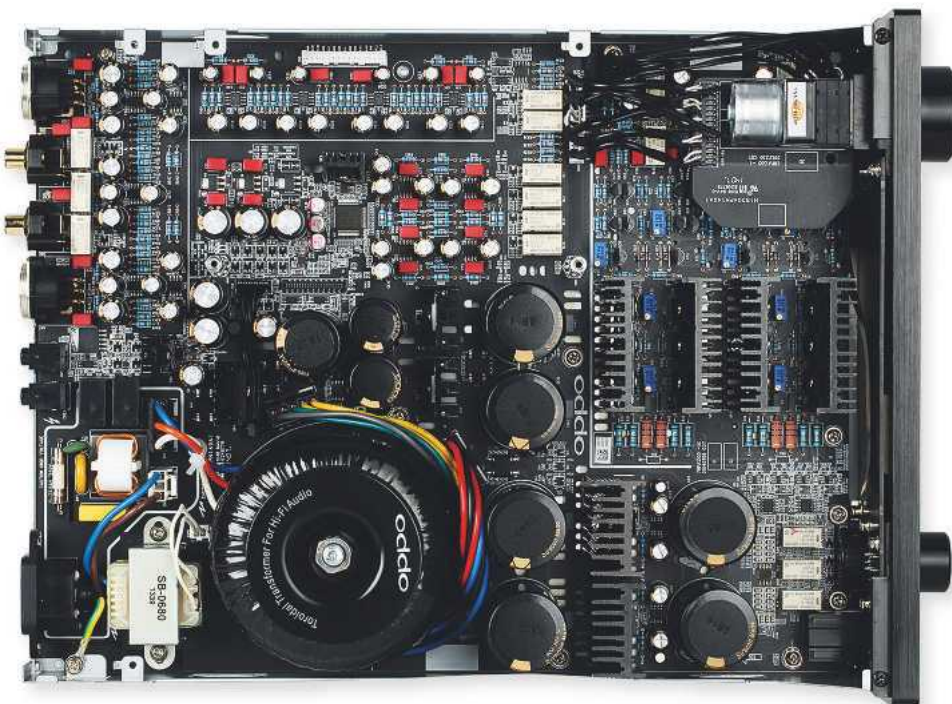
The unbalanced, balanced and Toslink digital inputs all support up to 24-bit resolution and 192kHz sampling rate while the USB input stretches out to

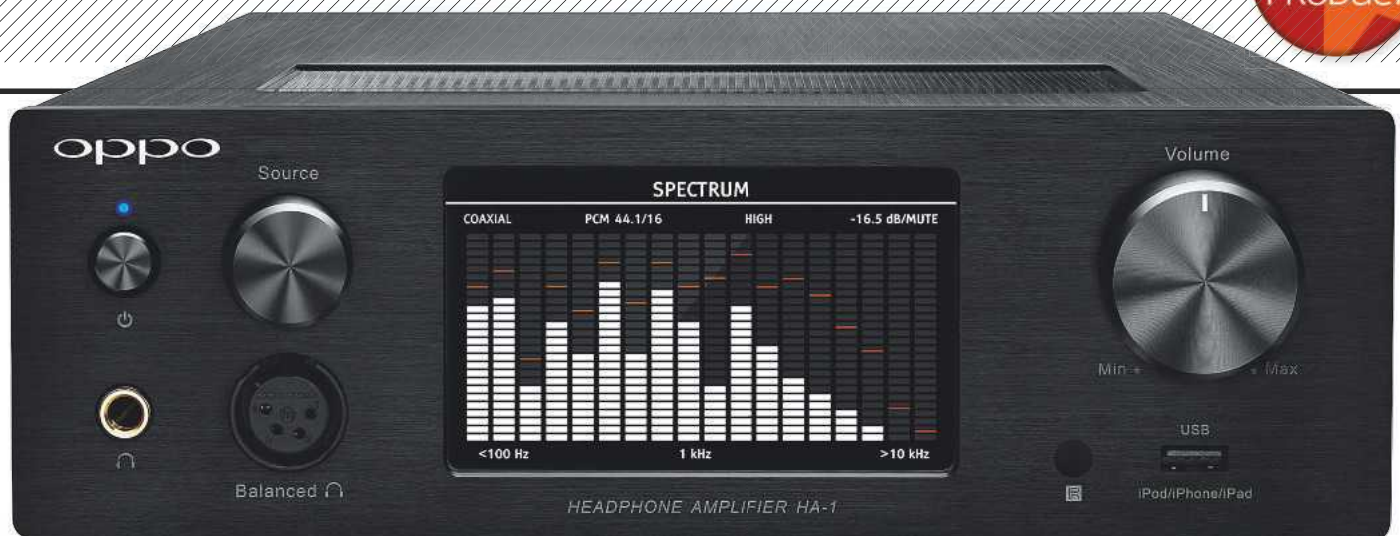
384kHz/32-bit, which means you can play DXD (352.8kHz/24-bit) files without downsampling. The USB input also provides DSD replay using the DoP (DSD over PCM) interface at rates up to DSD128 (5.6448MHz/1-bit), *ie*, twice the usual DSD rate of DSD64, and even supports DSD256 (11.2896MHz/1-bit) in 'native' mode.

DANCING DISPLAY ANYONE?

The rear panel is completed by a pair of phono and XLR sockets carrying unbalanced and balanced analogue outputs respectively, trigger in and out sockets, and the usual IEC mains socket. Round the front a further USB input is provided for the connection of an iPod, iPhone or iPad; and the HA-1 also incorporates a Bluetooth wireless input using the Apt-X codec, via a little stub aerial that you can attach to the rear panel if required.

Front-panel controls provide power on/off and source selection to the left above the ¼in jack and XLR headphone output sockets, with a large volume control knob.





In between is a large, 4.3in fluorescent display which has three modes: Status, which shows source, format, gain and volume information; Spectrum, which displays a rather crude (16-bar) spectrum analysis of the input signal; and VU Meter, which shows a virtual signal level meter for each channel. While the latter two also show the status data along the top, if like me you dislike dancing displays you'll opt for the 'boring' first option. Or if you prefer no display whatsoever you can use the 'Dimmer' button on the slim IR remote to extinguish it entirely, or to reduce its intensity.

That remote handset also provides comprehensive control of other functions: input source selection, volume control and mute. Play/Pause, Previous and Next buttons are also provided which are active when either USB input or the Bluetooth input is selected. Mute can be configured to disable both the line-level output and the headphone output or just the former – which is useful if you use the HA-1 as

'It had a reserved quality that boded well for extended listening'

a preamplifier feeding power amps and speakers. To better match the differing sensitivities of low impedance and high impedance 'phones, internal gain can be set at either High or Normal, the former providing an extra 18dB (8x) voltage gain.

A further option, 'Home Theatre Bypass', takes the HA-1's volume control out of circuit for use in situations where gain setting is determined elsewhere in the system. Quite rightly, selecting this option is something that the user is required to confirm. The volume control, incidentally, is a motorised potentiometer – no digital volume control is employed.

INSIGHT AND ENJOYMENT

So that's what the HA-1 comprises; how does it sound? It's a question with two distinct answers, of course: how it sounds as a headphone amplifier, and how it sounds as a DAC. I'll address those separate issues in a moment. As for how the two elements sound in concert, the answer

ABOVE: Between the source selector and volume knobs is a large display that can be variously configured. This Spectrum option shows a spectral analysis of the input signal

depends – as so often – on which digital input is used (and on cabling too).

But via the back-panel USB input, using a Chord Company SilverPlus USB cable and listening over Sony's fine MDR-MA900 headphones [HFN Oct '12], I achieved good if unexceptional results. I was reminded a bit of the Meridian Prime headphone amplifier [HFN Feb '14]: the sound was smooth and (within the context of the slightly mid-forward Sonys) neutral, but with a reserved quality that bodes well for extended listening but doesn't mine all the detail and all the vivacity to be had from a good recording.

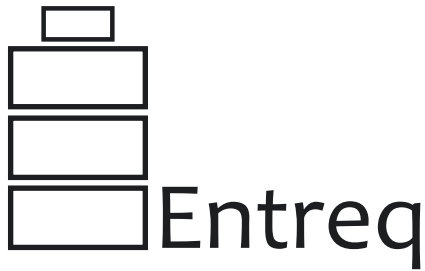
To assess the headphone amp section alone I fed the HA-1 from the unbalanced output of a Chord QuteHD DAC, itself fed S/PDIF from a TC Electronic Digital Konnekt x32 FireWire digital interface under the control of JRiver Media Center v17. To hand for reference was a Teac HA-501 – the best sub-£1000 headphone amplifier I've yet heard [HFN Apr '14]. Everything was powered via a PS Audio P10 mains regenerator [HFN Aug '14].

In this mode the HA-1 unquestionably gave my established favourite a run for its money. The HA-1's headphone amplifier stage has a clean, clear, explicit sound quality that provides insight and enjoyment on a wide range of music. I tried, for instance, the title track from Arne Domnérus's *Antiphone Blues* [Proprius PRSACD 7744], ripped from the SACD and converted to 24-bit/88.2kHz PCM.

This is a typical 'audiophile' recording where you listen more for the sound quality than the music, but it has its moments and there's no question that the large Swedish church acoustic provides a luxuriously

OPPO CORPORATION

Oppo Digital Inc – creator of the HA-1 and Oppo's widely acclaimed universal disc players – is an independent, California-based arm of Oppo Electronics Corp, headquartered in China where it was founded in 2004 by CEO Tony Chen. Because of this geographical and functional split, it's easy for audiophiles to underestimate the resources at Oppo's disposal and the range of products it has manufactured. Setting aside the familiar Digital Inc operation, its name has also appeared on LCD TVs, portable media players, eBook readers and mobile phones. It has been particularly successful in the last category, in 2013 becoming the second most profitable mobile phone manufacturer in China – the world's largest smartphone market – despite not beginning to sell products until 2008. Earlier this year it unveiled plans to enter the huge market in the Indian subcontinent. And shortly after it then announced its entry into the Mexican mobile phone market too. Oppo's R&D capability means that it designs, develops, manufactures and markets its products in-house.



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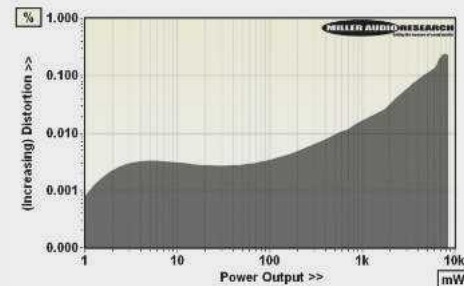
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OPPO HA-1

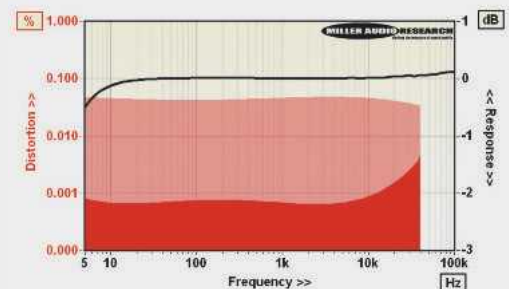
Anyone looking for a headphone amplifier able to drive the least sensitive cans on the market or, indeed, a high sensitivity horn-loaded loudspeaker then Oppo's new HA-1 fits the bill perfectly. Unloaded, distortion is a low 0.0006-0.0009% from 20kHz-20kHz but this increases to a remarkably uniform 0.04-0.045% under load [see red infills on Graph 2, below]. There's a further increase beyond 100mW to its maximum 8.5W output level at 0.25% THD at which point Oppo's electronic protection kicks-in [see Graph 1]. Via its analogue inputs, the HA-1's response extends from 10Hz-100kHz (-0.1dB) while, via S/PDIF and USB inputs, it reaches 20kHz/-0.09dB (44.1kHz/48kHz media), 40kHz/-0.15dB (96kHz files) and 90kHz/-0.45dB (192kHz files). The A-wtd S/N ratio is very wide - 93dB (re. 0dBV) via the analogue inputs and 109dB (re. 2V) via the digital inputs, increasing to 120dB (re. full 9V balanced output).

Tested as an S/PDIF and USB DAC via its balanced outputs, the HA-1 proves most impressive with high sample rate media (96kHz/24-bit upwards) and via USB rather than S/PDIF. While there's no appreciable difference in distortion - as low as 0.00002% at -10dBfs via S/PDIF or USB through midrange frequencies - jitter is significantly lower with 48kHz/24-bit media via USB (85ps). In this respect, and despite sharing the same proven ESS 9018 Sabre DAC solution with its BDP-103 and '105 universal players [HFN Jan '13], the latter still have the edge in performance.

Readers are invited to view comprehensive QC Suite test reports for Oppo's HA-1 headphone preamp, S/PDIF and USB DAC performance by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Continuous power output versus distortion (until protection) into 25ohm 'headphone' load



ABOVE: Frequency response (black) from 5Hz-100kHz into 25ohm and distortion versus frequency (red, 1V; shaded, 40mW) from 5Hz-40kHz



ABOVE: A packed back panel provides balanced and unbalanced analogue inputs and outputs via XLR and phono sockets plus a variety of digital inputs: S/PDIF via phono, balanced AES/EBU via XLR, optical via Toslink, and asynchronous USB

reverberant backdrop to this track's improvised solo saxophone and simple organ accompaniment.

The HA-1 lapped it all up, with a forthright saxophone sound but well developed sense of the church acoustic and its long reverberation time. Perhaps in its forthrightness it lacked a little magic, but we are talking arguable subtleties here.

It was a similar story with the 88.2kHz/24-bit download of Daft Punk's 'Giorgio By Moroder' from *Random Access Memories*. The HA-1 majored on explicitness but still did a good job of conveying the infectious dance pulse that develops in the background while Moroder speaks about how he came to develop his synth disco sound.

USB VERSUS S/PDIF

Classical music fared well also. I played the 24-bit/176.4kHz download of the Beethoven Violin Sonata Op.96 that first appeared on the Wilson Audiophile Recordings label in the 1970s and revelled anew in just what a finely judged recording it is of violin and piano. Once more the HA-1's presentation was a little different from what I'm used to - a bit more muscular, a little less subtle - but again I wouldn't take robust issue with you whichever portrayal you preferred.

Next I used the HA-1 as a DAC, first via its USB input to its preamp output (volume control disabled), using the Teac as the headphone amp. The QuteHD, fed via S/PDIF, acted as reference. As already intimated, I found the HA-1 to sound a little a little diffuse in this guise but then I often find myself preferring an S/PDIF 'pipe' to USB, for reasons I can but guess at. The Daft Punk track, for instance, lost some of the urgency heard previously.

Via S/PDIF the situation is complicated by the high jitter at lower sampling rates [see PM's Lab Report]. With this in mind I did my initial USB-S/PDIF comparisons

using 88.2kHz files to sidestep this issue. And the result was, indeed, a preference for the S/PDIF input, which restored some missing colour.

In fact as I'd go so far as to say that the difference between them was marked. With 'The Miller's Wife's Dance' ripped from the Japanese import SACD of Falla's *Three Cornered Hat* - the 1961 Ansermet/Decca recording - nobody in the least attuned to this fiery music could possibly conclude that the USB 'take' was better. Compared to the S/PDIF version it was dynamically fettered to the point of being rendered rather turgid.

So, a not unprecedented victory here for the older digital interface technology, and by a large margin. Which is a pity, of course, for computer audio users since sourcing a coaxial (as opposed to optical) S/PDIF output from a computer generally involves additional hardware and expense.

Firing 44.1kHz sources down S/PDIF to the HA-1 was, regrettably, less of a success, presumably because of the jitter issue. The remastered version of 10cc's 'Une Nuit à Paris' - for all its searing treble - was much better via the USB link, the S/PDIF alternative sounding a bit of a *mélange, mes amis*. ☹

HI-FI NEWS VERDICT

With the exception of the low sampling rate S/PDIF problem, the HA-1 is a well thought out and thoroughly engineered product at a competitive price - as we've come to expect from Oppo. Its headphone amplifier stage is up there with the finest, and on high sampling rate material delivered via S/PDIF you hear it at its considerable best. It's a pity that the USB input isn't as good, but that's not uncommon.

Sound Quality: 86%



HI-FI NEWS SPECIFICATIONS

| | |
|---|--------------------------|
| Maximum output (re. 1% THD into 47kohm) | 17.5V |
| Max. power output (re. 1% THD into 25ohm) | 8495mW |
| Output impedance (20Hz-20kHz) | 1.25-1.35ohm |
| Maximum gain | +6.65dB (High gain mode) |
| A-wtd S/N ratio (re. 0dBV) | 93.0dB |
| Frequency response (20Hz-20kHz/25ohm) | -0.03dB to -0.10dB |
| Distortion (20Hz-20kHz, re. 40mW) | 0.040-0.045% |
| Power consumption | 30W |
| Dimensions (WHD) | 254x80x333mm |

Elac FS 409

Latest of the Elac models to use the distinctive JET tweeter, this eye-catching design has plenty of high-tech pizzazz
 Review: **Steve Harris** Lab: **Keith Howard**

If there's one speaker company that wants to show you high-tech innovation, visibly combined with quality German engineering, it's Elac. That's just what you get with the impressive new FS 409.

This tall floorstander takes its place as the top model in Elac's Line 400 series. Along with the new CC 400 centre channel, it completes a range that kicked off in 2012 with the introduction of the smaller FS 407 floorstander and BS 403 bookshelf speaker.

All the Line 400 models use Elac's JET 5 tweeter, the latest refinement in a progression that started when the first JET unit appeared in 1993. Essentially, JET is Elac's development of a concept originated several decades ago by Dr Oskar Heil. Born in Germany in 1908, Heil moved to America after World War II and patented his AMT (Air Motion Transformer) principle in 1972.

In the Heil AMT, as with other ribbon-type drivers, the moving element is a very light plastic membrane that carries a fine metal track to conduct the audio signal.

It is suspended between powerful magnets so that when current flows, the membrane moves. But there the resemblance ends.

A TWEETER BELLOWS

What's special about the AMT is that the membrane is not flat, but folded into concertina-like pleats, so that it responds to the signal, opening and shutting like bellows. By increasing its velocity this action moves a greater volume of air than a flat ribbon with the same frontal area, hence the name Air Motion Transformer.

Other companies employ the same basic principle. Adam Audio of Berlin calls its Heil-based tweeters ART (Accelerating Ribbon Technology), while in the USA, MartinLogan has its Folded Motion devices. In Switzerland, Precide produced various AMT-equipped models before its Syrinx [*HFN* Jan '05], aiming for better integration with a bass unit facing upwards at 45°. Precide has also offered the big Oskar Heil Kithara speaker.

Meanwhile, Elac has continued to enhance its own tweeter design, the JET 5 having been already described by some observers as sweeter-sounding than its predecessors. But although the JET AMT has long since become Elac's signature technology, the Line 400 range embodies several other innovations.

ELAC'S CONE DESIGN

In the FS 409, the next unit down from the JET 5 is a new 150mm midrange driver, specially developed for this model. This is matched to a pair of the 180mm bass units that had already been introduced in the 'two-and-a-half-way' FS 407 speaker and, like those units, it features Elac's latest AS-XR cone design. This is a development of the existing Elac AS cone, which is really

an inverted dome consisting of a 0.2mm-thick aluminium foil layer bonded to a cellulose layer to create a rigid sandwich. In the AS-XR drivers, the inverted aluminium dome is stamped with a faceted

'crystal' pattern to give greater stiffness, and is bonded to a paper pulp cone behind.

At its outer edge, the 'sandwich' is suspended by a wide asymmetrical rubber surround, while at the centre both the neck of the paper cone and the rear of the aluminium part are bonded directly to the voice coil former.

Elac states that this construction extends the unit's bandwidth by almost an octave compared with the previous AS cone type, hence the suffix 'XR' for 'extended response'. It's said that the TT180 woofer can handle excursions of up to $\pm 15\text{mm}$.

So, in the 'three-and-a-half-way' FS 409, the midrange drive unit crosses over from the tweeter at 2.7kHz and handles

RIGHT: Here the JET 5 tweeter is combined with Elac's latest 'crystal' AS-XR mid and bass units. Grilles attach magnetically with no visible fixings. The speaker comes in other finishes: White, and two wood veneers

'The cymbals seemed almost to "sing" around the listening room'



FROM SONAR TO AUDIO

Elac's history dates back to 1926, when Electroacoustic GmbH was founded in the maritime city of Kiel, to develop sonar systems. At the end of World War II, the factory switched to consumer goods, and the first Elac record player appeared in 1948. The following year, Elac was allowed to re-enter the field of nautical products, and these continued alongside the audio division until 1978. The nautical business was later acquired by Honeywell, while new investors took over the hi-fi side. In 1984, Elac started building speakers, and soon introduced its innovative 4PI omnidirectional ribbon tweeter, developed jointly by Elac and the Dutch van den Hul/Bakker group. Elac originated its first JET tweeter in 1993 – the basic JET design that had been developed by ARES from the concept of the inventor Dr Heil. Elac outsources its budget speaker line to the Far East, all its other models are entirely built in Germany.

frequencies down to 360Hz. Below this the two bass units share the work, with the upper one rolling off at the 'half' crossover point of 140Hz.

Bass loading is by a large flared reflex port in the bottom of the cabinet, which stands on short pillars to provide slot-like final venting between cabinet and base. This is an elegant arrangement which will give more freedom for speaker positioning compared with a rear-firing reflex port, as it will be more tolerant of placement close to the back wall. Finally, the base is supported by feet attached to strong steel outrigger bars that give added stability, and spikes are provided.

Our speakers came in Black, but the standard alternatives for all the Line 400 models are White, Metallic Tobacco and Walnut Veneer, and almost any paint finish is available to special order. Finish is superb, and once out of the box, the speakers simply stood there glistening, as if waiting to show what they could do.

A GLOSSY PRESENCE

Once seated, I quickly found that the Elac gave a presentation that was slightly different from the norm, partly due to the high position of the tweeter and midrange units. While we're used to looking straight at the tweeters, in this case the midrange was at ear or eye level, so of course the tweeter was looking down on me slightly.

I obtained the best results with the speakers positioned around two feet from the back wall and toed-in slightly, though not so much as to point directly at the listening seat.

That extra feeling of height was helpful on many favourite discs. For example when I returned after some lapse of time to *Entre Cada Palabra* by Marta Gomez [Chesky JD301], there was a nice sense of atmosphere particularly on the singer's most lyrical offerings, like 'De Amarillo Se Vista La Tarde', with


a pleasant feeling of instruments spread across a stage.

In the same album's wide-open-spaces-opening track, 'Maria Mulata' I felt that the bass was firm and well controlled, if actually not especially communicative. Yet even if the speakers didn't quite, on this track, seem to open up the full depth of the recorded acoustic as I might have hoped, they really did give a big and attractive sound picture.

On many other recordings, too, I found that the Elac speakers brought a slightly different perspective. On the eternal *Jazz At The Pawnshop* [Proprius PRSACD 7879] there was a kind of glossy presence to the clarinet and equally to the vibes, seeming to bring these instruments more forward, thus making them more prominent in front of the rest of the band, and at first even seeming to mask other sounds.

And yet the fine background detail was there when you listened for it. In 'Confessin', for example, only my severely limited knowledge of Swedish stopped me from understanding what the inattentive audience was talking about, and I was struck afresh by the sound of a single clap at the end of a solo, where one person starts to applaud but desists when he finds himself alone. Meanwhile, drum sounds were ear-catching and dynamic, while the cymbals sometimes seemed almost to sing around the room.

Then I turned to another truly atmospheric audiophile gem, Muddy Waters' *Folk Singer* [Discovery Sounds HDR CD1001], and here the airy qualities of the JET-tweetered speakers were heard to the full. In fact with these speakers it was almost *too* airy. This time the huge, echoing soundstage seemed to extend right into the back corners of the room, with sounds appearing well beyond the confines of the speakers to right and left.

But the Elac speakers could be equally impressive on a clean and simple studio 



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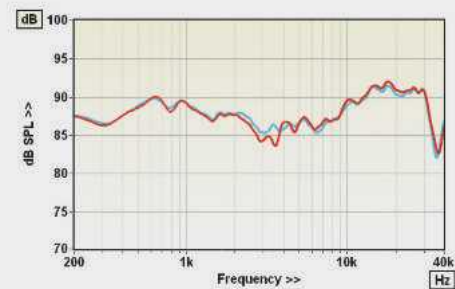


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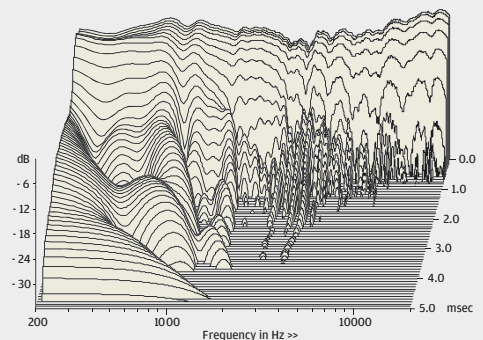
ELAC FS 409

Elac claims 89dB sensitivity for the FS 409, which chimes with our simple FFT average of 89.3dB. But the pink noise figure of 88.2dB and the 87.5dB 'music-shaped' figure using the simulated programme filter from IEC 60268-1 indicate that 88dB is more realistic. Low impedance is used to help achieve this. Elac specifies a nominal 4ohm with a 3.4ohm minimum at 105Hz; we measured a 3.4ohm minimum albeit at a slightly higher 110Hz, so the 4ohm nominal figure is justified. Although impedance phase angles seem fairly well controlled, nonetheless the EPDR (equivalent peak dissipation resistance) dips to a minimum of 1.6ohm at 83Hz, making the FS 409 a marginally more challenging amplifier load than is typical of modern floorstanders of this size.

Frequency response errors were quite well contained at ± 4.2 dB and ± 3.1 dB respectively for the review pair (200Hz-20kHz) but as the on-axis frequency responses show [Graph 1, below] the trend is far from flat. In fact the FS 409 displays a marked presence band dip followed by a rising upper treble, so will probably deliver its flattest tonal balance if toed slightly out from pointing at the listening seat. Pair matching over the same frequency range was a disappointing ± 1.8 dB but the largest errors occur in a narrow frequency band between 3kHz and 5kHz – elsewhere the error is held to ± 1.0 dB limits. Bass extension of 57Hz (-6dB re. 200Hz) is par for the course for a floorstander of this size and its sensitivity will be improved in-room by careful exploitation of boundary gain from the walls. The CSD waterfall [Graph 2] evinces fast initial energy decay but midrange cone breakup resonances are visible in the treble. KH



ABOVE: Forward response trend shows a marked dip through the presence band with a peaked treble



ABOVE: Cumulative decay waterfall reveals good cabinet damping but some mid-driver breakup modes

LEFT: Rear view highlights Elac's excellent build quality and finish for the FS 400. There is just one chunky pair of speaker terminals, with no provision for bi-wiring or bi-amping

S200 valve amplifier [HFN Jul '14]. Although I've already described these speakers as airy, with the VTL they could be luxurious too. On Patricia Barber's *The Cole Porter Mix* [Blue Note 50999 5 01468 2 6], there was a fullness to the piano which was very convincing, although it could become very slightly 'clangy.' But now I felt that that the bass was a little too fat, and it benefited from moving the speakers a bit further from the room boundaries. Barber's voice was well presented, its characteristic harder edge well portrayed.

A FINE SENSE OF DEPTH

Listening to the classic 1959 Heifetz recording of the Mendelssohn Violin Concerto with the Boston SO and Munch, [JVC XRCD JMXR-0010] there was indeed a sense of height in the soundstage and also again that admirably airy quality. If I was expecting some upper mid hardness or an over-bright balance, what I got was just a very lively and spacious sound. There was really no sense of hardness or glare, albeit a certain wispiqueness to the treble.

Bass was clean and firm, convincing, and never lumpy or overdone, while the midrange was again very clean, if not particularly characterful. Above all, the speakers brought a fine sense of depth and scale to the image, which was very appealing indeed. ☺

HI-FI NEWS VERDICT

Elac's unusual drive units are meant to be seen, although grilles are supplied in case you do want to cover them up. Yet there's nothing showy or overbearing about the sound, as there is plenty of detail to be heard but it's never 'etched' or too much in your face. This carefully balanced design majors on spaciousness, with wide-open imaging and a smooth, refined treble, and is very well worth seeking out.

Sound Quality: 82%



recording, With 'Perfect Fit (Original Version)' from Gwyneth Herbert's *Clangers And Mash* [NaimEdge naimCD137], the vocal was upfront and truly striking, although it possibly had a little more presence and a little less subtlety than I'd expected. The handclaps were infectiously rhythmic, while the big bass drum had plenty of oomph.

Up to now I'd been listening to the Elac speakers with my usual Classé amplifier, but fortunately I also had the chance to hear them with the truly excellent VTL

HI-FI NEWS SPECIFICATIONS

| | |
|--|----------------------------------|
| Sensitivity (SPL/1m/2.83Vrms – Mean/IEC/Music) | 89.3dB/88.2dB/87.5dB |
| Impedance modulus min/max (20Hz–20kHz) | 3.4ohm @ 110Hz 13.3ohm @ 56Hz |
| Impedance phase min/max (20Hz–20kHz) | -49° @ 70Hz 32° @ 20Hz |
| Pair matching (200Hz–20kHz) | ± 1.8 dB |
| LF/HF extension (-6dB ref 150Hz/10kHz) | 57Hz / >40kHz/>40kHz |
| THD 100Hz/1kHz/10kHz (for 90dB SPL/1m) | 0.6% / 0.2% / 0.1% |
| Dimensions (HWD) | 1180x290x380mm |

Rogue Audio Cronus Magnum

Looking for a valve amplifier that won't break the bank? Made in the USA, this integrated model is a great all-rounder and even features a built-in MM phono stage...

Review: **John Bamford** Lab: **Paul Miller**

While today's esoteric high-end audio components often command stratospheric prices, savvy audio enthusiasts looking for high performance gear that doesn't cost a king's ransom should take heart that there's still plenty to choose from when shopping wisely.

Take, for example, the amplifiers made by Rogue Audio, which hails from Pennsylvania. The company's *raison d'être* since its inception has been 'to create truly high-end products at entry-level prices'. It's a bold claim for sure – one that usually implies that manufacturing has been outsourced to the Far East. But that's not the case here: this American boutique brand sources most of its components locally, using American-made transformers, resistors and capacitors, and assembles its products entirely in-house. Not for them the leveraging of inequalities in global labour markets.

MAGNUM UPGRADES

In 2010 Rogue Audio's Cronus integrated, Metis preamplifier and Atlas power amp from the company's well-respected Titan series gained 'Magnum' nomenclature, reflecting a suite of upgrades designed to improve dynamics, frequency extension and overall transparency – as well as a smoother overall sonic presentation. In the Cronus the Magnum modifications included a significantly larger power supply, the addition of polypropylene bypass capacitors, as well as Dale-Vishay resistors 'in critical areas of the circuit', gold-plated valve sockets, upgraded input signal tubes and superior five-way binding posts for more robust speaker cable connection.

Where the original Cronus (employing EL34 output valves) was rated at 2x55W/8ohm the extensive power supply modifications permitted the use of the KT90 and – as featured here – the mighty

KT120 power tube, increasing rated output to 100W/8ohm per channel [but see Lab Report, p61].

In some ways the Cronus Magnum can be viewed as deliciously anachronistic. Without its protective valve cage (a £150 option that's frankly an essential accessory for those with children or pets) it looks quaintly utilitarian. Housed in a rugged chassis that's supported on four sturdy rubber isolating feet, it has a textured black finish that's claimed to be highly scratch resistant, while its thick aluminium front panel (in black or silver) is anodised to protect its appearance over the years.

Input switching is manual, the amplifier's solitary concession to modernity being a motorised potentiometer for volume control and a minimalist infra-red

handset sporting nothing other than volume up/down keys [see p61]. Yet it's nice to see the inclusion on the fascia of a *balance* control (so often missing on modern amplifiers) and a headphone socket; and there's also a built-in MM phono stage, providing 35dB of gain before the line stage. For music lovers on a tight budget this makes the Cronus Magnum a particularly high value proposition – although it should be noted that both the headphone amplifier and phono stage are solid-state rather than valve circuits.

In essence the Cronus Magnum is Rogue Audio's Atlas Magnum power amplifier with a triode preamp section in front of it. Its four Tung-Sol KT120 power valves are run as push-pull pairs, with two 12AU7 driver tubes, two 12AX7 input tubes and a



RIGHT: Built-in meter allows setting of DC bias current for the four KT120 power valves. Adjustment pots are situated beneath the removable hatch cover on the right



single 12AU7 dual triode employed for the preamp's gain stage. At the rear there are three RCA line input sockets in addition to the MM phono input, along with two line outputs (also on RCAs). One of these is a fixed-level 'tape' output, while the other is a variable output. This is a handy inclusion should you wish to connect a powered subwoofer, or a further power amplifier for bi-amping loudspeakers.

Unusually for a valve amp, there is only a solitary set of loudspeaker terminals, although a choice of 4 or 8ohm taps are available with a little DIY modification. The factory setting is 8ohm; changing to 4ohm necessitates the removal of the amplifier's top cover plate and swapping a couple of internal wires. There's no soldering required, and the manual includes comprehensive instructions – but if you're nervous about such a kerfuffle, your dealer will of course do this for you.

Setting the correct bias current for the output tubes must be done manually, by removing a small hatch plate to the right of the bias meter on the top of the amplifier's chassis, flicking toggle switches in turn from 'run' to 'set', and adjusting small potentiometers with the provided tool that's parked in a clip behind the

power transformer. Bias adjustment is for each valve, negating the need to buy replacement tubes in matched pairs.

EFFORTLESS DELIVERY

From the outset I was struck by the Rogue's innate musicality. While it doesn't 'grip' a speaker's woofers and deliver immensely deep and tightly controlled low frequencies, it does sound deliciously effortless. Even when delivering high SPLs driving my Townshend Sir Galahad loudspeakers, its music-making almost always appeared relaxed and calm. The antithesis of many high-powered solid-state amps that can appear cold and calculating, the Cronus Magnum sounds enchantingly warm and euphonic, creating a welcoming environment within which instruments and voices appear beautifully depicted.

Playing Joan Armatrading's 'Willow' from her 1997 album *Show Some Emotion* [A&M 394663-2] revealed the amplifier's delicious midrange clarity, the voice appearing vivid and natural within a

ABOVE: Anodised fascia, which is also available in a silver finish, sports a headphone socket and IR receiver for the volume control. Input switching and balance are manual

broad soundstage. Cymbals and sibilants were realistically portrayed without any edginess, although the tonal balance was evidently 'polite'. At both extremes of LF and HF this analogue recording's transient 'snap' was a little softened I thought, a slight smoothing of the sound masking the last ounce of textural detail.

Negating any such shortcomings was the sound's gloriously seductive tonality and the three-dimensionality of its imaging. With simple recordings where a lifelike acoustic setting has been captured, the Cronus Magnum

'The Cronus
Magnum sounds
enchantingly warm
and euphonic'

proved utterly beguiling.

Some vintage recordings of Hammond organ maestro James Oscar 'Jimmy' Smith, from the CD *The Complete Sermon Sessions* [Groove Hut Records GH 66712], showcased the Rogue amplifier at its most seductive. Smith's famous number 'The Sermon', taken from his classic 1958 LP of the same name, features Art Blakey on drums and trumpeter Lee Morgan, with tenor saxophonist Tina Brooks and Lou Donaldson on alto sax – all in their twenties at that time.

Hearing 'The Sermon' with its pioneering amalgam of '60s soul and jazz improvisation rendered by the Rogue amplifier, I felt as if I was witnessing a live musical event, such was the apparent naturalness and realism of the performing ensemble. From the air behind the brass, the spit behind the reed of the sax, and the splash of the cymbals, the amplifier sounded invitingly open and infectiously vivid. And it simply got the scale right, ➔

GOING ROGUE

Although far from being a household name this side of the Atlantic, Rogue Audio has an enviable reputation Stateside for offering excellent value for money, its amplifiers often used by loudspeaker companies at audio fairs. In fact at this year's Audio Expo North America in Chicago, Sony chose Rogue's flagship Apollo monoblocks and Hera II preamp to show off its HAP-Z1ES hi-res digital server [HFN Mar '14] and SS-AR1 floorstanders. Company founder and chief designer Mark O'Brien is a physics graduate who worked at Bell Labs before setting up Rogue Audio in 1996 in order to indulge in his passion for audio. He'd become interested in electronics and acoustics as a teenager, starting off building Hafler kits before designing his first valve preamp, the Rogue Audio Sixty-Six, in the mid '90s. Says Mark: 'We maintain a low overhead and boast excellent supply line management in the procurement of parts in order to maintain competitive pricing.' Divine Audio became Rogue's UK distributor last autumn.



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HiFi World, July 2013

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ROGUE AUDIO CRONUS MAGNUM



ABOVE: There are three line ins and a MM phono input, with fixed and variable pre outs. Only one set of speaker terminals is provided; 4/8ohm taps are set internally

while obviating any midrange congestion or treble hardness.

Six and a half minutes into 'The Sermon', after Kenny Burrell's guitar solo, when the saxophone enters stage right, the image was palpable, with a holographic three-dimensionality that would send shivers down the spine of any audiophile. Soundstage depth and height were quite fabulous.

CREDIBLE SOUND IMAGES

Listening to the album *No Deal* by the evocative Belgian jazz singer Melanie de Biasio [Play It Again Sam, PIASB335CD] also highlighted the Rogue amplifier's seductive music-making. Gracefully minimalist, dark and brooding, the album's seven tracks were recorded in just three days in a fairly simple fashion, with all the musicians in the same room save for the vocalist separated by a transparent window.

Again, it was impossible not to be seduced by the amplifier's recreation of a wholly believable sound image and its smooth, relaxed demeanour – although I did miss the weight of the pumping infrasonic bass notes I'm used to experiencing when the title track segues ominously into 'Sweet Darling Pain'. Similarly, with Daft Punk's 2013 electro-pop-disco *Random Access Memories* [88.2kHz/24-bit download; on CD Columbia 8883-71686-2] a bit more bass punch and extension would have been welcomed, as would a little more crispness and rhythmic snap.

The Cronus Magnum also delivered a majestic rendition of the album *Antiphone Blues*, an audiophile favourite with Gustaf Sjökvist, organ, and saxophonist

Arne Domnérus (of *Jazz At The Pawnshop* fame) recorded in 1976 by Proprius. I was listening to the 2008 CD reissue from Winston Ma's First Impression Music catalogue [LIM K2HD 026].

Once again the scale of the image was enormous, the setting of the Stockholm church with its very long reverberation beautifully depicted in all dimensions and totally rock-solid, with no image smearing during the recording's tremendous dynamic swings. With tracks such as 'Träumerei' (from Robert Schumann's *Kinderszenen*) and the Negro spirituals 'Sometimes I Feel Like A Motherless Child' and 'Nobody Knows The Trouble I've Seen', the Cronus Magnum faithfully portrayed the recording's fabulous depiction of space and depth – and it was sufficiently revealing to highlight the fact that the saxophone does not remain still in front of the microphone setup.

I could 'see' it moving away to increase the reflected sounds of the church acoustic and alter the music's dynamics, then coming closer to allow the microphone to catch the instrument's pad cups and rasping mouthpiece. ☺

HI-FI NEWS VERDICT

A tube lover's delight, Rogue Audio's Cronus Magnum integrated is bound to put beaming smiles on the faces of many enthusiasts looking for a solidly built and 'sweet' sounding amplifier at a very fair price. Its delivery is a little soft-focused and rounded at frequency extremes, but it can kick when required and never sounds brittle, even when dealing with complex, multi-track recordings. It's a real charmer.

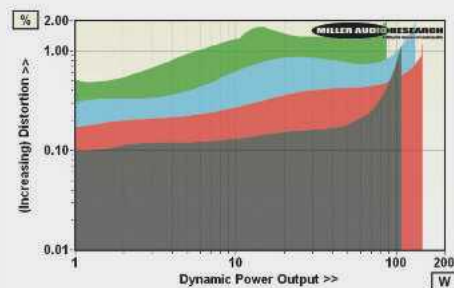
Sound Quality: 80%



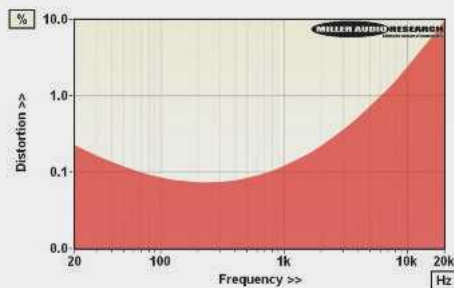
Despite being equipped with a pair of KT120s per channel, the Cronus Magnum did not quite meet Rogue Audio's 100W specification – a figure of 85-90W (up to 1% THD) into both 8/4ohm loads is more realistic under continuous conditions through the midrange. There's certainly extra headroom available under dynamic conditions where the amp continues up to 108W and 145W into 8 and 4ohm with 130W and 90W possible into 2 and 1ohm loads if the THD limit is relaxed to 2% [see Graph 1, below]. Beyond this output the amp's clipping point is fairly sharply defined.

Instead, it's the power *bandwidth* of the Cronus Magnum that shapes its performance, as distortion – and therefore maximum power output – both increases and decreases, respectively, at higher frequencies. As Graph 2 illustrates, while distortion is as low as 0.07% at mid-bass frequencies and 0.1-0.2% through the midrange, it rises to 1% at 6kHz, 2.3% at 10kHz and a full 10% at 20kHz at just 10W/8ohm. The response also shows a commensurate treble roll-off of -2dB/20kHz into 8ohm. The subjective treble quality will surely be influenced by both the sensitivity and HF load impedance of the partnering speaker as well as the HF bandwidth of the music media.

Otherwise, the output impedance is usefully sub-1ohm from 20Hz-20kHz but the 77dB A-wtd S/N ratio (re. 0dBW) and 48dB stereo separation (falling to 30dB at 20kHz) are both a little below average. The maximum +33.5dB overall gain is ideal for modern line-level sources, however. Readers may view an in-depth QC Suite report for Rogue Audio's Cronus Magnum amplifier by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Dynamic power versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (cyan) and 1ohm (green) speaker loads. Maximum current is 9.5A



ABOVE: Distortion vs. frequency from 20Hz-20kHz at 10W/8ohm. Note increase in THD at high frequencies

HI-FI NEWS SPECIFICATIONS

| | |
|--------------------------------------|--------------------------|
| Power output (<1% THD, 8/4ohm) | 87W / 91W |
| Dynamic power (<1% THD, 8/4/2/1ohm) | 108W / 145W / 108W / 10W |
| Output impedance (20Hz-20kHz) | 0.51-0.85ohm |
| Frequency response (20Hz-100kHz) | -1.9dB to -7.3dB |
| Input sensitivity (for 0dBW/80W) | 60mV / 1091mV |
| A-wtd S/N ratio (re. 0dBW/80W) | 77.1dB / 96.1dB |
| Distortion (20Hz-20kHz re. 10W/8ohm) | 0.07-9.5% |
| Power consumption (Idle/Max. o/p) | 195W/430W (80W/8ohm) |
| Dimensions (WHD) / Weight | 457x140x444mm / 22.7kg |

Audeze LCD-X

Audeze claims that the LCD-X, in addition to achieving higher sensitivity than the LCD-2 and LCD-3, offers a more neutral tonal balance. Is this the Audeze with pizzazz? Review & Lab: **Keith Howard**

You could be forgiven for being confused by the range of Audeze headphones, since – apart from the closed-back LCD-XC – they look very similar and all incorporate a planar magnetic drive unit rather than the more typical moving-coil driver. And, indeed, they are alike in other respects too, all three – LCD-2, LCD-3 and the LCD-X we're looking at here – having extended bass and a tonal balance that can be variously described as 'laid-back' or 'dark-hued'.

So what exactly distinguishes them? Audeze describes the LCD-X as its 'most neutral' headphone, with a 'fast, dynamic, accurate sound' and claims that 'the X is sensitive enough to be driven directly by portable players' – to which end a short ¼in jack to mini-jack converter lead is supplied as standard. The X has 'the longest voice coil and strongest driving force yielding the fastest transient response of all the LCD collection.'

ENHANCED SENSITIVITY

I don't usually quote so extensively from manufacturers' literature but it's relevant here because I take issue with some of this. If the LCD-X had a significantly longer voice coil, then, assuming the same magnetic field strength, it ought to have higher current sensitivity than the LCD-2 and LCD-3. In fact, as the box-out describes, our measurements indicate that it doesn't.

Unquestionably the LCD-X is the most *sensitive* of the three models, by almost 6dB from the LCD-3 (which itself betters the LCD-2 by about 3.5dB). But that can be ascribed to the 20ohm impedance of the X (for which Audeze claims 22ohm), which is by far the lowest of the three.

RIGHT: Visually, all is familiar from previous Audeze models – large capsules with generous earpads – except for the use of anodized aluminium in place of wood

As for transient response, this is something I discussed in the box-out for the LCD-3 review [*HFN* May '14]. If you actually measure these headphones on an artificial ear and correct for their different sensitivities then you find that their transient responses are very alike. Which is precisely what you'd expect given that the three models have similar frequency responses. Never forget that time domain behaviour and frequency domain behaviour are intimately related.

So, I'm not convinced by all of Audeze's claims for the LCD-X. But its enhanced sensitivity will certainly be welcome to some users. It's right up there with the Oppo PM-1 [*HFN* Jul '14], although the Oppo benefits from a somewhat higher impedance and is considerably lighter. Indeed, the LCD-X is the heaviest Audeze we've measured at 725g including cable, a factor

that together with its bulk effectively disqualifies it from use on the move. The payback is in those large, squishy earpads that don't cramp your pinnae, and in the modest head-clamping force that banishes any sensation of your head being in a vice. Together these make the LCD-X, like its siblings, as comfortable to wear

as headphones of this weight could ever be.

And there is no sensation, if you listen to pink noise on one channel alone, of vibration being carried over to the inactive capsule via a resonant

headband – although if you tapped the LCD-X's capsule yokes while wearing it you might expect otherwise.

'FOR BEST RESULTS...'

On an aesthetic note – as someone who is thoroughly jaded by the over-use of wood and wood veneers on hi-fi products – I like the fact that the LCD-X has black anodised aluminium capsule bodies rather than the wooden ones of the LCD-2 and LCD-3. To my eye it brings the Audeze range into the 21st century. The 'ruggedised' tough plastic travel case I have admired from the outset – much more practical, I reckon, than an effete presentation box. Unless, of course, you display your headphones for admiration in a glass case, alongside your collection of Stellavox and Nagra portable tape recorders. (I'm only jealous...)

As Audeze says, even though the LCD-X is sensitive enough for use with portable players 'an external amplifier produces better results'. Particularly so if that headphone amplifier is the Teac HA-501 [*HFN* Apr '14], which is the best I've yet heard at combining hear-through transparency with seductively natural tonal warmth. It is also well able to drive headphones of lower impedance,

'There's no doubting the extension of the LCD-X's bass'



RIGHT: What distinguishes the LCD-X from the LCD-2 and LCD-3 is its high sensitivity – higher even than that of the Oppo PM-1's. Lowered impedance provides this



like the LCD-X. So did the two deliver on Audeze's promise of a neutral tonal balance and whipcrack dynamics?

A CAT'S WHISKER

Not quite to these ears. The LCD-X has a frequency response very like its siblings and this is the prime determinant of any headphone's sound quality. Not the be-all and end-all, of course, but a major factor. Like the LCD-2 and LCD-3 (and the Oppo PM-1), the LCD-X 'editorialises': it has a sonic agenda that you either buy into or don't. It majors on tonal warmth and a presentation that is unlikely ever to grate or offend. What it sacrifices in doing so is being able to realise the full measure of insightfulness and excitement that comes with a more neutral presence band.

For comparison I had to hand the original review sample of the LCD-2 [HFN Mar '13]. They are so different in sensitivity (by over 9dB) that A/Bing isn't


straightforward but – within the context of the familiar Audeze tonal balance – there really isn't much to choose between them. If the LCD-X is indeed more neutral, as Audeze claims, then it's only by a cat's whisker, and anyone hoping for a recasting of the Audeze sound into a more vibrant,

exuberant mien will be disappointed. Yes it has a little more presence band output relative to 1kHz but it also has greater bass and lower-midrange output which offsets it. Essentially, then, the LCD-X is more of the same only louder.

So if you've heard other Audeze models you'll pretty much know what to expect. But if not, let me illustrate the trade-offs with a variety of tracks I'm enjoying at the moment, beginning with 'Dreaming' from the CD *Duo* by Bugge Wesseltoft and Henrik Schwarz. This partnership is all about what, on the face of it, may seem an unlikely combination – piano and electronica – although it has also been explored successfully by others such as Ryuichi Sakamoto and Alva Noto.

For it to work both parties need a fair crack of the whip, which in the case of 'Dreaming' means in particular that the electronic percussion, on which so much of the energy of the track depends, needs to be crisp and duly forward in the mix.

What the LCD-X does, because of its tonal balance, is favour the left hand of the piano while bleeding some bite and sparkle from the high frequency electronic sounds. So the result is a little stodgy rather than spry and energetic. There's no doubting the LCD-X's bass extension, particularly when the bass-drum kicks in, but the other end of the spectrum is reticent.

A very different example: 'By The River', a tranquil movement from Frederick Delius's early *Florida Suite* [Chandos]. There's no weir or waterfall churning up the water here, and no orchestral explosions are required or appropriate. As the glorious main theme calms your mood the principal requirement is for resolution sufficient to give the violins a realistic sheen of bows on strings, and impart an appropriate sense of air to the recording acoustic. Instead the LCD-X thickens the textures somewhat and deadens the acoustic. Which is not to say that the 

SENSE AND SENSITIVITY

According to the Audeze website [in late June] the sensitivities of the LCD-2, LCD-3 and LCD-X are 93dB, 93dB and 95dB respectively for 1mW input; and their impedances are 70, 110 and 22ohm. Translating into the more relevant voltage sensitivity that we measure, these figures are equivalent to 104.5dB, 102.6dB and 111.6dB SPL for 1Vrms input. But our *measurements* tell a rather different story: sensitivities of 106.0dB, 109.4dB and 115.1dB respectively for 1Vrms input at 1kHz, and impedances of approximately 59, 48 and 20ohm. To what extent the progressive increase in sensitivity is due to the progressive decrease in impedance we can assess by calculating current sensitivity instead – since it is the current flowing through the voice coil that gives rise to the force on the diaphragm. Doing this we find the figures are 107.4dB, 109.0dB and 107.1dB, all for 20mA rms. On this basis there's little to choose between the LCD-X and LCD-2.

NO COMPROMISES. NO COMPARISON.

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AUDEZE LCD-X

Audeze claims a sensitivity for the LCD-X of 95dB SPL for 1mW power input which, for the stated impedance of 22ohm, corresponds to a voltage sensitivity of 111.6dB for 1Vrms. Our measurements show that this is a significant understatement of what the LCD-X actually delivers, which amounted to 115.1dB at 1kHz for 1Vrms input, averaged for the two capsules. While this exceeds the previous highest we've obtained from a planar magnetic headphone [114.4dB for the Oppo PM-1, *HFN* Jul '14] it has to be borne in mind that the Oppo's average impedance is about 31ohm whereas the LCD-X's is about 20ohm – a difference equivalent to a 3.8dB boost for the LCD-X – so the inherent sensitivity of the PM-1 remains higher. In fact if you perform the same calculation for the Audeze LCD-2 [106.0dB and 59ohm, see *HFN* Mar '13] it is apparent that the LCD-X's sensitivity advantage over its lesser sibling can be ascribed entirely to its lower impedance.

Over the audible range (20Hz-20kHz), the LCD-X's worn impedance is all but constant but for a small peak at 5.2kHz, ranging from a minimum of 19.3ohm to a maximum of 21.0ohm. In conjunction with a 10ohm source resistance this equates to a frequency response modification of just 0.24dB, rising to 0.44dB for a 30ohm source. These are both negligible but the approximately 8dB attenuation in the latter case may not be in some situations. Typically of Audeze, the uncorrected frequency response on the artificial ear [Graph 1, below] evinces extended bass – down to 10Hz/–6dB (re. 200Hz) – but a less than fully developed peak around 2-3kHz. As a result the diffuse-field corrected response [green trace, Graph 2 below] indicates a falling perceived output above 1kHz. Capsule matching was good at ±4.8dB and, as with every Audeze model tested so far, total harmonic distortion was vanishingly small at <0.1% (90dB SPL, 100Hz and 1kHz). KH



ABOVE: Because of its high sensitivity the LCD-X can be used with portable players, via an adapter lead

LCD-X doesn't *image* well – it does – but it's as if the hard surfaces of the concert hall have been covered over with thin drapes.

Sometimes, of course, stepping backwards from forthright truthfulness can be a wise move and I was sure to include in my listening some tracks on which the LCD-X's understated nature might be a blessing. Tracks like the hi-res download of 'Jumpin' Jack Flash' from The Rolling Stones' *Through The Past Darkly*, which is nothing if not raw – a rawness that the LCD-X ratchets back.

EMOLLIENT AID

Of course there's an argument that raw is exactly how this music should sound but many listeners, particularly if settling down to listen to the whole of the album, would surely welcome the LCD-X's emollient effect. And the same could be said with 'Songbird' from Eva Cassidy's *Simply Eva*, where someone got well and truly carried away EQ-ing that wonderful voice. Here too the LCD-X's calming influence was an asset and would significantly delay the arrival of listening fatigue.

But point the LCD-X at a clean, contemporary hi-res recording for which no excuses need be made and it's harder to conclude that the Audeze tonal balance is the right one. Illustrating this was the studio master download of

the Allegri String Quartet playing three Beethoven quartets Op. 18. Immaculately captured by Tony Faulkner, there is nothing that this Vivat recording needs by way of a leg-up. All that's required is a rigorously neutral tonal balance and utter transparency.

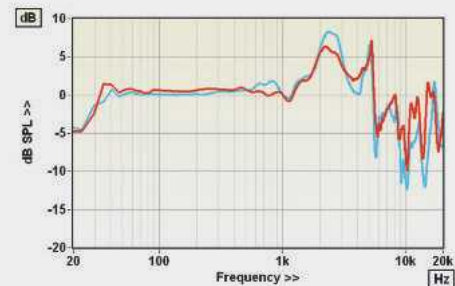
Now you could argue that no headphone available today can truly deliver those; but some get significantly closer to the ideal than the LCD-X, which couldn't lay bare this recording in the way necessary to enjoy its consummate music-making to the full.

The Audeze range, I know, has plentiful admirers. But you need to assure yourself that this distinctive take on headphone tonal balance is to your taste. If it is, then the LCD-X, with its superior voltage sensitivity, makes a good case for itself against the LCD-2 or LCD-3. ☺

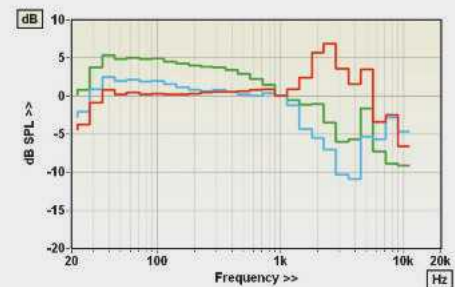
HI-FI NEWS VERDICT

Anyone expecting the LCD-X to break the familiar Audeze mould will be either delighted or disappointed to find that it doesn't, depending on their love or otherwise for the sound quality of the LCD-2 and LCD-3. For all Audeze's hype that the LCD-X has a more neutral tonal balance, in fact it still espouses the softened delivery of its forebears. If that appeals then the high-sensitivity LCD-X will too.

Sound Quality: 84%



ABOVE: Very flat frequency response below 1kHz with excellent bass extension but presence/treble peak is not especially well developed (see green trace, below)



ABOVE: Third-octave freq. resp. (red = uncorrected; cyan = FF corrected; green = DF corrected)

HI-FI NEWS SPECIFICATIONS

| | |
|--|------------------------------------|
| Sensitivity (SPL at 1kHz for 1Vrms input) | 115.1dB |
| Impedance modulus min/max (20Hz-20kHz) | 19.3ohm @ 23Hz 21.0ohm @ 5.2kHz |
| Capsule matching (40Hz-10kHz) | ±4.8dB |
| LF extension (–6dB ref. 200Hz) | <10Hz |
| Distortion 100Hz/1kHz (for 90dB SPL) | <0.1% / <0.1% |
| Weight (inc cable and 0.25in connector) | 725g |

Light Harmonic Geek Out EM

Funded by an instantaneous response on Kickstarter, the Geek Out is the pocket-sized USB DAC from Light Harmonic, better known for £20k-plus processors

Review: **Ken Kessler** Lab: **Paul Miller**

Disclosing my involvement with Light Harmonic's Geek Out USB DAC is nothing sinister: I'm one of the thousands who pledged money during its fund-raising campaign on Kickstarter. I certainly wasn't alone in doing so, nor unduly pessimistic about the eventual outcome: they targeted \$28,000, reached that goal in under 11 hours and went on to attract ten times that amount.

Like everyone else who pledged funds, I was swept up initially by the campaign's audacity, as much as I was finding the notion of a USB DAC from the makers of the hugely expensive Da Vinci not without its fascination [*HFN* Apr '13]. The resultant product is a curate's egg, however much I wish I could be totally positive about it. So, please, do not skip to the verdict: this product deserves careful consideration.

THE AWESOMIFIER EFFECT

Keeping personalities out of this (especially as Geek Out's Gavin Fish is a virtuoso ukulele player, which might soften my stance), and factoring out that I actually paid for my Geek Out, I have done what Light Harmonic itself suggests: I compared the Geek Out EM – the top model of three – to its main rivals as perceived by the brand. Its literature contains a comparison chart setting up the Geek Out EM against

two of my three pet USB DACs – Meridian's Explorer and the Audioquest DragonFly v1.2 [*HFN* Mar '14] – to which I only had to add the Cambridge DacMagic XS. (I'd have included Chord's magnificent Hugo but it costs four or more times as much as the others, and its portability is moot.)

Although the USB DAC/headphone amp is a new-ish genre, the majority adhere to the basic form created by the Audioquest DragonFly. The most minimalist among these devices require levels set by the source, eg, a notebook computer, but – like the DacMagic XS – LH fits proper buttons to its Geek Out. With dimensions that allow it to fit in most headphone travel cases without disturbing the cans themselves, the Geek Out is fitted with a USB plug on one end, two 3.5mm sockets on the other (47ohm and 0.47ohm), and the aforementioned pair of buttons for volume up and down.

Simultaneous use of the two buttons activates the ludicrously-named 'Awesomifier' 3D spatial effect, which actually does a fine job of increasing the sense of out-of-the-head listening. Too bad the circuit was probably named by the guy who cooked up the unit's dire, circa-1986

styling. With all the extra money they got from Kickstarter, over a quarter-of-a-million dollars beyond their goal, surely they could have hired a non-geek to make this thing more commercially appealing? C'mon: 'Awesomifier'? Why are they targeting valley girls and Kardashians?

A SERIOUS CONTENDER

Ugly carcass and risible nomenclature aside, the Geek Out packs a helluva lot into its small shell. Indeed, it's so impressive

that I used it not only with my computer, but through a high-end system: this is a serious DAC by any measure. It will delight those already advanced down the road toward streaming, because it

can handle high-res material from your on-line source of choice thanks to processing LPCM (DXD) up to 384kHz/32-bit, and the decoding of DSD64/128.

This is where the price tag starts to mean something, which it must do because the Geek Out costs more than double a DacMagic XS. The company points out that much of the tech is derived from the hugely-expensive Da Vinci, including the 64-bit volume control, the aforementioned 384kHz/32-bit and DSD decoding engines and – in the analogue stage – Da Vinci's 'Quiet Power Technology'.

So, too, is the Class-A output derived from the Da Vinci. It must be the real thing as something must account for it running so hot that it is genuinely uncomfortable to the touch. If this said 'Krell circa 1984' on it, no-one would be surprised. I'm sure LH has all its approvals in place, but I have tube amps that run cooler.

It must be said that not only is the Geek Out EM the most powerful of the three Geek Out models, able to drive any

'It had resolving power I'd never associate with portable gear'



LEFT: Mac and Linux OS need no drivers and plug'n'play via USB; LEDs show sample rate and use of the '3D Awesomifier'. Cans and hi-fi systems are served via dual 3.5mm sockets



LEFT: Alloy bodies come in different colours according to spec; up/down volume buttons also activate the '3D effect'. The Geek's Class A output causes it to run quite warm

headphones in my arsenal, it's also more powerful than its rivals. Power, however, is limited by the output of the USB bus to which a Geek Out is connected; it has no external PSU.

A basic Geek Out (£199) is suggested for headphones with an impedance of less than 100ohm; it has a rated 450mW output and will be available only in silver. Next up is the Geek Out M (£249) in black with rated 720mW output, for less efficient headphones with an impedance of 100-300ohm. The model reviewed here is the Geek Out EM (£299), with 1000mW output to drive headphones with an impedance over 300ohm [see Lab Report, p69].

Note that the blue EM seen here is now a collector's item, like the green ones supplied to Kickstarter supporters: the colours listed above for the base model and the M are the final production colours, with the EM supplied only in red. The Geek Out comes with a carry pouch and a short,

160mm USB 'Slacker Mini Cable' for situations where the Geek Out won't fit, eg, a USB next to an occupied socket or if the Geek Out covers other ports on your system. The company does caution users with this caveat: 'It is advised not to let your Geek Out dangle from your USB port. Over time this can cause damage to your USB port.' Light Harmonic specifies the 0.47ohm socket for lower impedance headphones and the 47ohm outlet for higher impedance headphones. The latter is also preferred for connecting to other equipment like external amplifiers.

HIGH-END AUTHENTICITY

Setup was a no-brainer with the Mac Air and iMac, needing me to do but one thing: go into System Preferences, click on 'Sound' and select Geek Out, which appeared immediately. Same with Fidelia, preferred over iTunes. Linux's OS also works this fluidly, but PCs require driver downloads. Within seconds, I was hearing

music, but that initial burst comes with a warning. No matter what I tried, the Geek Out always played at maximum level upon initial switch-on or re-connection. I got used to it, and quickly developed the habit of plugging in the headphones after first lowering the volume. But I never got used to the excessive heat of my sample...

In its literature, the company states emphatically, Geek Out is 'using the highest quality Class A amplifiers and as a result will create heat even when the unit is idle. This is normal and will not hinder the unit's operation.' That's fine. But mine got too hot to touch. I can forgive this in a massive Class A power amplifier, which I have no need to touch during playback, but this is a portable device and should run cooler.

That aside, the Geek Out performed, not just well, but remarkably so. I mean, we're talking a shift in sound quality that elevates the playback of digital programme material available from transportable hardware to a level way beyond mere convenience and into true high-end authenticity. I was hearing previously undetected and blindingly minute details in recordings so familiar that they're bordering on the rote. It was disconcerting.

Take the opening to J Geils Band's 'Cruisin' For A Love', with its piercing mouth harp. One's tendency is to focus closely on this lead instrument to the detriment of all else, for it is a solo note lasting for eight seconds. This was the first time in 43 years that I heard a subtle percussive count-in beneath the harp playing. The isolating properties of Focal's fabulous Classic headphones may have helped. Suffice it to say, the ease with which one can flit from instrument to instrument was the result of resolving power I would never associate with portable gear.

Textures, tonal variations, dimensionality and space, attack and decay – and through headphones, not via speakers that bless us with sound to the front of us rather than inside one's skull. And bass! The Isley Brothers' 'It's Your Thing' had low-end mass, fluidity and extension that the Focals delivered as real and palpable as in life. ➔

KICKSTARTER

Crowdfunding is a clever way to get financing without crawling to bankers or venture capitalists. Kickstarter is the best known, along with IndieGoGo and many others. Entrepreneurs come up with an idea, present it on a crowdfunding site, it's vetted, and money rolls in as members of the public pledge from as little as \$1. Increase a pledge – which isn't paid until the target is reached – and the rewards are greater. My funding includes Pledge Music, for financing the latest Caravan album; pledges earned anything from a signed CD to having one's name in the credits to attending gigs. I've also contributed to a photo book about the 'last record shops', a video about the 'Wrecking Crew' studio musicians; I signed up for a Pono player [see PM's 'Opinion' in HFN Aug '14] and also participated in the subject of this review, the Geek Out being one of crowdfunding's most surprising coups. Hugely successful though the Kickstarter campaign was, LH has a long way to go to reach the \$41m raised by... a computer game.



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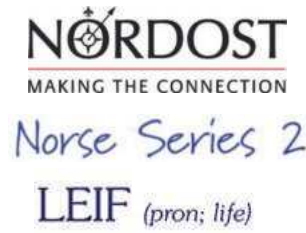
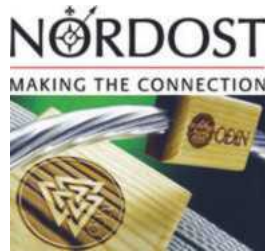
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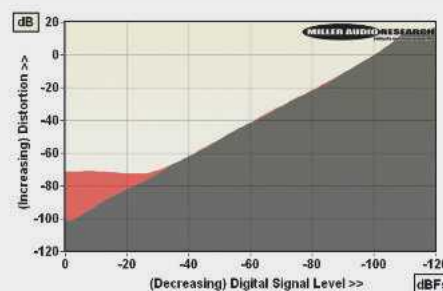
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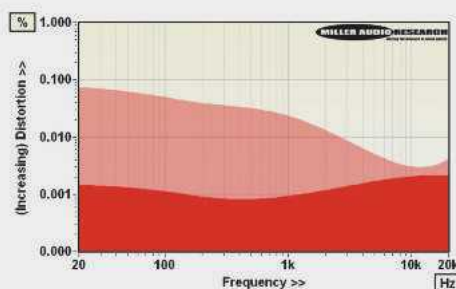
LIGHT HARMONIC GEEK OUT EM

Light Harmonic offers some basic measurements on its website, comparing its Geek Out with competing USB DAC headphone amplifiers. Unlike most hub-powered USB DAC devices, the Geek's maximum output is 6dB higher than the 2V norm at 4.05V, a performance achieved without overload judging by the very low 0.0015-0.0017% distortion achieved with peak level (0dBFs) digital inputs from 20Hz-20kHz [see solid red infill, Graph 2, below]. This is slightly better than even Light Harmonic suggests although the A-wtd S/N ratio, which would necessarily enjoy a boost relative to the 2V competition, is rather weaker at 94.3dB. On the other hand, this is the best we've measured with a hub-powered device, still 10dB better than other models on the market and unaffected by headphone loading.

Output and, more markedly, distortion is influenced by headphone loading [see shaded red infill, Graph 2], suggesting that LH's own tests were conducted with the Geek driving a high impedance load. Rated at 1000mW, our Geek Out EM achieved 605mW/25ohm at 0.027% THD [see red infill, Graph 1 below]. It's possible the inbuilt headphone amp could deliver more but as the maximum digital input can never be more than 0dBFs, 605mW/25ohm remained the practical limit with my test USB hub. Digital filtering is chosen to reduce ringing in the time domain at the expense of alias artifacts and the gently rolled-off frequency response reflects this at -2.1dB/20kHz (44/48kHz media), -5.4dB/45kHz (96kHz media) and -8.1dB/90kHz (192kHz media). Readers are invited to download a comprehensive QC Suite test report for Light Harmonic's Geek Out USB DAC/headphone amplifier by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Distortion versus digital signal level at 1kHz (black = unloaded; red = loaded where 0dBFs = 605mW, -10dBFs = 61mW and -20dBFs = 6.1mW and -28dBFs = 1mW)



ABOVE: Distortion versus frequency from 20Hz-20kHz (solid red, 1V unloaded; shaded red, 10mW into 25ohm load)

HI-FI NEWS SPECIFICATIONS

| | |
|---|----------------------------|
| Maximum output (re. 0dBFs into 47kohm) | 4.05V |
| Max. power output (re. 0dBFs into 25ohm) | 605mW |
| Output Impedance (20Hz-20kHz) | 0.85-1.02ohm |
| A-wtd S/N ratio (re. 0dBFs) | 94.3dB |
| Distortion (20Hz-20kHz, re. 10mW) | 0.003-0.072% |
| Freq. resp. (20Hz-20kHz/45kHz/90kHz) | +0.0 to -2.1/-5.4dB/-8.1dB |
| Stereo separation (20Hz-20kHz) | 88dB to 102dB |
| Digital jitter (unloaded/loaded at 25ohm) | 100psec / 135psec |
| Dimensions (WHD) | 30x10x54mm |



LEFT: Rear label explains what the LEDs reveal, indicating the sampling rates; all glow white except for the '3D Awesomifier' setting which glows blue

even convince yourself that it hardly needs electricity. But, no, I didn't try it with the Mac Air in battery mode.

LISTEN UP!

Get yourself a copy of Gladys Knight And The Pips' 'Midnight Train To Georgia', one of the greatest soul ballads ever. It exhibits copious amounts of bass, brass with the power to punch holes in walls, piano, strings, dominant percussion and – best of all – the Pips harmonising behind Gladys' powerful pipes. With the Geek Out, it had the kind of authority that will not allow you to listen casually: it commands your attention.

But there is a downside: a lack of professionalism may hamstring this otherwise outrageously fine device. The commercial presentation is dire, while the hectoring follow-up campaign to the initial Kickstarter bordered on harassment. A Geek Out looks like the kind of unbranded item you get from mail-order electronics wholesalers.

Sadly, I fear the Geek Out may be remembered more for crowdfunding than for its actual performance. The company has announced a desktop version called 'Geek Pulse', which pulled in more than \$1,020,000, making it one of the most successful crowdfunding projects in IndieGoGo history; and a player is in the works. I just wish they'd perfected Geek Out first. As The Ventures once sang, 'Walk, Don't Run.' ☹

HI-FI NEWS VERDICT

Unacceptably hot after mere minutes and with the aesthetics of a brick, the Geek Out nearly undermines its astonishing sound quality with behaviour and looks that flatter its rivals. Audioquest's sublime DragonFly is the default selection, Cambridge's funky DacMagic XS is the bargain of the decade and Meridian's sexy Explorer will seduce connoisseurs. The Geek Out is astounding, but made for masochists.

Sound Quality: 88%



Johnny Rivers' 'Rockin' Pneumonia And The Boogie Woogie Flu' [United Artists] ices the bass with juke-joint piano, fuzz tones, hand-claps, baritone backing vocalists – a kitchen-sink experience accented with cow-bell, high-hat cymbals... it's rock'n'roll in its most raucous mood. The Geek Out delivered its majesty and power in a way that one would assume was the sole preserve of full-sized components of uncompromised complexity.

The clincher was Mike Nesmith's 'Rio' [Pacific Arts]: soft percussion, acoustic guitar, massed backing vocals – the sound was as caressing as the promise of the song's lyrics. The Latin rhythms and the liquid guitar work produced layers of complementary textures, creating a party atmosphere complete with tinkling glasses: the Geek Out held it all together with the grace of its Italian-named domestic sibling.

Throughout the sessions, I changed from Mac Air to iMac, from Focal headphones to Grados to assorted B&Ws. Power was never an issue. The EM drives the hungriest cans to levels that should be proscribed by the government. What it translates into, for those of us who are not interested in candidacy for a hearing-aid, is a sense of freedom, as if this unit is barely exerting any effort. If it wasn't for the sheer heat coming off the device, you might

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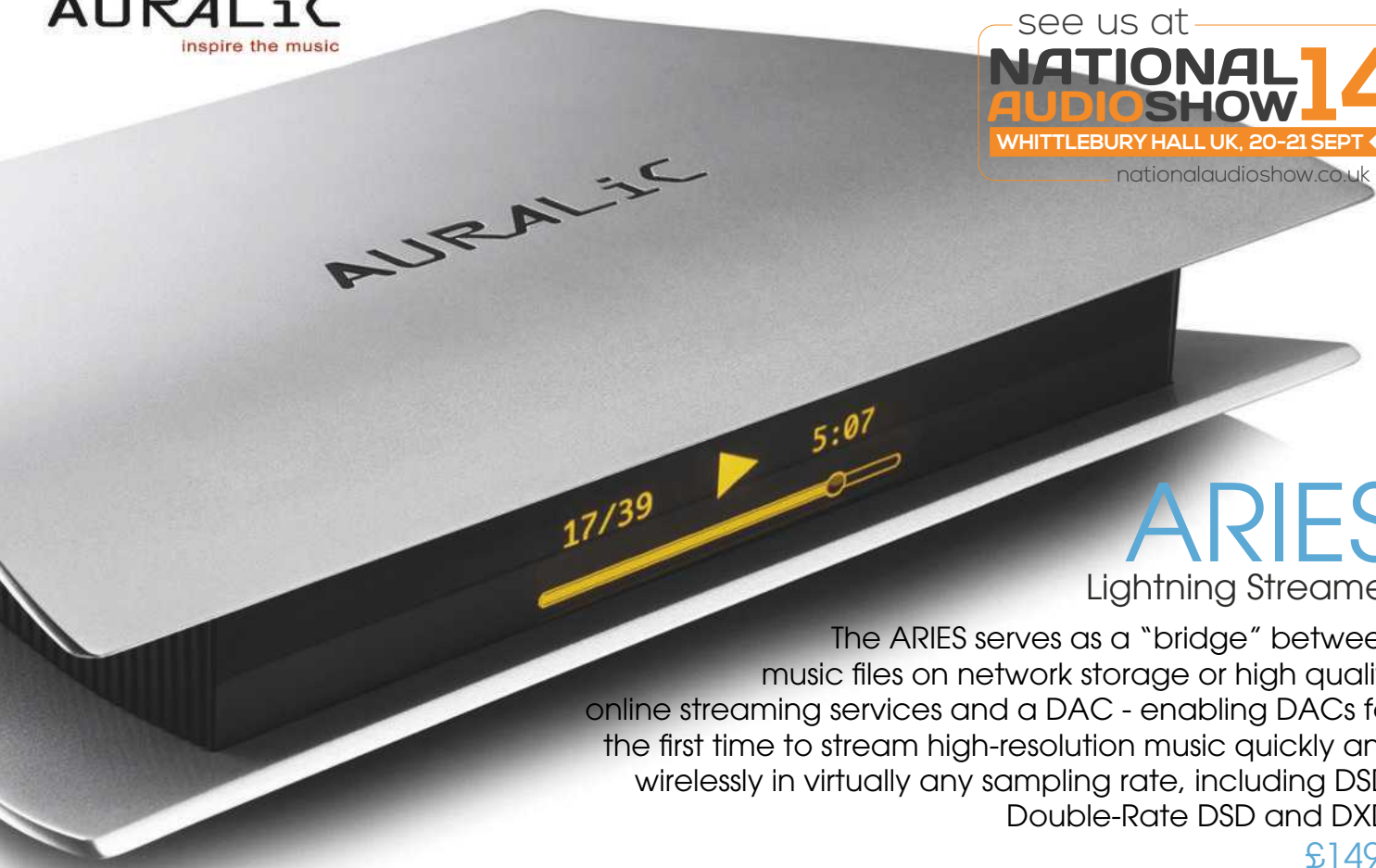
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NEW SERIES

Sir William Walton *Symphony in B minor*

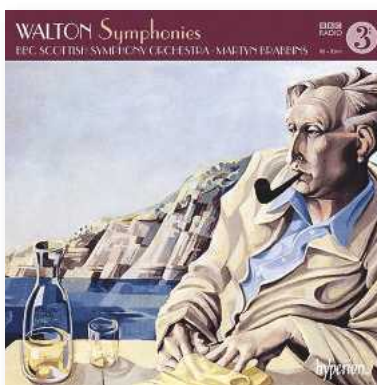
It's a work that received *two* premieres; and it marked the end of a relationship with the dedicatee. **Christopher Breunig** has to choose between two great LSO recordings

With Edith Sitwell's experimental verses spoken through a megaphone coming through a painted drape and the instrumentalists similarly hidden, the spiky, jazzy musical sketches of *Façade* declared the young William Walton 'a modernist'.

He was 20 and, having left Christ Church Oxford without a degree, he'd been invited by fellow-undergraduate Osbert Sitwell to live at their house in Carlyle Square as an 'adopted brother' with Sacheverell and Edith. Their devised entertainment was first heard privately at their home in 1922 and a year later at the Aeolian Hall, London – where it was not well received. The earliest recording (Decca 1929), was with Walton directing and speakers Edith Sitwell

→ The CD cover of Hyperion's 2010 release [CDA67794] features a painting by Michael Ayrtton, which is now in the National Portrait Gallery

← Walton portrait from the Decca DVD of Tony Palmer's documentary *At The Haunted End Of The Day*



and Constant Lambert; it was reissued on LP [ECM 834].

MALICE AND MELANCHOLY

The young freelance composer from Oldham had quickly decided he needed to 'make himself interesting to others', and was fortunate in finding a publisher (Oxford University Press); and a BBC commission for the great oratorio *Belshazzar's Feast* – texts by Osbert Sitwell – came in 1929. It was premiered by Malcolm Sargent at the Leeds Festival in 1931.

The suggestion of writing a symphony was made by the conductor Sir Hamilton Harty (then with the Hallé) who gave the first performance(s) respectively with the London Symphony Orchestra and the BBC SO. Walton's progress was slow: he was at the time living in Switzerland with the Baroness Irma von Doernberg (a young widow) and by the time of the planned premiere only three movements were completed.

With some reluctance he agreed it could be given in that form in March 1934, but he took a further 15 months to finish the jubilant (if

somewhat unmatched) concluding part. Although the work was dedicated to Irma, the relationship had by then ended. The *Presto* scherzo and *Andante* were marked 'con malizia' and 'con malinconio' although Walton never elaborated on this – quite rightly!

The Symphony was written at a time, argued the distinguished musicologist, the late Deryck Cooke, when the form was thought – except by the likes of composers Nielsen or Sibelius (whom Walton later came to admire) – to be out-moded as a means of expression. The score, 'with its nervous rhythms, piercing dissonances and hard sonorities... made it an entirely original creation of shattering impact'.

Harty made the first 78rpm recording in 1935 for Decca, with the LSO [X.108-13; CD reissue

Dutton CDAX 8003; download at The Music Parlour]. But it was the composer's own Philharmonia version which reigned in the LP era (Abbey

'Reviewers unhesitatingly preferred the Previn RCA LP'

Road, Oct '51; HMV ALP 1027) and which has had various LP/CD reissues – Naxos currently lists it as a 44.1kHz/16-bit download [980168].

The first *stereo* LP was with Sir Adrian Boult, made with the LPO under a pseudonym for Nixa at Walthamstow in 1956. It's been reissued by First Hand Records as part of a 3CD set [FHR 06]. It's also on SOMMCD 094 with *Belshazzar's Feast*, but in a far less satisfactory transfer. A 1975 BBC SO Boult concert performance was issued on Carlton's now deleted BBC Classics label [15656 91782] with a much faster scherzo – however, honest though his readings were, Boult didn't really have the temperament



PHOTO: UNIVERSAL CLASSICS

for this work. And surprisingly perhaps, Barbirolli never conducted it, although at the end of his life he told his biographer Michael Kennedy he would 'look at it again'.

WALTON'S CHOICE

Walton enjoyed a cordial relationship with impresario Walter Legge and he was somewhat taken with Karajan's work (whom Legge had brought to London to help develop his Philharmonia Orchestra). He hoped Karajan would take up his symphony but the conductor gave a single Rome performance on 5th Dec '53 with the inferior RAI Orchestra. Walton missed the radio broadcast, which was probably just as well: EMI transferred it, briefly, to CD in 2004 [562869-2] and there were cuts and changes to scoring. A Karajan curiosity.



PHOTO: LSO ARCHIVE

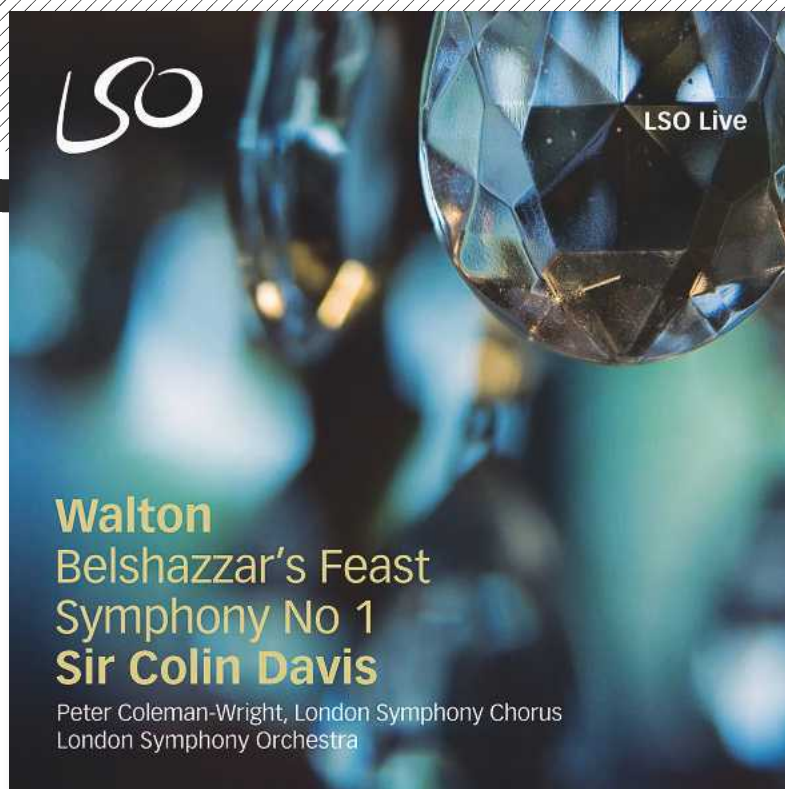
During 1966, Walton learned that two new recordings were in preparation: one on EMI with Sargent and the New Philharmonia, the other with Previn and the LSO on RCA. In fact both were released here in the same month, Feb '67, and reviewers unhesitatingly preferred the Previn [SB 6691]. Sargent was gravely ill with cancer and his Kingsway Hall record [ASD 2299] was issued with an endorsement from Walton; in a letter to Legge he confided 'both are very good, naturally in parts one is better than the other, but on the whole Decca [sic] is best.'

PREVIN OR DAVIS?

As the critic Edward Greenfield suggested, Previn gave us a 'young man's view' of a work whose 'nagging nervous tension exactly suited Previn's urgent temperament'. (Greenfield had been with Previn, Walton and Kyung-Wha

→ Sir Colin Davis's 2005 LSO recording was later reissued on SACD with *Belshazzar's Feast* added

← Sir William Walton ultimately preferred André Previn's 1966 RCA recording to Sir Malcolm Sargent's



Chung on the LSO's extensive tour of 1971.) He was certainly attuned to the scherzo's vehement momentum and broken rhythms, and to the jubilation of the finale, with its unexpected fugue insert. It seemed unlikely that we'd get anything better – and Previn's Telarc remake with the RPO didn't have anything like the same impact.

But then came another LSO version with Sir Colin Davis conducting [HFN album choice Jul '06], taken from Barbican performances from Sept/Dec '05. 'Compared with the brilliantly optimistic Previn account, Davis' shadows are darker and his victory more hard-won,' suggested an American critic, 'making it harder,

leaner, edgier' than with any intermediate recording we'd had.

The disc was later replaced by one including a 2008-sourced *Belshazzar's Feast* [LSO0681, SACD hybrid]. This didn't add much value, I suggested [HFN Jun '11], but hardly detracted from a version adding 'Sibelian weight' to the Previn view.

Davis was, of course, our greatest Tippett interpreter, but this recording was something of a surprise – as was the Vaughan Williams Sixth Symphony he did with the Bavarian RSO [BR Klassik]. 'No one has exposed its troubled heart with greater care than Sir Colin' I wrote. He had a way, too, of making the course of this powerful symphony sound inevitable. ☺

ESSENTIAL RECORDINGS

London Symphony Orchestra/André Previn

RCA 74321925752 (2CDs)

This now comes with classic concerto recordings by dedicatees Jascha Heifetz (Philharmonia cond. Walton) and Gregor Piatigorsky (Boston SO/Munch), plus Yuri Bashmet/LSO/Previn in the Viola Concerto. So no excuses not to buy!

NPO/Sir Malcolm Sargent

Warner Classics 2564634121 (18CDs)

This is now tucked away in a bargain box with some British rarities and historic material, along with Sibelius symphonies, Rossini overtures, Beethoven, *et al.* It remains a fine account by this undervalued English conductor and the sound is good. His 1958 *Belshazzar's Feast* is here too.

Bournemouth SO/Andrew Litton

Decca 470 5082 (4CDs) or 478 4606 (2CDs)

Litton has the measure of the work although in 1993 the orchestra was not as fine as its competitors; a useful 'Centenary Edition' four-disc anthology with Bryn Terfel in *Belshazzar's Feast* and Tasmin Little in the Violin Concerto and much else of value. The 2CD set has both symphonies and the three string concertos.

BBC Symphony Orchestra/Edward Gardner

Chandos CHSA5136 (SACD)

Not dissimilar to the Sargent interpretation in feeling, this new release comes with a Tasmin Little remake of the Violin Concerto which has less Mediterranean warmth than in the Decca set [above]. Alternatively available as a 96kHz/24-bit download.

Vinyl Release

BEHIND THE MUSIC WITH HI-FI NEWS & RECORD REVIEW

Bob Dylan *Oh Mercy*

The singer said goodbye to the 1980s with an album that was hailed as a comeback. **Steve Sutherland** listens with fresh ears now that the LP is released on 180g vinyl

Say hi to Sun Pie. Sun's a funny old geezer, wears a flat-topped straw hat and gold-rimmed glasses. He runs a place called King Tut's Museum, which lies at the end of a track across a field just off Route 90.

King Tut's is actually not so much a museum as a rundown old shack, part convenience store selling newspapers, trinkets, sweets, umbrellas, fake jewels, voodoo beads, votive candles and wicker baskets, part crawfish joint, part butchers, part boat repair shop, and part furniture renovation workshop.

A BIT OF A JAM

Sun's of indeterminate origin. His skin's all leathery and dark but his features are kinda Slavic and, although he's obviously an old-timer, he appears to be married to that schoolgirl beating the dust out of a rug out there on the porch.

The reason I'd like you to meet Sun is because, without him, *Oh Mercy*, the record we're here to acclaim, would never have been completed. Or, at least that's what Bob Dylan says.

See, Dylan's in a bit of a jam. On Bono's recommendation, he's committed to recording an album with this passionate

Canadian producer called Daniel Lanois who's done good stuff recently with Brian Eno, U2 and Peter Gabriel.

Lanois is thrilled to be working with Dylan and, for the vibe, has hired and converted a Gothic Victorian mansion in New Orleans for the recording sessions, bringing in a bunch of ace local players like Rockin' Dopsie (accordion), Mason Ruffner and Brian Stolz (guitars), Willie Green (drums) and Tony Hall (bass) to get the grooves down. Top place. Top players.

But all is far from well. Lanois is looking to return Dylan to the heydays of his apocalyptic mid-1960s but, quite frankly, Dylan doesn't have it in him anymore. He's another person in another place. And judging by the fact that he hasn't made anything approaching a decent record in over a decade and his shambolic live shows are acceptable only to his most devoted of disciples, he isn't even sure who or where that person is.

What he does know, though, is that he's used to getting his own way – a fact this Lanois chap doesn't appear to appreciate.

STEVE SUTHERLAND

Steve edited NME from 1992-2000, the Britpop years, launching NME.com and reviving the NME Awards. Previously he was Assistant Editor on Melody Maker. Among his many adventures he has been physically threatened by Axl Rose, hung out awhile with Jerry Garcia and had a drink or two with Keith Richards...



The sessions are barely a week old and nothing good has emerged, the star and the producer working to differing agendas.

Dylan is frustrated, about to pack it in when he takes off out of the city on an old blue police Harley Davidson and comes across King Tut's. The conversation that transpires with Sun Pie under watchful posters of Bruce Lee and Chairman Mao turns Dylan right around. Sun says Dylan had better pray because the Chinese

are coming to take over America. He has views on the useless conscience of man, the inevitability of inequality, and the usefulness of war. He says: 'I think all the good in the world

might already have been done.'

Sun talks hard and long and time imperceptibly passes. Dylan, called to his senses by a passing lonesome train whistle, says he's gotta go. Sun gifts him a bumper sticker that says World's Best Grandpa and asks if he's got everything he needs. Dylan replies: 'Yeah, but I need some more.' Sun Pie laughs and says he does too.

RENEWED ENTHUSIASM

Dylan returns to recording with renewed enthusiasm. 'He was the right guy to run into at the right time,' he recounts in the first volume of his autobiography, *Chronicles*. And, at last, a great album gets made, including three songs which are right up there with Dylan's finest – which, let's face it, is really saying something!

The first is 'Most Of The Time', one of those topsy-turvy relationship songs that Dylan has such fun with on his last class effort, *Blood On The Tracks*. Strung out across Lanois' aching ravine, a sorrowful bassline contributing the counterpart, Dylan relates a tale of late night bar room bravado, our sorry hero unconsciously protesting far too much that he's over the gal of his dreams. It's a beautifully knowing exercise in self-delusion.



Columbia Records shot of Bob Dylan from 1981, which also appeared on the picture sleeve of the single 'Heart Of Mine' that year. *Oh Mercy* was Dylan's 26th studio album



➔ Priced £21, the 180g Music On Vinyl release of Bob Dylan's *Oh Mercy* can be ordered online from www.rockbox.co.uk

Then there's 'Shooting Star', a deeply regretful romantic ballad, the nostalgic protagonist musing on how the differing dreams and ambitions of a once loving couple have seen them drift apart into different worlds of mistrust and misunderstanding.

And finally, the terrifying 'Man In The Long Black Coat', the best of the lot. A swamped-up scene from a horror movie, the rhythm a dull threatening thud to reflect the lyric about someone out there in the everglades 'beating on a dead horse', the Man in question a victim to his own dark vices, a man addicted to predatory, violent and murderous sex.

'There are no mistakes in life some people say/ And it's true sometimes you can see it that way/ People don't live or die, people just float/ She went with the man in the long black coat'. This is terrifying stuff, Southern Gothic shot through with the 'Book Of Revelation', Robert Mitchum's crazed preacher from *Night Of The Hunter*, love and hate tattooed across his knuckles, his brain, as Jim Morrison once said, squirming like a toad.



E. ANTOLÍN HERNÁNDEZ

➔ The singer photographed live on stage in 1984 at a show in Barcelona, Spain

BOB DYLAN



OH MERCY

Other songs come close – 'Ring Them Bells' and 'What Good Am I' sound strong but haven't quite shaken off the righteous whiff and pomposity of Dylan's Born Again Christianity, which unhinged his previous few albums. The 'Disease Of Conceit', a sermon delivered from this standpoint, would suck mighty bad even without the hokey faux gospel setting.

'Political World' is better though, shuddering with smart couplets that throw back to the motherlode of 'A Hard Rain's Gonna Fall', but somehow the whole never grows to mean anything beyond its title and parts.

'Everything Is Broken' is similar, a cranky old feller sounding off a litany of images about the frustrations of modern technology rather than the sort of scathing appraisal of the corrupt human soul which the finest young Dylan would have delivered. Not quite there, but at least the embers are glowing.

GHOSTLY NETHERWORLD

Lanois was rightly critical of Dylan's refusal to challenge himself lyrically and endlessly tries to goad him with musical frameworks out of the legend's comfort zone. And that's what makes *Oh Mercy* such a success against all the odds. There's a tension and struggle in here which pushes Dylan for the first time in ages to really think hard. Even when the songs fall short, Lanois'

work is mostly gorgeous and timelessly contemporary, pulling Dylan into a ghostly *Twin Peaks* netherworld where the imagery echoes down the years and preps the pair for their next meeting in 1997, when the raddled voice in the wilderness grows into the feisty conscience of a generation grown old but refusing to be feeble.

A bit like Sun Pie I guess. Except... well, hard as they've searched, not one of the myriad enthusiasts who dog their master's every step has ever been able to locate Sun Pie or King Tut's Museum.

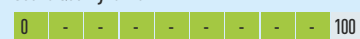
He's the man who wasn't there. ☹

RE-RELEASE VERDICT

From the Music On Vinyl stable, this 180g release comes with an insert and is packaged in a 3mm card sleeve bearing the original artwork. Pressed in Holland at Record Industry (see www.recordindustry.com) our copy was crystal clear, devoid of static and free from popping or skipping.

Sound quality was consistent across the LP. The sinister atmospherics created by the shimmering guitar-work stretched wide across the soundstage while the low-slung bass lines were kept in check. A worthy successor to the original. HFN

Sound Quality: 89%





Roxy Music *Roxy Music*

A pastiche of styles drawn from influences as wide as '50s doo-wop and John Cage, the band's debut album was radical in that it dared to wave a feather boa in the face of a rock and pop scene ruled by be-denimed bores. Even their record label had to be convinced...

Words: **Mike Barnes**

Brian Eno has said that when he boarded a Bakerloo Line tube train at Elephant & Castle in December 1970, his decision as to which door to walk through changed his life. It also helped change the face of British music in that decade. If that sounds a tad melodramatic, it's because Eno found himself sitting opposite an old friend, Andy Mackay, whom he had first met in 1968. Mackay was now playing, with Bryan Ferry, in the first incarnation of a group that would become Roxy Music.

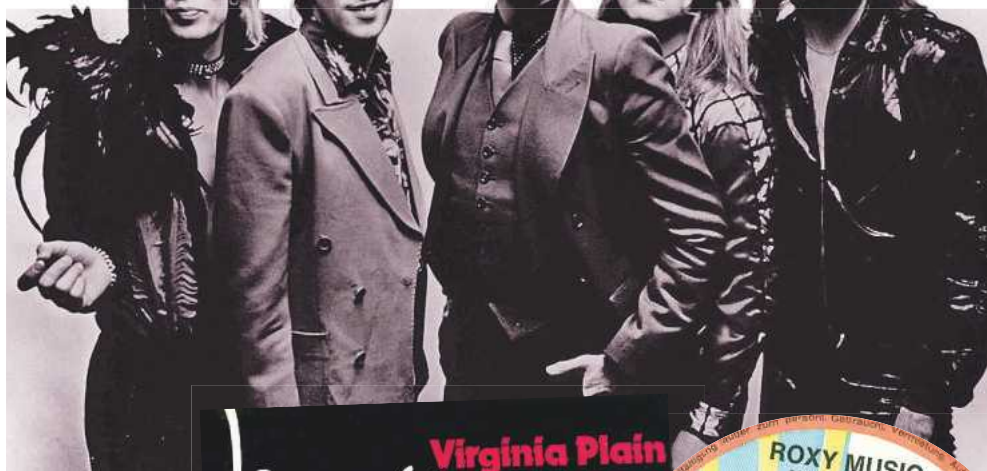
Knowing that Eno owned a reel-to-reel tape recorder, Mackay explained that the group wanted to make some demos. He also had an early VCS3 'Suitcase' synthesiser, which he agreed to lend to Eno.

Although not a musician, Eno took to the VCS3's noise-making capabilities like the proverbial duck to water. In the New Year the group began rehearsals in Eno's primitively soundproofed flat in Camberwell.

THRILL OF IT ALL

The early '70s was an exceptionally fertile time musically. Musicians were experimenting with structure and juxtaposing different styles, and few did it so thrillingly as Roxy Music. Mackay and Eno were steeped in both rock 'n' roll and doowop as well as being drawn to the darker, transgressive sounds of The Velvet Underground and contemporary avant-garde composers like Morton Feldman and John Cage.

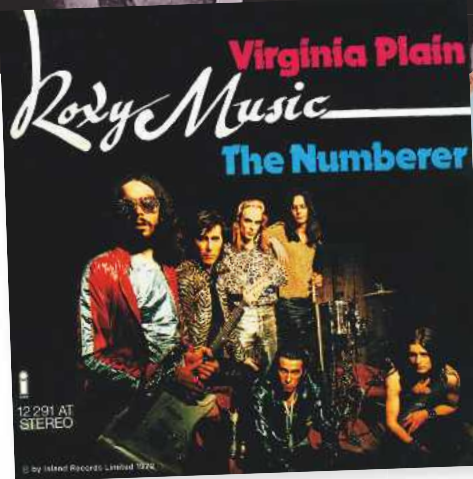
Vocalist and pianist Bryan Ferry came from an art school background and had a pop art sensibility as well as a hankering for the glamour of old Hollywood and the suave, timeless classics of Cole Porter and Noel



➔ Roxy press shot from 1972 (l-r) Eno, Andy Mackay, Brian Ferry, Paul Thompson and Phil Manzanera

➔ Picture sleeve and label for the single 'Virginia Plain' which was a UK top ten hit in 1972

➔ The band pictured in 1973 on Dutch weekly music programme *TopPop*



Coward. The group's initial guitarist Davy O'List, who had played with The Nice, established a brief tenure before Phil Manzanera took over, and they employed a succession of bass guitarists.

The group really took shape with the arrival of Paul Thompson, a skilful, propulsive rock drummer, who grounded the band in more ways than one. Like Ferry he was a Geordie, but Thompson came fresh from working as a labourer on a building site.

On paper, at least, this ensemble looked an unlikely bunch of misfits. Yet after some early setbacks, they finally hit their stride and recorded some demos which gained the attention of DJ John Peel and EG management. EG brokered a tentative deal with hip independent record label Island, despite the fact that some at Island remained unconvinced by this uncatagorisable, arty, rather arch

music. Label head Chris Blackwell was finally swayed when he saw roughs of the sleeve artwork featuring model Kari-Ann Moller looking imploringly up at the viewer.

In 1972, glam rock was in full swing with Marc Bolan of T Rex appearing of *Top Of The Pops* wearing satin and glitter make-up. Slade and The Sweet favoured ever more outlandishly camp garb while

David Bowie was living his Ziggy Stardust alter-ego, with his dyed-orange barnet, spangled jump suit and red boots.

PALE ALIEN

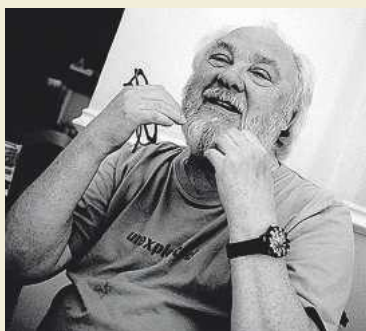
This was the world into which Roxy Music arrived and rather than appear aloof and cerebral, the group plundered the dressing-up box with relish. Manzanera might have been a bearded hairy, but the photo of him that appears on the LP's inner gatefold sleeve sees ➔

'On paper, at least, Roxy Music looked an unlikely bunch of misfits'



PRODUCTION NOTES

EG's deal with Island didn't come with a producer. EG admitted it didn't know who to bring in so it asked Peter Sinfield. Sinfield was one of the founder members of King Crimson. He was ostensibly a label mate, although he had parted ways with Crimson by then. Importantly he knew Ferry, who had unsuccessfully auditioned for King Crimson in 1971 and, like Eno, he had something of a maverick role in the group. When the band had played live he had operated the lights and the VCS3 synthesiser from the mixing desk, running some of the instruments through the synthesiser in a similar way that Eno had 'treated' instruments in Roxy Music.



GIANNI ANSALDI

Although he'd never actually produced an album before, Sinfield was put behind the desk for Roxy Music's debut. Although he later complimented Eno on his exploratory use of the VCS3, at the time of recording he wasn't sure of what to do with this bleeping, burping, screeching rogue element in the music, but ultimately the way it was bedded into the mix worked well.

The group were handed a restricted budget and the album was recorded in nine days of intense activity in March 1972 at Command Studios in London. Bryan Ferry has said that he was not keen on the album's 'murky production' and the fact that he was recorded singing live against the group meant that he didn't give as good a vocal performance as he would have liked.

The idea that Sinfield had somehow spoiled the album became common currency. To these ears, while the mix does sound a tad flat and boxy, the instruments are recorded as well as many other albums of that era and the music compensates for any shortcomings.



him wearing a pair of huge shades that look like an insect's compound eyes. Mackay, meanwhile, looks like a glamorous but thuggish leather-jacketed greaser; Ferry, a handsome matinee idol sporting a fake tigerskin top, leering from beneath an architectural quiff; and Eno, clad in leopardskin, looks like a pale alien with swept back blonde tresses.

Meanwhile, the sleeve notes find publicist Simon Puxley hyperventilating with excitement while at the same time being tongue-in-cheek, describing the music as 'rock 'n' roll juggernauted into demonic electronic supersonic mo-mo-momentum'.

As there was a Brian and a Bryan in the band, it was decided that the former would simply referred to as Eno. 'Eno' is actually an old Suffolk surname with Huguenot roots and Brian was a postman's son. This was all unknown at the time and his unusual moniker made him seem even more exotic.

GLAMOUR 'N' GLITZ

Decked out in their gladrags, Roxy Music were difficult to ignore. Although there was a knowingness about them, they had enough glamour and glitz to appeal to the teen market, while their music was so original that it struck a chord with a more discerning audience constantly

looking for new kicks. The band's influences look like an almost impossible squaring of the circle. But then one of their acknowledged influences, The Velvet Underground, managed just this, allying Lou Reed's ability to write pop songs with John Cale's penchant for avant-garde noise.

On Roxy Music's debut album, a range of musical styles are at times blended subtly, at others jammed together like big bold shapes in a collage. This is most overtly stated on the opening track, 'Re-Make/Re-Model'. Over solid, slightly stiff, pounding drums and Ferry's choppy

piano – which has echoes of The Velvets' 'I'm Waiting For The Man' – we are presented with a scene in which Ferry is driving in London. He spots a beautiful girl in a car and pursues her, before losing her in traffic. He voices this poignant snapshot in cliché with 'She's the sweetest queen I ever seen', to which the band respond, singing 'CPL 5938', the number plate of the car carrying his obscure object of desire. From then on the track becomes gloriously chaotic, Mackay coming

'Musical styles are jammed together like big bold shapes in a collage'



EVA RINALDI



↑ The inside of the LP's gatefold sleeve with individual portraits of the band members and an original Reprise Records poster aimed at the US market

← Label mate and King Crimson co-founder Peter Sinfield, who was brought in to produce the LP, pictured in 2010

← Bryan Ferry on stage in Australia in 2011

I S O L - 8

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Alternate Format Discography



➔ Brian Eno pictured on Dutch television's *TopPop* in 1974

on like an R&B horn player let loose, Manzanera punctuating proceedings with noisy wedges of guitar while Eno's synth screeches its way through the mayhem.

Later in the track, Mackay blows a 1950s sax lick, bassist John Simpson plays a refrain from The Beatles' 'Day Tripper', Ferry chips in with some splintered piano and Manzanera plays part of a Duane Eddy riff.

Even now it sounds thrillingly new. At the time, no one had heard anything like it.

DELICIOUSLY ODD

'Sea Breezes', with Mackay on oboe and Eno playing waves of electronic white noise finds Ferry the doomed lover on the foreshore, looking heavenwards for help, intoning, 'But even angels there made the same mistakes in love'.

Ferry demonstrates his love of old rock 'n' roll and doowop on 'Would You Believe', while 'Chance Meeting' is an eerie, sinister ballad, with Manzanera's guitar feedback intruding atonally into the singer's piano chords.

But 'Ladytron' is deliciously odd. Eno's abstract electronics and Ferry's Mellotron usher in a scenario in which the latter is hobnobbing with debutantes at the 'start of the season', which he confides to us in a cheesy, insincere lounge-lizard croon, accompanied by corny-sounding castanets.

There is a brief runaway section led by Mackay's oboe, before another verse and finale with Thompson's thundering tom-toms and Manzanera's guitar doing battle with Eno's beeping synths.

It shouldn't really have worked, but somehow it does, and typifies Roxy Music's audacious, experimental approach on what is an extraordinary debut album. ☺



ORIGINAL LP (1972)

Roxy Music's self-titled debut album was released in the UK in June 1972 on Island Records [ILPS 9200]. Despite the reservations of some at Island, once the deal had been made it was clear that the band were causing something of a stir with certain influential journalists, particularly Richard Williams of the *Melody Maker*. They had also landed a couple of John Peel Sessions on BBC Radio 1.

The album was released in separate editions across an unusually large number of territories compared with some other Island releases of that year, including the US, New Zealand, Brazil, Scandinavia and Japan, and in the UK it charted at number ten. In the UK and New Zealand the album was also released by Island on cassette [ZCI 9200 and IL-24630, respectively]

The US version of the album issued on Warner Bros subsidiary label, Reprise [Reprise MS 2114], was significantly different. The group's debut single 'Virginia Plain' [WIP 6144] was recorded just after the UK album was laid down and this charted at number four in the UK in August 1972. The delay in the release of the US version saw the single being included on that LP.

Bass guitarist Graham Simpson left after the

recording of the album and Reprise wasted no time in updating the sleeve with a picture of his replacement Rik Kenton, who had played on 'Virginia Plain'.

Distribution of Roxy Music in the US was transferred from Reprise to its affiliated company Atco Records in 1976, and back to Reprise in the mid-'80s. LP editions of the album pressed during this time were released without the gatefold sleeve and band photographs, with Simon Puxley's liner notes moved to the rear of the album cover.

FIRST CD VERSION (1984)

The first appearance of the album on CD was in the US on Reprise [9 26039-2] in 1984. 'Virginia Plain' was included and the words 'Contains 1 extra song' were printed on the bottom left of the CD's front cover.

The album didn't appear on CD in the UK until 1987 when it was released by EG through Virgin [EGCD 6]. This version also saw 'Virginia Plain' included, though the simultaneous LP release [EGLP6] didn't include the track. To date, the only territories which have seen it included on vinyl have been the US and Canada.

180G VINYL (2008)

In 2008 Virgin released the album on 180g vinyl [509992 43033 16] and this remains one of the most

sought after LP versions. Part of the From The Capitol Vaults series, it was a limited edition in a gatefold sleeve and came with a giant poster of the front cover artwork.

BOX SETS

A rare box set that will have vinyl collectors salivating is *The First 7 Albums*, which was released on EG via Polydor in 1981 [EG - EGBS 1] and contains the band's debut without 'Virginia Plain'.

For those who want to go the whole hog there is *Roxy Music - The Complete Studio Recordings* [Virgin-509994 4021726] which boasts a 'flat transfer' said to keep the sound of the 10CD set as close as possible to that of the original vinyl. It contains eight albums on separate CDs plus two bonus CDs of singles, B-sides and different mixes.

Roxy Music - The Thrill Of It All, a condensed version of the above, is a 4CD best-of set, plus book, including 'Virginia Plain' and 'The Numberer'.



ALTERNATIVE TAKES

The production on the first Roxy Music album has been a perennial cause for contention and Bryan Ferry was prompted to re-record a number of the tracks for solo B-sides between 1974-76.

These new recordings of 'Sea Breezes', '2HB', 'Chance Meeting' and 'Re-Make/Re-Model' were gathered together on his 1976 solo album *Let's Stick Together* [Island ILPS 9367] and signal the smoother path that the group would pursue on reforming in 1978.

The first two Peel Sessions, which the band recorded just after signing to Island, give us a complete alternative album, plus there is a feisty *BBC In Concert* recording featuring songs from the album from early 1973. Ferry himself has recently praised these superb recordings as 'the real Roxy Music', but sadly they have yet to be officially released.



Eric's, *Liverpool*

Opened in 1976 in a basement opposite the legendary Cavern Club, the venue quickly became a meeting place for future stars of the '80s pop and indie scene, inspired by the excitement of the punk rock explosion. **Steve Sutherland** has the story of Eric's

Once upon a time, there was a band that never was. They had a name, they had a rehearsal or two, they even had some song titles, but they never made a record and they never played a gig. OK, I know what you're thinking. Walk away. No news here. After all, thousands, nay millions of bands get precisely that far and no further. The dream that never makes it to reality.

But hang around and you'll discover our story's different. Although the band never really were, as it were, they have passed down from local folklore into rock legend and it all began one fateful night at Eric's club in Liverpool.

ENERGY LINES

Eric's was opened, run and DJ-ed by a chap called Roger Eagle in a basement in Mathew Street on the 1st of October 1976. It was situated pretty much opposite the famous Cavern Club where The Beatles and the rest of Brian Epstein's Merseybeat roster honed their skills in the early '60s before taking over the world. And, in addition, according to Bill Drummond – a bloke who was in an influential local group called Big In Japan and then went on to form Zoo Records and then, later, the KLF – it stood on one of the earth's main energy

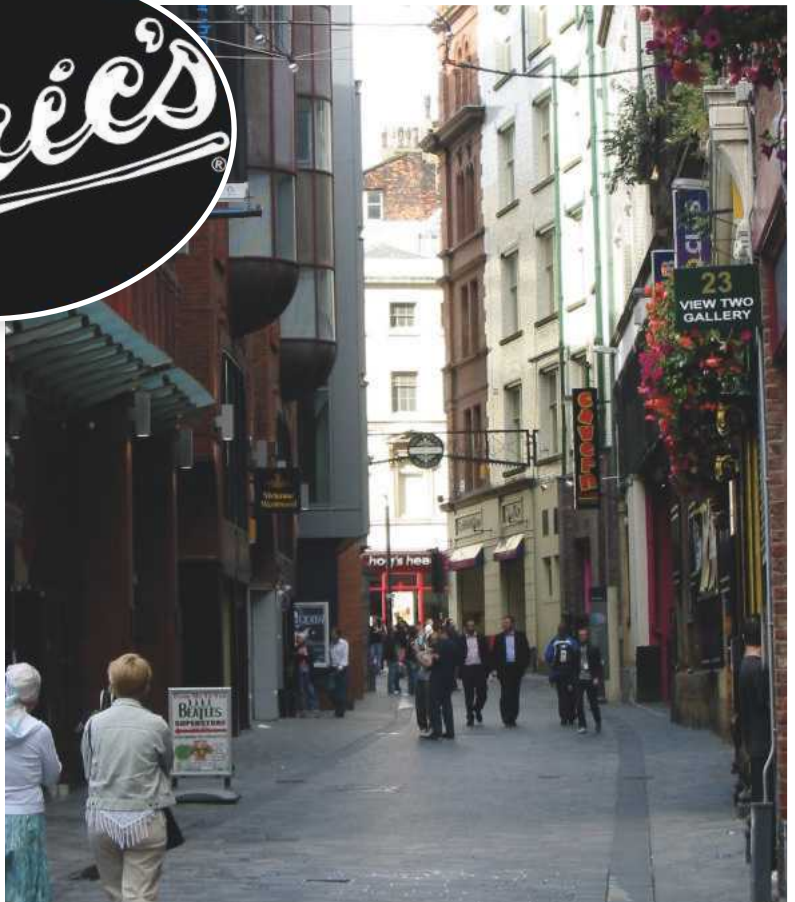


➔ The club's famous logo

➔ View down Mathew Street in Liverpool.

Eric's was in a basement at No 9, opposite the old Cavern Club, which was at No 10

⬅ The first band to play at Eric's were The Stranglers, who took to the stage in October 1976



lines, running from the North Pole, through Reykjavik, the pyramid of Cheops in Egypt, New Zealand, then the South Pole, taking in Mathew Street along the way.

Roger had been instrumental in introducing Northern Soul to the UK at the Twisted Wheel in Manchester before moving to Liverpool, putting on gigs at the Stadium, then launching Eric's, named by a partner as an antidote to the posher local discos like Samantha's and Tiffany's.

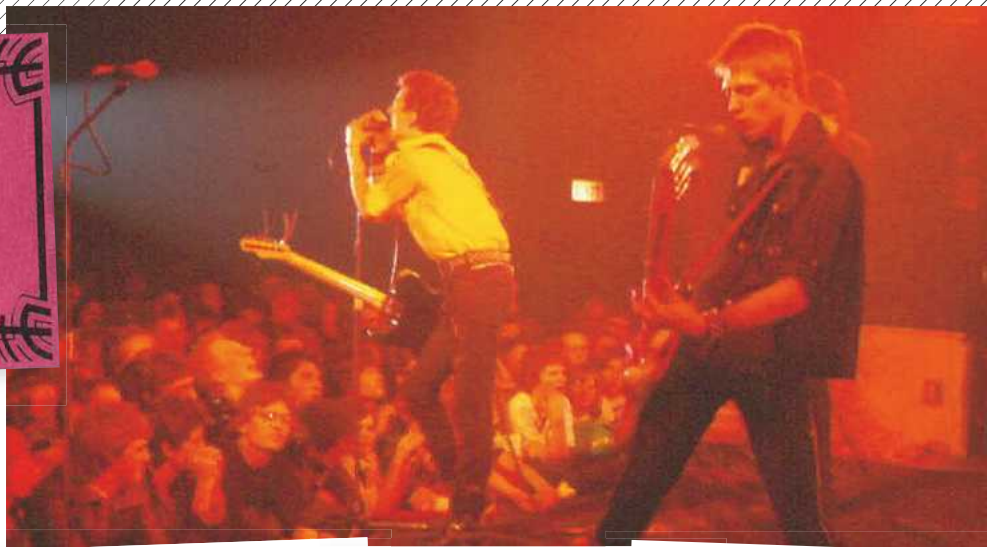
The Stranglers were the opening act in October '76, quickly followed by The Sex Pistols. Pretty soon Eric's was the premier Liverpool club; much like the Marquee was to London in the '60s or the Hacienda to Manchester in the '90s, Eric's was

the epicentre of the Mersey scene in the late 1970s, Roger Eagle booking all the hot new touring British acts plus some choice American imports and providing a watering hole for a group of impressionable post-punks hoping to make names of their own.

WHAT'S ALL THE FUSS?

On our night in question, The Clash are coming to town on their White Riot Tour with Vic Godard's Subway Sect and The Slits in tow. The date is the 5th of May 1977 and anyone who wants to be anyone on the Liverpool scene has turned out to witness whether all the fuss down South about Strummer and co is really justified or just more journalistic hot air.





JACK HAZEN/BUZZY LTD

Among the expectant throng are a trio of young men, all hankering after their own small slice of rock 'n' roll notoriety. The gauche blonde one over there is Julian Cope, a barmy but shy youth from Tamworth who, for want of any real, discernible talent, has tried his hand at playing bass. Over there, by the bar, is Peter Wylie, a motormouth geezer in a leather jacket and already a massive star in his own imagination. And that guy there, squinting enigmatically from behind the fringe, is a Bowie-wannabe calling himself The Duke but otherwise known as Ian McCulloch.

CRUCIAL THREE

It is The Duke's 18th birthday and by the end of the night, the three have fallen in love with The Clash and in cahoots with each other. So much so, they decide to form a band. Cope will play bass, Wylie guitar and the Duke will sing. And they will be called Arthur Hostile & The Crucial Three, honed to just The Crucial Three by the time of their first proper band meeting where they talk over such song ideas as 'Salomine Shuffle', 'Bloody Sure You're On Dope', 'Robert Mitchum' and 'Read It In Books'.

Grand scheming aside, though, the Three can't get it together. Cope saunters off and forms The Teardrop Explodes, McCulloch founds Echo & The Bunnymen, and Wylie finally gets it together in Wah! Heat after



↑ The Clash on stage as pictured in the 1980 film *Rude Boy* – and a ticket from Eric's gig in October 1977

↗ The Crucial Three – Julian Cope, Ian McCulloch and Pete Wylie

↙ London 'punk hangers' Johnny Moped, who played at Eric's in September 1978

The Clash's Mick Jones gives him a Les Paul and tells him to pay back the loan when he gets rich and famous. All three will grace the charts and *Top Of The Pops*. The Teardrops will make the national scene with three singles in 1981 – 'Reward' (No 6), 'Treason' (No 18) and 'Passionate Friend' (No 25). Their first two albums, *Kilimanjaro* and *Wilder*, will also do the business.

Cope will eventually freak out under the pressure plus his prodigious intake of LSD, the band will split and he will reappear as an eccentric druidic rocker and author of well-regarded tomes on stone circles and suchlike.

Slightly less weird, McCulloch's Echo & The Bunnymen will follow suit. 'The Back Of Love' single is a No 15 hit in 1982, followed the next year by 'The Cutter' (No 8) and the year after that by 'Silver' (No 30) and 'Seven Seas' (No 16).

Their debut album, *Crocodiles*, puts them on the international map and the follow-up, *Heaven Up Here* cemented their reputation as prime movers on the '80s alternative rock scene. They too will eventually split but are now back out there on the UK festival circuit.

ART OF BLUFF

Wylie's Wah! finally announced their talent in 1981 with a bonkers LP called *Nah Equals Poo!* – *The*

Art Of Bluff and a No 3 hot single in the shape of 'The Story Of The Blues'. Then it all went a bit pear-shaped, Wylie still knocking around the scene

'Cope will freak out under the pressure plus his intake of LSD'

whenever a good cause needs a charismatic scouser.

Still, the start of that heady ascent came at Eric's on the 15th of November 1978 when the Teardrops debuted live, headlining a private party with Echo & The



CLASSIC VENUES

BEHIND THE MUSIC WITH HI-FI NEWS & RECORD REVIEW



PENNIE SMITH

Bunnymen – who played a song called 'Monkeys' for 20 minutes – in support. The Echo in the Bunnymen was a drum machine, replaced by a lad called Pete DeFreitas who meets the rest of the band at Eric's in September 1979.

FROM DEAD TO RED

And that's pretty much the way the Club continues, fans meeting other fans and forming bands. A local technicolor nightmare known as Pete Burns forms Dead Or Alive, a couple of likely lads called Holly Johnson and Paul Rutherford go on to become the focal points of Frankie Goes To Hollywood, a top drummer called Budgie joins Siouxsie & The Banshees, another lad with a fair set of pipes turns out to be Mick Hucknall of Simply Red, and Ian Broudie, who'd been in Big In Japan, does his own chart thing with his Lightning Seeds.

Snapshots of the line-ups during this time reveal visits in September '78 from punk hangers The Lurkers and Johnny Moped, futurist wannabes Ultravox, New Zealand glamsters Split Enz, cross-dressing agitators The Electric Chairs, rock 'n' roll survivors The Pirates, and new wave innovators Wire and Penetration. October brought Mancunian

heroes-in-the-making The Fall and John Cooper Clarke, punk eccentrics X-Ray Spex, chill-out folk godfather John Martyn, David Johansen freshly shorn of The New York Dolls and Ireland's very own fancy goths The Virgin Prunes.

A few months later, in the spring of '79, The Cure came calling in their drab long raincoats, swiftly followed by one-of-kind Doll By Doll, DIY anarchists Crass, Swindon's finest mathrockers XTC and king Stoooge Iggy Pop, who patrons were surprised to find was a bit wee and wrinkled, looking a little akin to

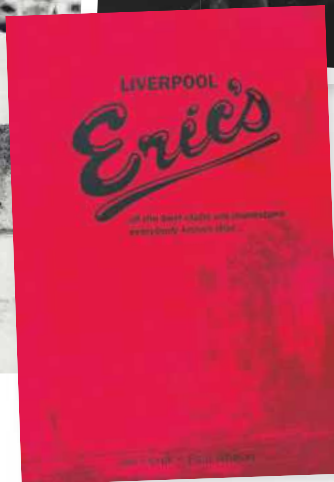
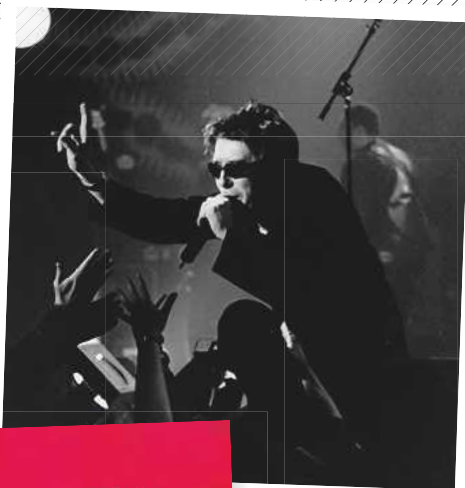
Melvyn Hayes from the daft hit Brit TV wartime comedy *It Ain't Half Hot Mum*.

And six months after that, the bill looked like this

for November: Scots space cadets Simple Minds, Bristol's funkateers The Pop Group, Birmingham's homegrown reggae warriors Steel Pulse, punk pranksters The Damned, and new ska-sters The Beat.

Another name regularly cropping up at Eric's was Warsaw, a pretty grim band from Manchester who debuted at the club during a matinee on the 27th of August 1977. No-one took that much notice until, almost a year later, on the 15th of July, they suddenly appeared transformed into Joy Division.

'Patrons were surprised to find Iggy Pop a bit wee and wrinkled'



↑ The last band to appear at Eric's – The Psychedelic Furs

↖ Joy Division (l-r) Bernard Sumner, Ian Curtis, Peter Hook and Stephen Morris

↖ The book *Liverpool Eric's...* by Jaki Florek and Paul Whelan

↓ 'King Stoooge' Iggy Pop

Immediate heroes due to the intensity of their performances and the way reluctant lead singer Ian Curtis became some other possessed being entirely on-stage, they returned to Eric's again and again, including an Amnesty International benefit in May 1979, and a double show on the 11th of August of the same year, the matinee being for under 18s only.

HIPPEST JOINT

With Bo Diddley and Captain Beefheart on the jukebox, Roger Eagle spinning the latest dub reggae between acts and bills like the above, Eric's was just about the hippest joint on the planet until... well, all good things come to an end. The cops finally shut it down in March 1980 following a drugs raid, The Psychedelic Furs supported by Wylie's Wah! Heat the last, ace line-up.

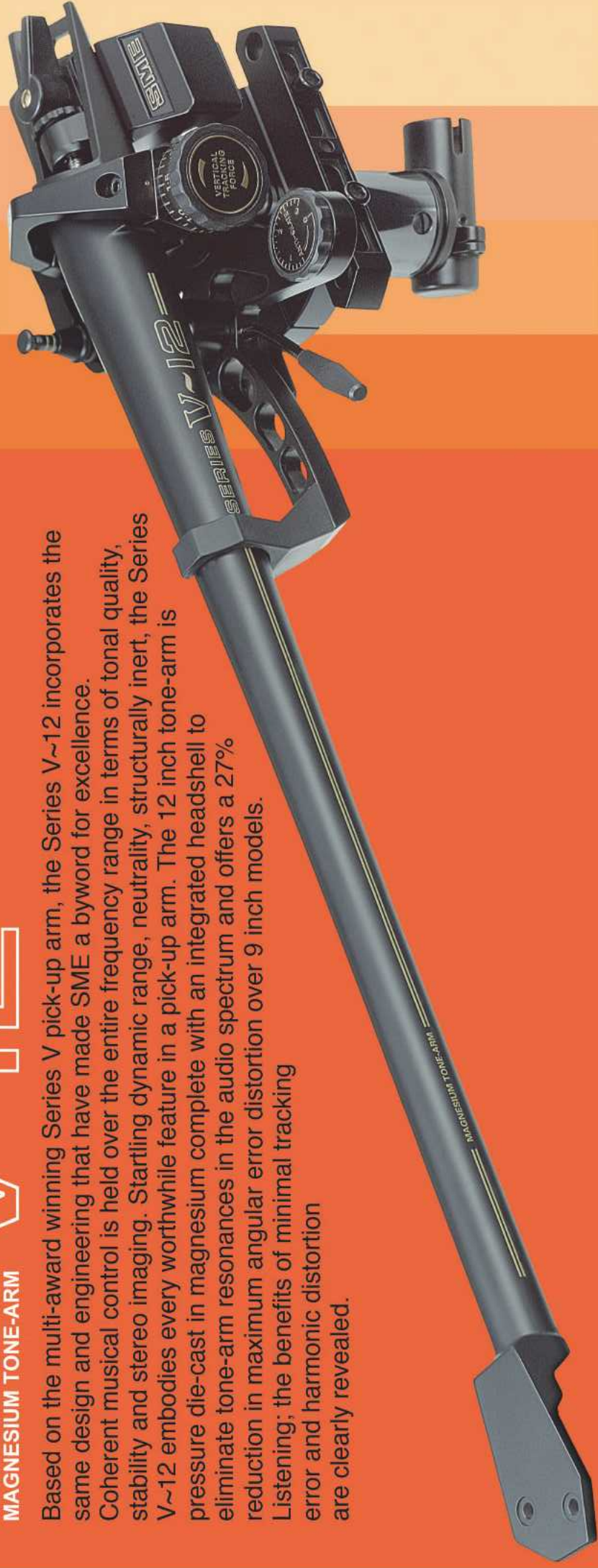
You can read more about Eric's in a detailed paperback oral history called *Liverpool Eric's – All The Best Clubs Are Downstairs... Everybody Knows That*, but you'd best win the lottery first 'cos a copy will set you back north of £350 on Amazon. ☹



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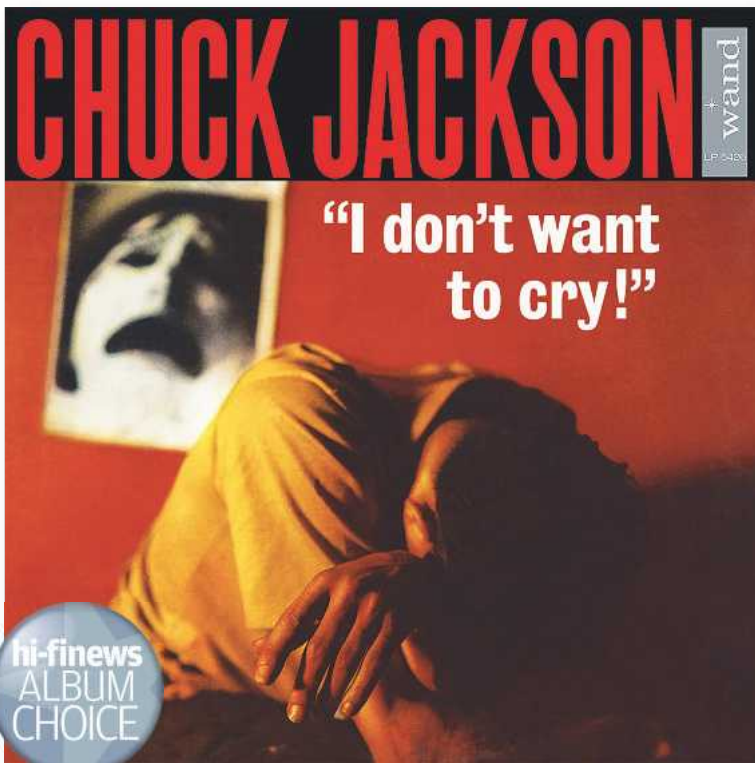
BLU-RAY



VINYL



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CHUCK JACKSON

I Don't Want To Cry!

Sundazed LP5426 (180g vinyl)

What would we do without Northern Soul fans... and labels like Sundazed? Jackson is one of many overlooked soul geniuses who didn't attain the levels of success he merited. This sensational debut from 1961 deserves a spot in any soul library, the singer's pedigree alone warranting one's attention: he sang with doo-wop legends The Dell-Vikings and performed with Jackie Wilson's Revue before signing with Wand Records. Opening with the title hit, the set shows versatility and style, Jackson leaning toward the more urbane soul rather than the down-and-dirty. How many singers can add to signature tunes like 'Tears On My Pillow' or 'Lonely Teardrops', songs owned by those who made them hits? *KK*

Sound Quality: 90%



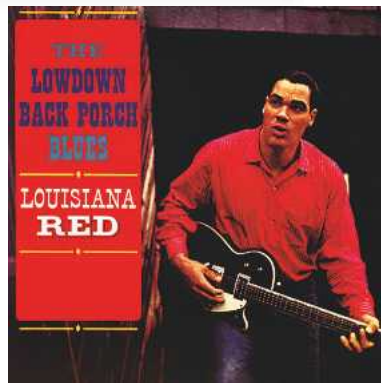
DARYL HALL & JOHN OATES

H2O

Mobile Fidelity MFSL 1-413 (180g vinyl)

By 1982, when this was released, Hall & Oates were one of the biggest acts in the USA, having transcended any strictures the 'blue-eyed soul' label conferred. They crossed genres, blending hard rock, R&B-based material, funk, dance and anything else that caught their ears. Its predecessor – the poppier, more infectious *Private Eyes* – was a tough act to follow, and this wasn't as impressive artistically, but it did contain three exceptional Top Ten hits that made it a commercial triumph: 'Maneater', 'One On One' and 'Family Man'. Under-40s will appreciate this as an object lesson in studio craft during the era of the synth, on the cusp of the digital wave. *KK*

Sound Quality: 88%



LOUISIANA RED

The Lowdown Back Porch Blues

Pure Pleasure PPAN R25200 (180g vinyl)

A sublime blues LP from 1963, significant because it pre-dates the boom set off by the British. Louisiana Red, who spent his last 30 years in Germany – was an exceptional guitarist, harmonica player and vocalist. After working with John Lee Hooker and recording sides for Chess and others, the then 30-year-old bluesman released this incendiary set with only bass and drums behind him, working through original material that bridges the generations. His attitude is of the Buddy Guy era, but his schtick was storytelling with contemporary subjects, including global politics. Lean boogie: Red learned much from Hooker and made it his own. *KK*

Sound Quality: 88%



THE SAVOY BROWN BLUES BAND

Shake Down

Decca Deram 375 066-5 (180g vinyl)

An impressive, but purely 'characteristic of the genre' debut from the group that would shorten its name to Savoy Brown and eventually rank among the boogie kings adored in the US, this 1967 release could have been issued by any half-decent British blues band from the first wave of the revival. Typically, it consists of covers of blues classics, starting with Willie Dixon's 'Ain't Superstitious' and B B King's 'Rock Me Baby', and – also typically – its main draw is a super-slick lead guitarist, in this case, Kim Simmonds. While the band were yet to find their signature sound, which would come with their second LP and a new vocalist, this one's hardly a throwaway. *KK*

Sound Quality: 86%





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BOB DYLAN

Desire

Mobile Fidelity UDSACD2119

Not sure if it's a groundswell, but Dylan's middle-to-later period (for the lack of a better term for his possibly-lesser, post-1960s work) seems to be undergoing reassessment, and it's almost entirely positive. He's been having a hard time lately – his recent Christmas album isn't even worthy of being called 'kitsch' – so it's nice to recognise astonishing albums that lack the same glory as his first dozen. How could anyone complain about this 1976 follow-up to the staggering *Blood On The Tracks*, with material like 'Isis', 'One More Cup Of Coffee', 'Sara' and 'Joey', and with an opener like 'Hurricane' – one of his most effective 'protest' numbers? Bliss. *KK*

Sound Quality: 90%



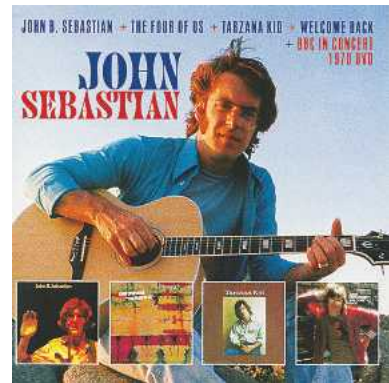
LYNYRD SKYNYRD

Nuthin' Fancy

Analogue Productions CAPP21375A

Dating from 1975, Skynyrd's third album was their first to reach the Top 10 in the US. It earned a gold disc that year, the slicker, heavier yet still-swampy sound of this undiluted Southern rock possessing the same irresistible air-guitar appeal of, say, ZZ Top – even for those who normally eschew hard rock. It opens with 'Saturday Night Special', a refreshing theme for a band of Alabamans as it deals with gun control, such that it's appeared in a number of TV shows, as well as computer games. The remainder is sufficiently bluesy enough to qualify as typical of the band, but worthy of repeated listening, despite few standout moments, because it's so damned good.

Sound Quality: 88%



JOHN SEBASTIAN

John Sebastian

Edsel EDG8039 (two CDs + DVD)

What a package! Sebastian's first four solo albums, post-Lovin' Spoonful, plus a DVD of a previously unreleased live concert for the BBC in 1970 – how to raid the vaults, fellas! The DVD is gem, a 4:3, monophonic (but full colour) reminder of what he was like in the immediate post-Woodstock years, all tie-dyed clothing and granny glasses, a hippie-king-in *excelsis*. The four solo albums? You get *John B Sebastian*, *The Four Of Us*, *The Tarzana Kid* and *Welcome Back* and hits like 'She's A Lady' and 'You're A Big Boy Now,' plus a rare single. Gentle, jug band-based folk delivered with sincerity, this is lush, joyous music to make you wish it was 40 years ago. *KK*

Sound Quality: 89%



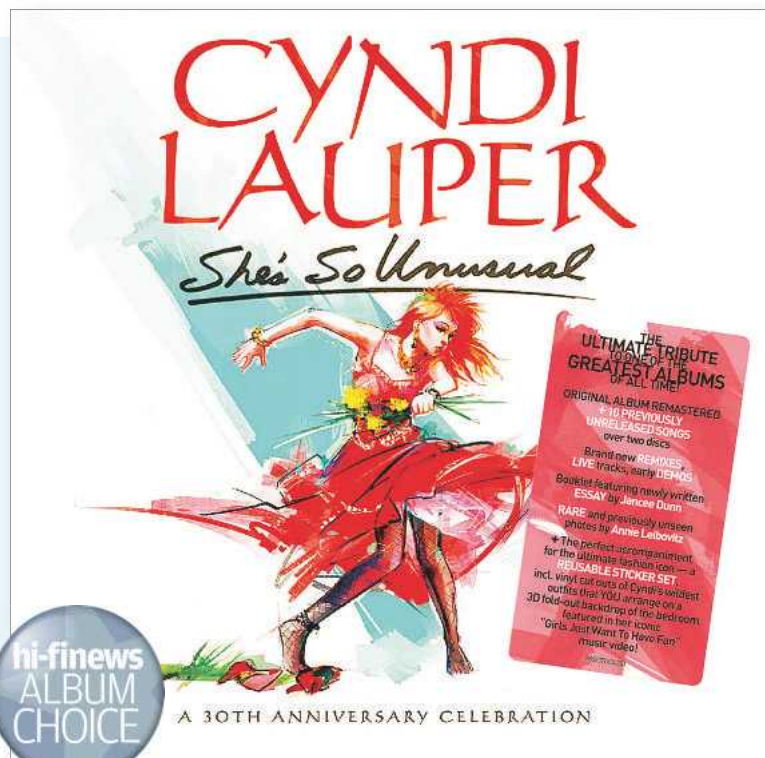
CYNDI LAUPER

She's So Unusual

Portrait/Epic/Legacy 88883706352 (two discs)

Whether or not you feel that this is 'one of the greatest albums of all time', it was a huge hit in '84 and did more for 'Grrrrl-Power' than any Atomic Kitten, Girls Aloud or even Spice Girls effort – which could not have existed without Lauper's anthem. Yes, this set gave us 'Girls Just Wanna Have Fun', the elegiac 'Time After Time' and the controversial 'She Bop'. Concurrent with the equally successful/influential Bananarama, this paean to pure attitude succeeds because it is so musically polished and 'poptastic' in the finest sense. This 30th Anniversary set adds ten unreleased songs, remixes, demos and live tracks, in a package that's so cutesy/girly it's beyond ironic. An absolute delight – and it sounds amazing. *KK*

Sound Quality: 91%



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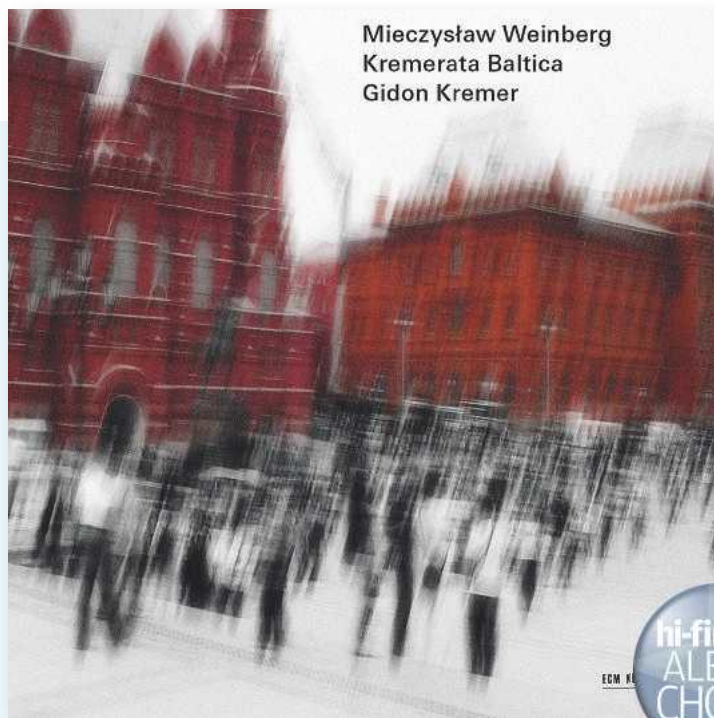
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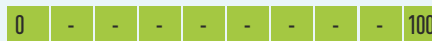
Solo violin sonata Op.126; String Trio Op.48; Sonatina Op.46; Concertino Op.42; Symphony 10; Kremerata Baltica/Gidon Kremer; Daniil Trifonov, et al (96kHz/44.1kHz/24-bit; FLAC)

www.hiresaudio.com; ECM 481 0669

The 2CD set was released in February while Kremer and his strings group were touring the States with music by Weinberg in their programmes. (ECM made the recordings at Lockenhaus and Neuhardenberg in Nov '12/Dec '13, the *Sonatina* for violin/piano at lower resolution, as noted on HRA's web page.) Music by the Polish composer – who went to Moscow but did not prosper – was

admired by Shostakovich, and Kremer sees an affinity, especially in the 1968 symphony here, commissioned by Rudolf Barshai. This is a tough work, with brief respite found in (iii), *Canzona*. Weinberg had forged an uncompromising individual style but Kremer's powerful advocacy makes you persevere and want to return to these tracks; the full strings are very convincingly represented. **CB**

Sound Quality: 95%



DEEP PURPLE

Made In Japan, Deluxe Edition (96kHz/24-bit; FLAC)*

www.hiresaudio.com; Universal Music Group UNI285

For baby boomers the world over whose teenage years were spent living on a diet of what's now termed 'classic' rock, Deep Purple's *Made In Japan* represents one of the world's most visceral and energetic rock bands captured at their pinnacle performance-wise. The 2LP set issued in 1972 contained tracks recorded across three nights in Tokyo and Osaka a few months after the band had released *Machine Head*. When the applause dies down following 'Smoke On The Water', singer Ian Gillan asks his engineer to adjust the foldback monitors to make 'everything louder than everything else'. This remains one of rock's immortal moments, as does the band's virtuosity in this timeless memento. These latest remasters sound better than ever – with improved clarity and weightier bass – but don't spend extra for the 96kHz/24-bit container. **JB**

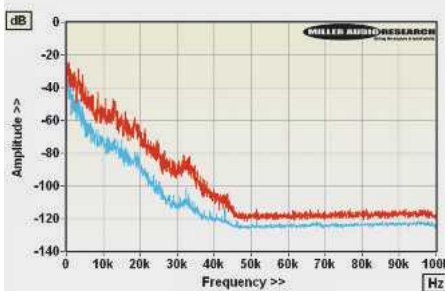
Sound Quality: 65%



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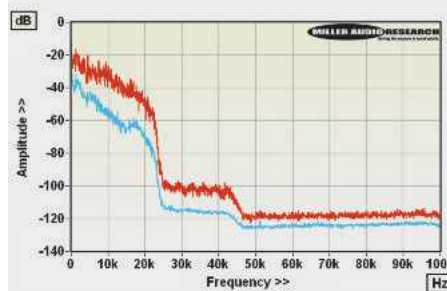
Following our Investigation feature [HFN, Jun '11] where we examined the claimed quality of high-resolution downloads, *Hi-Fi News & Record Review* is now measuring the true sample rate and bit-depth of the HD music downloads reviewed on these pages. These unique reviews will be a regular source of information for those seeking new and re-mastered recordings offered at high sample rates and with the promise of delivering the very best sound quality. (Note: asterisk in headings denotes technical reservation explained below.) **PM**

LAB REPORT



As accurately represented on HRA's website, the *Sonatina* tracks 5-7 are sampled at 44.1kHz, the remainder at 96kHz as illustrated here [see Graph]. Violin string harmonics stretch out to beyond 40kHz into background noise. **PM**

LAB REPORT



While the original 1972 mixes (trks 8-14) have a higher noise floor than the 2013 remasters (trks 1-7), the latter were produced (at 48kHz?) for release on CD – these '96kHz/24-bit Studio Masters' look like upsampled renderings. **PM**



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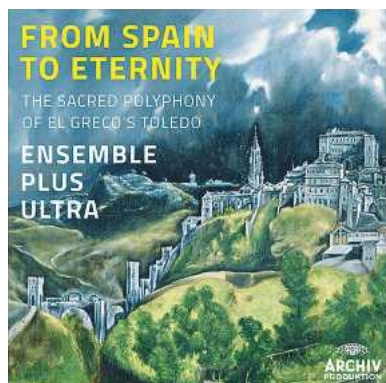
BLU-RAY



VINYL



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FROM SPAIN TO ETERNITY

Ensemble Plus Ultra (96kHz/24-bit; FLAC)

www.hiresaudio.com; Archiv 479 2610

Subtitled 'The Sacred Polyphony of El Greco's Toledo' this 70m selection of a mass by Alonso Lobo and motets, etc, by various composers, celebrates devotional music associated with Toledo Cathedral, and links to the painter who came to the city in 1557. Ensemble Plus Ultra comprises a small consort of singers, formed in 2001, who specialise in early Spanish music: their 10CD Archiv set of sacred works by Victoria was a runaway success. The unaccompanied voices, close-set in a reverberant acoustic have a strong presence. The music, of course, is by no means 'easy listening' (surprisingly, it was a Classic FM mid-May album choice), although the 'et incarnatus est' section in the Lobo *Credo* is strikingly lovely. The PDF gives no details of recording venue, etc, but full texts are included and the introductory essay is exemplary. *CB*

Sound Quality: 85%



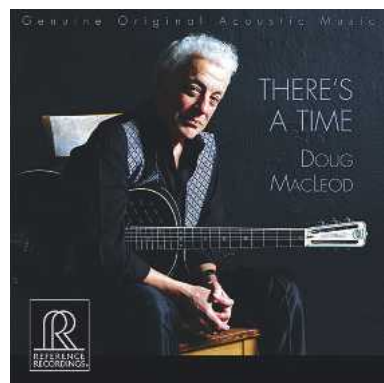
DIANA PANTON

To Brazil With Love (96kHz/24-bit; FLAC)

www.hiresaudio.com; In-akustik 0169125

Singing variously in English and French, Canadian-born jazz singer/composer Diana Ariadne Panton has an enchanting voice, *To Brazil With Love* being her fourth album, released in 2011. It's a meticulously manicured collection of Brazilian-infused MOR material with which you *might* want to chill out late at night: a curiously eclectic mix including compositions from Panton, Antonio Carlos Jobim and Paul McCartney. Panton's moving interpretation of 'And I Love Her' (here it's 'And I Love *Him*', of course) is a notable highlight – if you're not offended by classic Beatles numbers being sprinkled with a heavy helping of saccharine – featuring a delightful piano accompaniment by veteran multi-instrumentalist Don Thompson. This is a lovely, if artificially intimate recording with a sound balance that'll sound great on any good hi-fi system. *JB*

Sound Quality: 80%



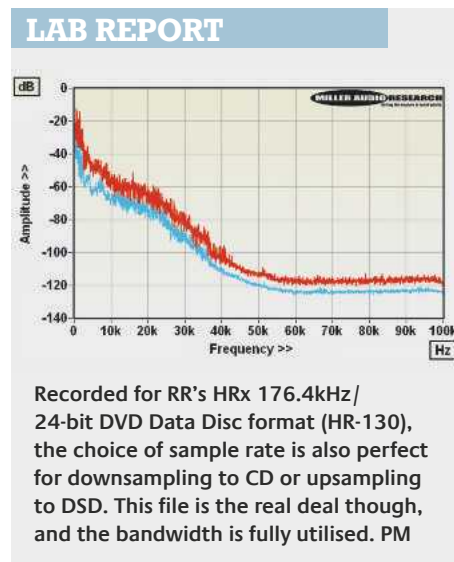
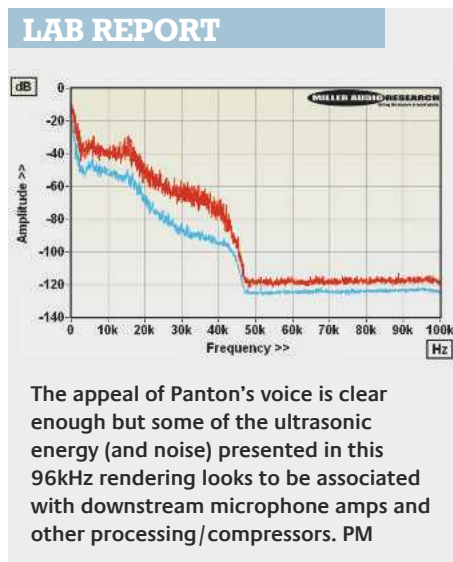
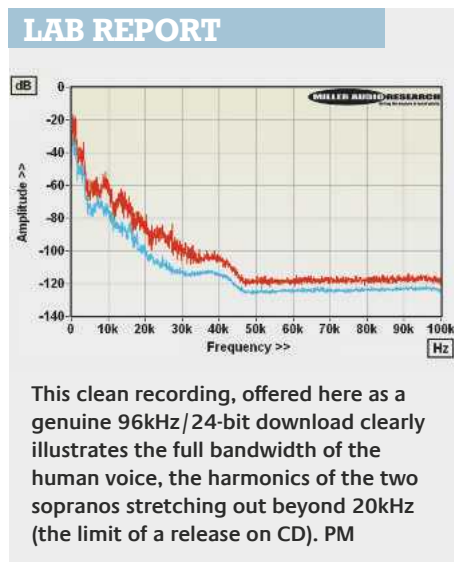
DOUG MACLEOD

There's A Time (88.2kHz & 176.4kHz/24-bit; FLAC)

www.hiresaudio.com; Reference Recordings RR-130

If you've got a system capable of suspending disbelief and you're a fan of the blues, recordings don't come much better than this. Dim the lights, turn up the wick and you'll swear bluesman Doug MacLeod is sitting at the end of your room. Reference Recordings' technical director 'Prof' Keith O Johnson has been a darling of the US high-end scene for more than 30 years, renowned for his audiophile recordings. This was his first blues project. MacLeod, together with bassist Denny Croy and drummer Jimi Bott sat in a circle on a soundstage at Skywalker Sound in May '12 and played 'live', the hi-res recording capturing the true-to-life dynamics of the performance. It's available as one of the label's 'HRx' discs, the 176.4kHz/24-bit master file burned to a DVD-R. Since they cost \$45 plus shipping, this download is a great way to add the file to your library. *JB*

Sound Quality: 95%





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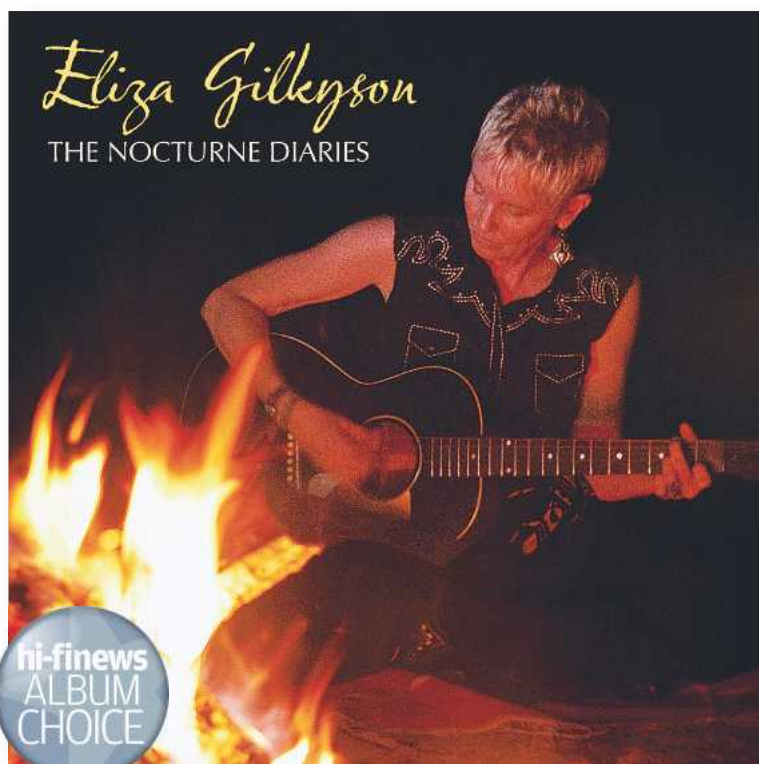
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VINYL



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ELIZA GILKYSON

The Nocturne Diaries

Red House Records RHR264

The Texas based singer-songwriter Eliza Gilkyson released her first album *Eliza* at the tender age of 19 (back in 1969), and although she hasn't yet set the world alight, her jumbo-sized discography is ripe for rediscovery. This, her 21st album by my reckoning – it follows *Roses At The End Of Time* from 2011 – might be the key that could unlock the door to her back catalogue, because she's in fine form. As its title suggests, this is a dark-hued collection of songs but, although often introspective, it's never depressing. Gilkyson's intimate, confidential voice invites and welcomes you in to her world of broken American dreams, train songs and late night musings on life and love. Happily, dawn never seems too far off. *JBk*

Sound Quality: 95%



YOU WALK THROUGH WALLS

You Walk Through Walls

Club AC30 AC3011081

You may well remember the core of this lot, guitarist Matt Bartram and drummer James Harrison, from their previous incarnation, the long-lasting Brighton band Air Formation, but *You Walk Through Walls* is a radically different proposition. What we have here is densely layered guitar feedback and distortion, harking back to the early '90s shoegaze scene, swirling around Bartram's doomy vocal melodies, and at its best when it picks up a bit of speed on cuts like 'Always Want To Know' or when guitar lines are a bit more pronounced, as in 'How Can We Go On'. If you miss 'The Jesus And Mary Chain' or 'Swervedriver', this could be right up your poorly-lit back alley. *JBk*

Sound Quality: 85%



MIDGE URE

Fragile

Hypertension Music HYP 14302

Former Ultravox frontman Midge Ure spent the last decade knocking out live albums, a covers CD and a re-formed Ultravox project, so his return to solo writing and performing is overdue. Ure is too much of a craftsman ever to produce a musically inferior album but, unfortunately, this suffers from being too calculated to function well as the soulful, sensitive rock he's clearly aiming at. 'Star Crossed', for example, needs to soar, but plods instead, nailed to the floor by unimaginative percussion. The semi-acoustic instrumental 'Wire And Wood' is pleasant but goes nowhere in particular, and even two collaborations with Moby do nothing to up the interest. *JBk*

Sound Quality: 75%



THE MOONS

Mindwaves

Schnitzel Records 1255231; 1255217 (180g vinyl)

After a brief instrumental that blends Shadows' twang with Joe Meek-like space fx, Northampton's finest, The Moons, settle down into their more accustomed groove of garagey-psych-pop to deliver a dozen highly-energetic and shamelessly retro guitar-powered stompers. It's hard, especially with the volume pumped up a few notches, not to be sucked into their maelstrom of catchy rock hooks and shoutalong choruses. Three albums on, the band have amassed a live following and impressed many thousands more with their Janice Long and Mark Lamarr show live slots, but will they find a wide enough appeal to escape the retro-ghetto? *JBk*

Sound Quality: 90%





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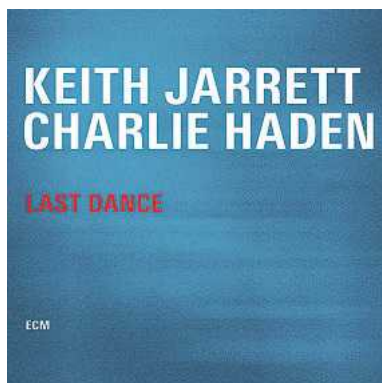
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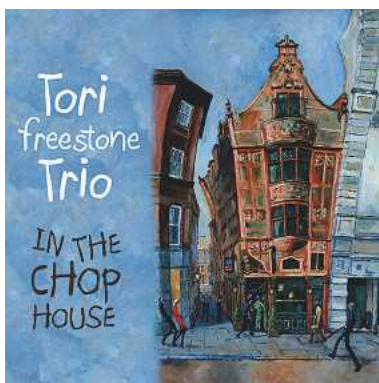
KEITH JARRETT AND CHARLIE HADEN

Last Dance

ECM 378 0524

In 2007, when they hadn't worked together for 30 years, pianist and bassist met during the making of a film about Haden, and Jarrett invited Haden to his home studio. They spent four days recording, and some of the results were heard on the 2010 album *Jasmine*. In this new collection, tunes include the jazz standards 'Dance Of The Infidels' by Bud Powell and Monk's 'Round Midnight' as well as ballads like 'My Old Flame'. With a second album celebrating the same reunion, you'll think that you're in for more of the same, and it's true. But with a now-familiar sound and approach, this duo have defined a genre of their own – one that you can't have too much of. *SH*

Sound Quality: 85%



TORI FREESTONE

In The Chop House

Whirlwind Recordings WR4648

Saxophonist Tori Freestone named her debut album after happy memories of a Manchester pub where musicians gathered after rehearsals on a Neil Yates project, and it was the folk side of his music that inspired Freestone to get back to her own roots. Here, for example, 'My Lagan Love' has the timeless melancholy of traditional pipes. Having played with bassist Dave Manington and drummer Tim Giles since student days, she says that their rapport allows them to play openly and freely in the piano-less trio format. And you don't feel the absence of a chordal instrument, because the music has depth, intelligence, richness and wit that get stronger every time you listen. *SH*

Sound Quality: 90%



ALBARE

The Road Ahead

Enja ENJ-9598 2

Migrating from Morocco to Australia in his twenties, guitarist Albert Dadon became a businessman, festival organiser and political adviser on Jewish affairs. In 2012 he went to Brooklyn to record *Long Way* with a sextet including drummer Antonio Sanchez, but this eclectic follow-up is a quartet album, with Phil Turcio, Yunir Terry and Pablo Bencid – all excellent on piano, bass and drums. Albare's lush guitar can recall the Creed Taylor sound of Wes or Benson, but the title track is based on Sephardic scales, while 'The Gift' creates deft horn lines using a synth guitar. There's also one fine guest vocal from Allan Harris. Intriguing, accessible and listenable. *SH*

Sound Quality: 80%



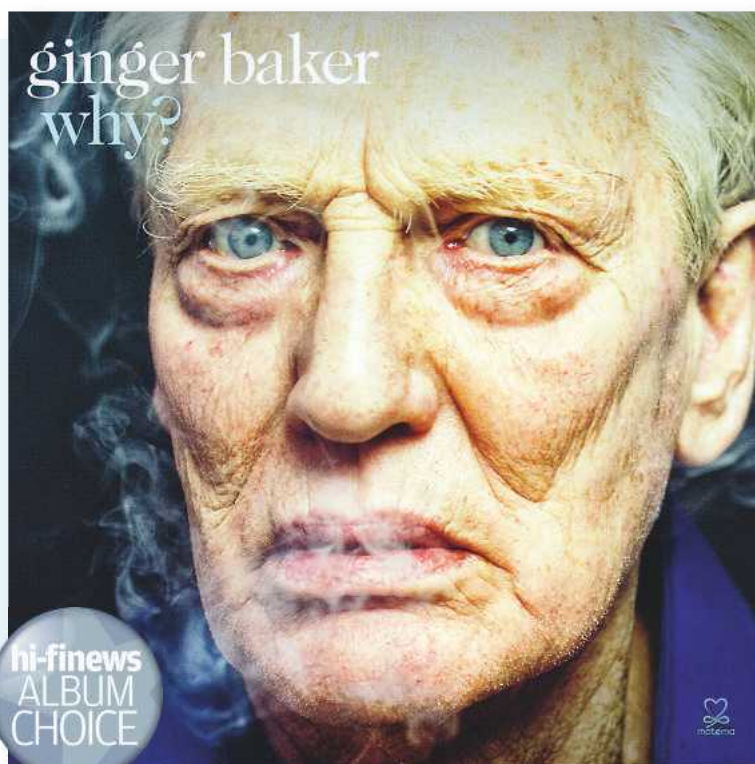
GINGER BAKER

Why?

Motéma 233846

His first recording for eight years features Baker's touring quartet Jazz Confusion, with Alec Dankworth on bass, African percussionist Abass Dadoo and saxophonist Pee Wee Ellis. In the late 1960s, while Baker was powering Cream, Ellis was touring with James Brown and, today, their work together reflects Baker's immersion in African music. Along with many originals there's a traditional Nigerian song and a diversion to the Virgin Islands by way of 'St Thomas', the tune made famous by Sonny Rollins. The image chosen for the drummer's Motéma debut seems to reflect the 2012 documentary *Beware Of Mr Baker*, and when you hear the title track, you'll know that he doesn't just look scary: he is scary. *SH*

Sound Quality: 90%



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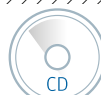


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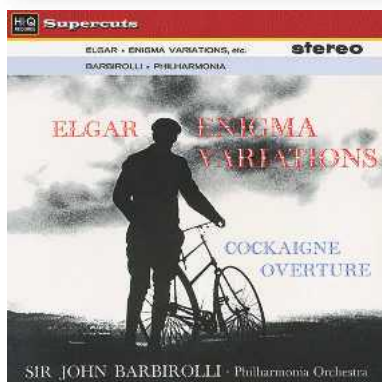
BEETHOVEN

String Trio Op.3; Serenade Op.8
Trio Zimmermann

BIS BIS2087 (SACD hybrid); downloads up to 96kHz/24-bit

You don't put three soloists together for the finest chamber-music performances, reviews in the old *EMG Monthly Letter* often argued. And with the Beethoven string trios you might 'prove' the case with the Trio Italiano D'Archi vs Mutter/Giuranna/Rostropovich recordings (both DG). But as we saw with Vol.1 [HFN Apr '12, p89] Frank Peter Zimmermann, Antoine Tamestit and Christian Poltéra play – and think – as one. The fourth movement of the *Serenade* ought (as Alfred Brendel would say) to make you laugh, with its abrupt *adagio-allegro molto* alternations. Wonderfully clean balances in these early summer 2013 Stockholm Musikaliska recordings. **CB**

Sound Quality: 95%



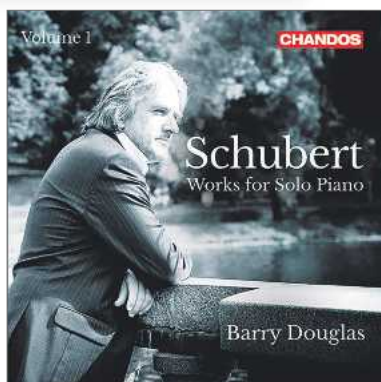
ELGAR

Enigma Variations; Overture Cockaigne
Philharmonia Orch/Sir John Barbirolli

Hi-Q Records HIQLP039

In 1962, Sir John Barbirolli returned to recording for EMI, after a period with Pye and his own Hallé Orchestra (it included a 1956 version of the *Enigma Variations* newly on CD: SJB1075-76). It was also the year of Ken Russell's *Monitor* film about Elgar, and an iconic still graces the LP cover. This was a Kingsway Hall production. Barbirolli's conducting is warmly engaging even if the Philharmonia playing has a slightly 'impersonal' character. Hi-Q's remastering is perfectly good, although with my original gold/white-label ASD the sound was less 'subdued' – cleaner strings, more impact with timps and brass. **CB**

Sound Quality: 80%



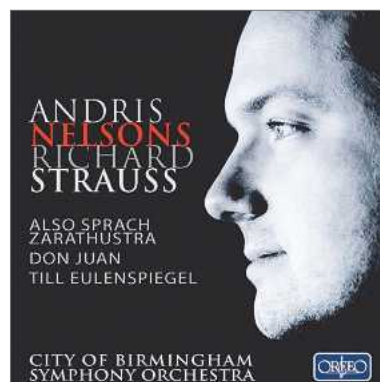
SCHUBERT

Piano Sonata D960; Wanderer Fantasy; two songs
Barry Douglas

Chandos CHAN 10807; downloads up to 96kHz/24-bit

As well as his Brahms solo piano works series for Chandos, Barry Douglas is recording Schubert, and he dives in at the deep end with the 'Wanderer' *Fantasy* and the last Sonata in B flat (where he includes the debated first-movement repeat). Between these are Liszt's transcriptions of 'Du bist die Ruh', and 'Ungeduld' from *Die Müllerin*. The Steinway piano sound, from the Cork School of Music, is impressive – especially in high-res. Barry Douglas plays in a very direct manner, rather as he might in Beethoven, with a wide dynamic range, taking the virtuoso demands of the *Fantasy* in his stride. **CB**

Sound Quality: 85%



R STRAUSS

Also Sprach Zarathustra; Don Juan; Till Eulenspiegel
CBSO/Andris Nelsons

Orfeo C878141A

Taken from live sources, this disc continues Andris Nelsons' Richard Strauss series for Orfeo with a *Don Juan* that's like the thrust of a rapier – although the darker moments of, presumably, regret register too. His *Till Eulenspiegel* is also a sharp character but not a particularly likeable one – with, say, Karajan or Celibidache you know from the outset that Till's a bit of a loser, and doomed to failure. The 'Midnight Bell' in this CBSO *Also Sprach...* has an impact that Karajan (who loved such recorded effects) would have envied; and the percussion and double-basses make a tremendous sound in the '2001 *A Space Odyssey*' intro. **CB**

Sound Quality: 90%



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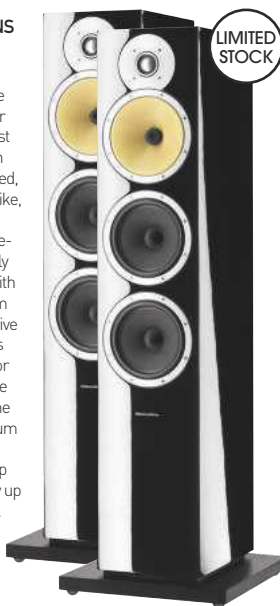
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Paul Miller
Editor

Technician and writer on all things audio for some 30 years, Paul Miller took over the editor's chair in 2006. He invented the QC Suite, used across the audio industry

All that glitters is carbon

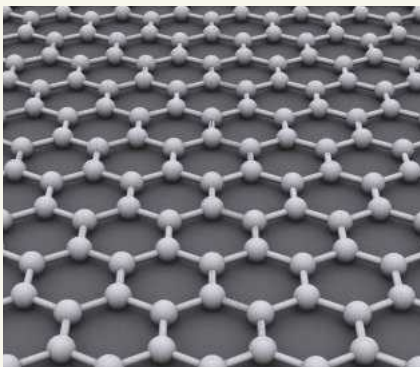
While governments try to square a low-carbon economy with increasing power consumption, **Paul Miller** asks if the technology of a Europe-wide 'Super Grid' may find its way into hi-fi cables

Despite the improved efficiency of consumer electronics in general and measures including the Standby Power Directive in particular, the demand for energy is only going in one direction – up. Numerous technology companies and universities are already working on engineering solutions to enable a Europe-wide 'Super Grid' supplied by renewables including wind, wave and solar in addition to nuclear, both fission and fusion. Quite how this energy is distributed over huge distances – as AC or DC – remains a hot topic of debate but the solution may lie in the new conducting materials being developed to lace this grid together. Copper, it seems is yesterday's technology.

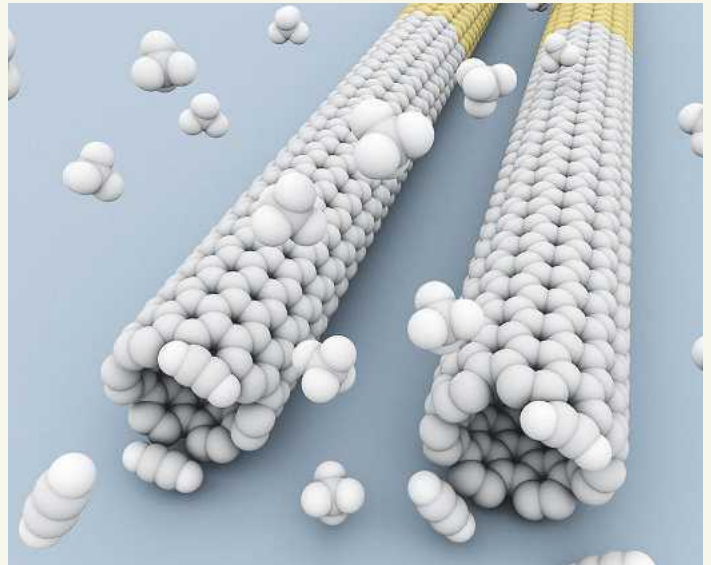
THE WONDER MATERIAL

Many pundits are pinning their hopes on the 'wonder material' Graphene, originally synthesised ten years ago. Graphene, pictured below, is a one atom thick lattice of carbon, a two-dimensional structure that's claimed to be 100x stronger than steel with the ability to conduct both heat and electricity with greater efficiency than any metal.

Roll this sheet into a cylinder and you have a Graphene nanotube. It's not quite this simple, of course, as the nanotubes have to be formed on a catalytic substrate which, typically, is quickly



RIGHT: Carbon nanotubes are a cylindrical form of graphene. The latter comprises sheets of carbon atoms arranged in a hexagonal 'chicken wire' pattern [BELOW LEFT] and exhibits extraordinary mechanical and electrical properties. (Image courtesy of Chongwu Zhou and Jia Liu)



poisoned and limits the length of complete tubes. Minuscule (sub-mm) nanotubes are already used in Kevlar composites to improve their strength-to-weight ratio, and in touch panels for smartphones and lithium-ion batteries. However, continuous nanotubes, free of interstitial boundaries, could prove to be the perfect 'wire' as the physics of conduction across these nano structures differs from conventional bulk materials. They approach the performance of super conductors, without the need for cooling to near absolute zero.

THE HI-FI CONNECTION

We are still a long way off realising the kilometres of nanotube wiring required to support an International Grid, but a few metres of IEC mains cable, interconnect or loudspeaker cable may soon be within reach. More likely we will see a combined copper and carbon nanotube conductor that offers reduced weight, greatly

improved flexibility, heat dissipation (current capacity) and conductivity over pure copper, silver or gold alone.

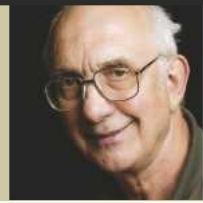
Such a carbon nanotube-copper (CNT-Cu) composite should not be

confused with the mixed graphite/copper interconnects already offered by some audio companies over the last couple of decades. A CNT-Cu cable will likely present a very different set of lumped parameters (inductance,

capacitance and resistance) than its copper or silver-plated copper equivalent. The surrounding dielectric may also exert a reduced, or at least alternative, influence over performance and sound.

One thing seems sure – a CNT-Cu speaker cable offers the prospect of running over far longer lengths with less subjective impact than its old school counterparts. I don't know of any hi-fi cable companies working on this right now. Perhaps they will, but you'll know where they read it first! ☺

'Carbon nanotube speaker cable and interconnects may soon be in reach'



Barry Fox
Technology journalist

Barry Fox trained in electronics with the RAF and worked as a patent agent, but he gave that up to enter journalism. He is one of the world's top technology writers

Comparatively speaking...

Comparing one component directly with another can enable us to make useful judgements about sound quality, and that's just as true with live versus recorded music, says **Barry Fox**

Never underestimate the power of direct comparison. If the people who pay a premium price for headphones adorned with the name of a famous DJ, or big name musician (like the late Bob Marley or Miles Davis), could try an A/B comparison before buying they might question the premium. Which dealer will be first to offer the chance to compare a clean recording heard simultaneously through half a famous-name headset and half a well-engineered but non-sexy name equivalent?

VOICE RECOGNITION

When Bang & Olufsen recently launched its new Avant range of TVs, we saw how the sound panel cleverly slides out of the main chassis when the television is on, and then retreats inside when the set is turned off. We learned that the set has eight driver units and eight dedicated amplifiers built in, with the option of 7.1 surround from up to 21 wired and wireless external loudspeakers.

But in its basic out-of-the-box state, the Avant set is three-channel stereo, Left, Centre and Right. A pre-recorded demonstration by B&O's Geoff Martin compared the sound of his voice heard through Left and Right speakers only and through Centre Front only. The object was to show the advantage of having a dedicated Centre Front speaker 'to enhance the connection between you and the actors with exceptional clarity of speech'.

But the direct comparison clearly revealed the Centre Front sound to be weak, boxy and bass-light compared to the Left and Right pair, because human voice is a great tool for highlighting audio differences. We have been hearing

speech since the day we were born. I am sure the object of B&O's demo wasn't to expose the difference between its speakers, or remind of the acidity of a voice comparison. But I am still trying to work out what the object was. I've raised this with B&O but not heard back.

Meanwhile someone finally did what I have been banging on about for several years now, and staged a comparative demonstration of live-versus-recorded music. But it happened in Turkey and was purely accidental.

It took place at a concert hall in Antalya, where I heard a programme of music by the Mozart family played by a string quartet and piano, with commentary by a Turkish actor portraying Wolfgang's father Leopold. The acoustics of the recently built hall were good, and the hall speaker system did a good job on the actor's deep and fruity voice. But for some bizarre reason the concert promoter had decided it would be a good idea to play recordings of the

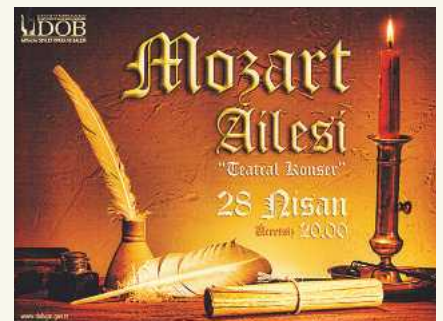
'Friends who neither know nor care a fig about audio tech heard the difference'

same music before the show, during the interval and even in gaps between the live performance.

The result was a chalk-and-cheese comparison between dull, soggy and messy music through the speakers, and music bright, clean and sparkling from the live instruments. Friends who went to the same concert and neither know nor care a fig about audio tech, were remarking on the difference.

Some years ago a broadcasting manager at the BBC asked me to listen to some comparisons, between original 78rpm shellac recordings and new digitally cleaned up versions.

The clean-up job had been done by Australian sound engineer Robert Parker. To get rid of the hissy background noise that blemishes most shellac 78s, even when in good condition, Parker digitally captured a



ABOVE: The Mozart concert in Turkey where a recording of the live music was also played

pure noise sample from a silent passage of each disc, and then electrically subtracted it from the music.

Parker also somewhat contentiously added some artificial reverb. Even more contentiously he created a pseudo stereo effect by slightly unevenly sharing the high and low music frequencies between the left and right channels, while putting the mid-range voice frequencies evenly into both channels. This had the effect of making vocals stand out centre front, proud from the musical accompaniment.

The BBC broadcast the recordings on Radio 2, and then released them on a batch of CDs.

CLEAR OFFENCE

I was reminded of this recently when a veteran BBC radio DJ lost his job after making the mistake of playing an 80-year-old recording of Ambrose & His Orchestra performing 'The Sun Has Got His Hat On', a novelty song with lyrics that unfortunately contain a racist word.

Thanks to the BBC's work with Robert Parker there is another version of this song, recorded in 1932 by Syd Lipton and his Grosvenor House Band, which makes the offending word even clearer.

The Corporation should now stick a big red 'Beware For Your Job' warning label on its library copy of *The Classic Years, Volume 12*. ☺



Barry Willis

Journalist for top American audio-video publications

While his main interest is high-end audio, Barry Willis also writes about the culinary industry, visual art and theatre for a huge variety of US newspapers and magazines

One-hit wonders

The album is dead, says **Barry Willis**, and it's not simply due to the fact that we are now able to purchase and download individual tracks but because many releases offer music that's mostly 'filler'

My abiding interest in hi-fi and audio technology has always been driven by a love of music. Over the years, a still-growing collection of CDs gradually displaced what was once an outsized collection of LPs – a heavyweight library that at its peak wrapped around three sides of a large room.

The acquisition of discs has slowed as other sources have become more convenient, but in the process of intermittently transferring favourite recordings to a hard drive, I've been astounded by how many albums I have bought for only one or two great tracks.

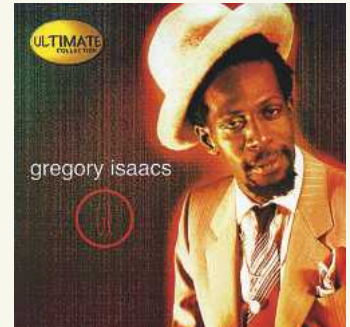
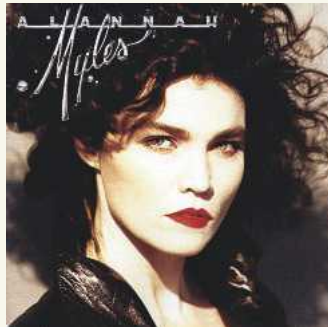
A dismaying portion of my music collection consists of one-hit wonders – both the widely recognised commercial variety, and personal favourites whose musical appeal so outdistances everything else on the album containing it as to render it irrelevant.

RAISING EXPECTATIONS

For performing artists, commercial one-hit wonders are both the hope and bane of burgeoning careers. Every recording that gains traction in the marketplace raises expectations to an unrealistic level for music business executives, and puts pressure on artists to repeat the success – something they often can't do. 'Harden My Heart' by Seattle-based Quarterflash went to the top of the US charts in the early 1980s, but the group was never able to match it. Everything else on the album is a forgettable mediocrity.

A more egregious example is Canadian rock diva Alanah Myles' self-titled album from 1989. Showcase piece 'Black Velvet' is an overwhelmingly powerful masterpiece, but there isn't

RIGHT: Alanah Myles' self-titled album from 1989 and (right) Gregory Isaacs's 20-track *Ultimate Collection* from 2001 – one standout song apiece, but little else that appeals



another decent track on the album. Buyers of albums whose enthusiasm is based on one great song are apt to develop resentment after a few such purchases. This syndrome is one factor driving the trend to download individual tracks rather than entire albums. There's only so much filler that music lovers can stand.

For me, departed reggae star Gregory Isaacs's *Ultimate Collection* is similar, although hardcore fans would disagree. I bought the album immediately upon hearing 'Night Nurse' on satellite radio – a

tune still in heavy rotation *chez moi* – but among its 20 tracks there's nothing else rising to that level of genius.

A similar case is No Doubt's *Tragic Kingdom*, the group's hot-selling 1995

album. 'Don't Speak' is a gloriously bitter and gorgeously rendered pop anthem, but no other track on the disc bears repeat listening. At least, not for me.

HEART-RENDING SOBS

Sometimes obscure artists create something so beautiful it induces bafflement as to why they never equaled it. On her album *By Request*, honey-toned soprano Renée Fleming wrings every last heart-rending sob from the aria 'Ebben?.. Ne Andro Lontana' from Catalani's opera

La Wally. As far as I know, the opera exists for the sake of this one aria – much the way the musical *Man Of La Mancha* exists for 'The Impossible Dream'.

Personal one-hit wonders are another matter, of course. Despite their enormous popularity, and belated admission into the Rock and Roll Hall of Fame, I've never warmed to the Dave Clark Five. To me, hits like 'Glad All Over' and 'Bits And Pieces' always sounded like so much monotonic shouting, but the DC5's 'Because' is an absolutely elegant love song whose beguiling melody, simple heartfelt lyrics, and engaging tempo make it very much the equal of The Beatles' 'I Will'.

RAP REBUTTAL

Many hi-fi fans swear there's nothing redeeming in the rap genre. As rebuttal, I offer Kool Mo Dee's 1989 *Knowledge Is King*, an uplifting and empowering work of erudition. It's a pity that more rappers haven't taken inspiration from it.

In 1991, pop crooner Richard Marx released *Rush Street*, showcasing his tragic ballad 'Hazard', a rare musical concoction whose every component, from ominous opening to bittersweet refrain, contributes to a satisfying emotional and intellectual experience. The remainder of the album is polished but not engaging. Others may find differently – this is, after all, *HFN's* 'Opinion' section. ☺

'To me, The Dave Clark Five always sounded like monotonic shouting'



Jim Lesurf Science Journalist

Jim Lesurf has spent a lifetime in audio, both as an engineer at UK hi-fi company Armstrong and reader in Physics and Electronics at St Andrew's University

Crazy drivers

The whole point of standards, says **Jim Lesurf**, is to make life easier for all involved, and that's not just consumers but manufacturers too. So why don't the makers of USB devices stick to them?

Almost anyone who has used a personal computer will have at some point found themselves cursing 'crazy drivers'. Drivers can make it a real struggle to get hardware to work at times. More than once I've heard someone complain that installing drivers for one device not only hasn't worked, but has caused something else to stop working. Little wonder someone coined the phrase 'plug and pray'!

In recent months I've been testing and comparing USB DACs and ADCs (Analogue-to-Digital Converters). During this time I've found a number of USB devices that can play or record audio very well. The ones I've been able to use follow the USB Audio Class standards – often referred to as Audio Class 1 and Audio Class 2 – which have been developed and described by the USB Implementers Forum Inc.

OPEN STANDARDS

These standards are openly published, and using them, USB audio devices

can deliver superb performance. The forum includes both Microsoft and Apple as members, so you'd think this was 'job done'. So why do so many manufacturers and dealers selling USB

audio devices behave as if they'd never heard of these standards?

I've lost count of how many times I've emailed a manufacturer, dealer or agent asking if a device it offers will work using these protocols. Some, like Cambridge Audio, give sensible and helpful replies, and its devices work excellently using them. But many others either don't reply or give strange responses.

Having recently found a device that follows the standards and worked well I

RIGHT: A driver is a piece of software that is installed on a PC to enable it to interact with a hardware device. Buying and adding a new device, such as a USB DAC, or upgrading an existing one will usually mean that a new driver is needed. If only it were that simple in practice...



asked its maker to let me know if it had any other devices that also followed the USB audio standards and might be worth my while trying. The response was that 'We do not support Linux or RISC OS'. This didn't answer the question I'd actually asked and despite the claimed lack of support one of

its devices worked fine with Linux and RISC OS. Because it worked in accord with the agreed standards.

There seems to be a general point here that some manufacturers have

missed. The main purpose in following such standards is that in doing so it frees a manufacturer from having to support any specific operating system or software. And the user should then not need to install a 'driver'! In short, the standards are there to make life easier for all involved.

OK, sometimes a driver may provide some added features. But that should be the icing on the cake. Your car may have a sun-roof, but that doesn't mean it lacks a steering wheel or a windscreen!

'It's something of an oversight that some makers should ignore potential markets'

Perhaps the reality is that all too many people in the computer market have no real idea that anything other than the then-current version of Windows exists. If this is the case, then they are being short-sighted for two reasons. Firstly, when a new version of Windows replaces an old one – XP anyone? – will your old devices still work? Or will they need a new driver, which if it fails to appear, will render them obsolete?

BLOWING A RASPBERRY

Secondly, is there really no market at all for USB devices among, say, the millions of people who have bought and are using a Raspberry Pi? This little computer runs Linux and RISC OS, not Windows or Mac OS X. OK, they are aimed at people who want to experiment. But many are running media systems like XBMC and will want decent audio.

It seems something of an oversight that some makers should ignore potential markets. They don't need to support these operating systems. All they need to do is follow the standards, and tell people that they do. What's the problem with these crazy drivers? ☹

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Steve Harris Contributing Editor

Steve Harris edited *Hi-Fi News* between 1986 and 2005. He loves jazz, blues music, vinyl and vintage hi-fi and anything that makes good music come to life

Match points

Approaches to system matching have shifted radically over the decades, but however much hi-fi systems change in the foreseeable future we'll still need loudspeakers, reckons **Steve Harris**

High summer has never been the greatest time of year for high-end audio but, allowing for seasonal dips, the market has been more buoyant in the last 12 months than for many a year.

Today's high-end customers tend not to be equipment-enthusiasts but well-heeled music-lovers who want the best. So the traders who are thriving are often the ones who can show buyers a complete and convincing system, rather than suggesting upgrades piece by piece. To do this means putting together components from different brands that work together both technically and subjectively. If the sound is really beyond criticism, cost ceases to be an issue.

SOURCE FIRST

'System synergy' is a relatively new concept. In the early days of hi-fi, the loudspeaker was seen as the main part of the system, and the part that determined the sound quality. Amplifiers and turntables hardly came into question as long as they met basic technical standards.

With the 1970s boom in hi-fi separates, 'compatibility' mainly meant making sure there wasn't a gross impedance or sensitivity mismatch to cause distortion. Consumers were generally advised to spend the biggest proportion of their budget on the speakers, splitting the rest between the record deck and amp.

Then along came Linn and Naim. Love them or hate them, you had to admit that these two companies did put together a system that worked in its own terms. Advocates of the Linn turntable derided the prevalent budgeting advice, using the 'garbage in, garbage out'

argument. If funds were limited, they said, you should spend as much as possible on the source, even when this meant that your Linn was running with a sub-£100 amplifier, driving tiny Videoton Minimax speakers that cost about £40. You'd be upgrading later, when funds allowed, to a proper Linn/Naim system.

Meanwhile, Japanese manufacturers selling complete systems could capitalise on consumers' fears. Sony ran ads that illustrated a grotesque and impossibly ungainly car, combining a Rolls-Royce radiator grille with a Citroen Deux Chevaux body: 'Would you buy a hi-fi this way?'

Later, there was a rift between Linn and Naim, when Linn started to make its own amplifiers, and eventually, of course, both became complete system manufacturers.

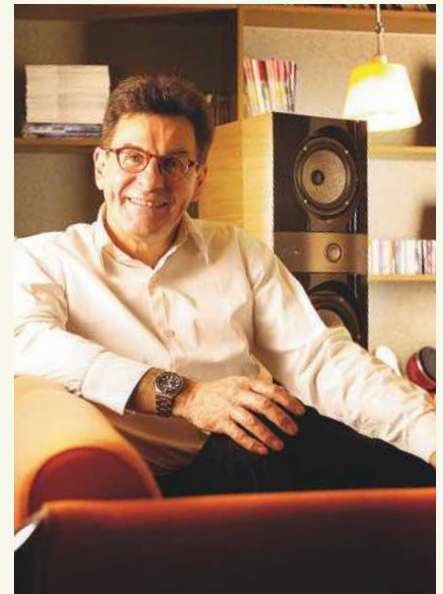
Last year, I was happily privileged to be able to discuss all this with Gérard Chrétien, managing director of Focal, the leading French speaker manufacturer, which acquired Naim in 2011. From 1977, until he joined Focal in 1990, Chrétien was *redacteur en chef* of French magazine

L'Audiophile, which published the seminal work of Jean Hiraga. Focal's founder, Jacques Mahul, was one of his contributors.

'In the past,' he commented, 'there were three main areas of knowledge. The manufacturing of the mechanical parts for the sources, the turntables, the cartridges and the tonearms, that was something very special in the 1970s. Then there were guys specialising in analogue electronics. There were other guys specialising in speakers.'

And in France, says Chrétien, and in most other countries in Europe, things more or less stayed that way. There has never been a culture of one company building a complete system. So a Focal speaker must be broadly compatible, easy for many different amplifiers to drive.

'Once more, the speaker is becoming the most important part of the system'



ABOVE: Gérard Chrétien, managing director of French loudspeaker manufacturer, Focal

Focal can be secure in the knowledge that however much hi-fi systems and sources change, we will still need speakers. Could it be that this European 'open market' approach will finally win the day in the UK?

SOURCE LAST

Just as I was thinking about this, I received a press release from Linn, the company that really introduced the word 'source' into most people's hi-fi lexicon. It was about the Exakt, a speaker that follows the lead given by Meridian's DSP speakers. The Exakt is an active loudspeaker that accepts digital signals direct and does away with all analogue components up to and including the crossover, which is digital too. Linn's slogan is 'The source is in the speaker'.

Once more, it seems, the speaker is becoming the most important part of the system. In this case at least, it's on its way to becoming the only part. ☺



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YOUR VIEWS

Sound Off!

Correspondents express their own opinions, not those of *Hi-Fi News*. We reserve the right to edit letters for publication. Correspondents using e-mail are asked to give their full postal address (which won't be published). Letters seeking advice will be answered in print on our Sound Off pages, but due to time constraints we regret we're unable to answer questions on buying items of hi-fi or any other hi-fi queries by telephone, post or via e-mail.

B&O MAKES VINYL EASY VINTAGE REVIEW SEES READER RETURN TO LP

I enjoyed Tim Jarman's article on the B&O Beogram 4000 turntable in the June issue. I sold all my vinyl replay equipment last year having become fed up with the cost involved and all the messing around with the setup. Speed change? Take off the platter and put the belt on another pulley. Then there was the removal of what was a heavy Perspex dust cover and the danger of this catching the arm when it was replaced and perhaps wrecking a very expensive cartridge.

So for a year it's been CDs and high resolution downloads to my Apple Mac for me, along with the joys of internet radio. Yet after reading the piece on the Beogram 4000 I decided to investigate the cost/benefit ratio of investing in vinyl once more.

I found a Beogram 5500 turntable with a working B&O MMC4 cartridge and negotiated a price of £90. I was then lucky enough to get hold of a pristine MMC2 cartridge at £190. In total, both were less than one third the cost of my last Lyra cartridge.

I decided to concentrate my search on the last Beogram turntables B&O made because

these were supplied with a system that included a CD player. My thinking was that these turntables might have only seen light use, if any at all as CD would have been the big attraction.

I have just listened to the Joe Pass *Virtuoso* album, recorded in 1973, and very nice it sounded too. What's more, I just put the LP onto the turntable, press 'play' and close the lid. When the album has finished playing the tangential tracking arm parks itself. Who would have thought playing vinyl could be this easy?

Ron Hilditch, via email

Tim Jarman replies: The 5500 was part of a later generation of B&O tangential turntables that employed a much lighter build than the company's original 4000 series of decks. Although they may not look that promising at first glance, the excellence of B&O's cartridges and the integrated design employed make for an easy-to-use machine which gives good results.

I have seen many of these turntables that have become damaged by the supplied stylus cleaning brush having fallen inside. Other than that, little goes wrong with them.



ABOVE: Introduced in 1987 – the Beosystem 5500 with Beogram 5500 turntable

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Even-handed hi-fi journalism

A REFRESHING BLAST FROM THE PAST?

As a long-standing reader of *Hi-Fi News*, I read your new series 'From The Vault' with great interest. How hi-fi journalism has changed in 30 years and not always for the better I'm afraid. Frank Jones's comparisons with other turntable manufacturers in the course of his article, comparing the Fons CQ30 and Linn Sondek LP12, showed an impartiality I feel is sometimes missing these days.

Towards the end of his article, a mention is made that despite the excellent engineering of the two turntables on test, neither was cheap enough to be considered good value. In our present economic climate, a remark like that seems even more relevant.

Frank Jones then goes on to suggest alternative turntables. He lets the reader have the names of other models that are cheaper and ones



ABOVE: The Linn/Fons comparison from our July issue. It was reprinted from the Oct '76 issue of *Hi-Fi News*

that are about the same price. How refreshing to have this unbiased information, which can be so useful to anyone considering buying equipment.

In his final verdict he doesn't sit on the fence and comes out firmly on one side. This uncompromising and impartial approach serves as a great example of even-handed hi-fi journalism in my opinion.

J Turkie, via email

Paul Miller replies: Our new 'From The Vault' feature [p124] has struck a chord with many readers. The Fons versus Linn turntable review was especially humbling because while the former was declared the winner, it was the fledgling Linn LP12 that subsequently grew to dominate the audiophile vinyl world. Just shows we can all back the wrong horse from time to time! Of course, that head-to-head product comparison has been superseded in current times by our collective Group Test where we always 'come off the fence' [see p41].

Ex3ma, and pure Class A

QUESTIONS ON CONVENTIONAL CAPACITORS AND WHY USE THE PHRASE 'PURE CLASS A'?

I enjoyed Ken Kessler's article on the Sonus faber Ex3ma [see *HFV* Jul '14]. But the pictures of the crossover with the inductors and Mundorf capacitors reminded me that the company didn't continue one of the unique features of the original Extrema – the capacitorless crossover. Here, instead of a series capacitor as the high pass element for the tweeter as is conventional, the high pass was accomplished with a parallel inductor yielding a 1st-order crossover without a capacitor (the best capacitor is no capacitor?) – a quite unique situation.

It would have been good to see a second iteration of this concept. But I suspect Sonus faber achieved superior results this time around with a more conventional approach using the superior capacitors available today over two decades later.

On a second front, I've never understood the need for the multiple redundancies in the too often used phrase 'pure Class A' when describing the operation of a single-ended amplifier. It's as if many an audiophile doesn't understand either single-ended or Class A.

In the first place, a single-ended audio amp is inherently Class A. There's no way to turn off the single output device as in the crossover from one output device to another in a push/pull amplifier. The single device is always biased fully on. Otherwise the performance would have little to do with fidelity.

As for pure Class A. What is impure Class A? It's not class A at all, even when it comes to a push/pull



ABOVE: The Ex3ma on its dedicated stand

amplifier. Either an amplifier is biased Class A or it goes into some form of Class A/B. I suppose a push/pull amp that has sufficient bias to be Class A into 8ohm but without enough bias to remain Class A into 4ohm or lower could be called pure Class A into 8ohm. But with single-ended one is stuck with Class A.

Allen Edelstein, via email

Paul Miller replies: While Sonus faber's new Ex3ma certainly harks back to the Extrema of 1991, in practice there is precious little similarity in the driver technologies. The original Extrema's tweeter possessed a very wide bandwidth and was rather more sensitive than the mid/bass unit. This allowed Sonus faber's engineers to effect a 1st-order crossover with a single inductor, connected in parallel with the tweeter, together with a series resistor. The inductor's impedance rose to counter the tweeter's output at resonance while the resistive arm defined the filter shape and brought down the overall sensitivity to better match the bass/mid driver.

Finally, the colloquial phrase 'single-ended Class A' is indeed a tautology because a single-ended output stage is necessarily Class A in operation. And 'impure' Class A? That'll be Class A/B!



ABOVE: The Mundorf 'Supreme' capacitors used in Sonus faber's new Ex3ma speaker



RJ/E Forest



RJ/E Cinnamon



RJ/E Vodka



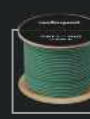
RJ/E Diamond



Cat 600 Pearl



Cat 700 Pearl



Cat 700 Forest



Cat 700 Carbon

Since its origins in the early 1980's, Ethernet, and the Local Area Network (LAN) systems it enables, has become the copper plumbing of the digital age. Originally deployed only over coaxial cable, the Ethernet protocols (IEEE 802.3) now also apply to fibre-optic and "Category" (Cat 5, 5e, 6, 6e, 7) cables. These 8-conductor (4 twisted pairs) Cat cables are the 8 lanes which stream or transport your digital entertainment to equipment a foot away or several rooms away.

AudioQuest refers to its pre-terminated leading-edge Cat 7 cables as the RJ/E Series ... RJ for the RJ45 connector standard to the application, and E for Ethernet. For AudioQuest, the highest Cat 7 standard (with all 4 pairs using correctly differentiated twist rates and individually shielded) is only the solid foundation to which AQ then adds better materials and unique-to-AQ additional technologies.

The particulars of the RJ45 connectors have also received extreme attention. The plugs used on the Vodka and Diamond models (and available for use with bulk Cat 700 models), feature a unique patented transition-compensating system which reduces reflections caused by the impedance mismatch where 4 twisted pairs meet a straight line of 8 plug contacts.

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Issues with USB cable test

DID THE FINDINGS SIMPLY REVEAL THE NOISE-REJECTION CAPABILITIES OF THE DAC USED?

I was very interested in the USB cable test in the July issue. I certainly won't argue with your subjective findings but I have to query the generality of your conclusions. This is prompted by my having recently undertaken some slightly similar experiments myself, though in my case using S/PDIF rather than USB as the digital transmission medium.

We have to accept that in any correctly implemented USB interface, 'bits are bits' (to coin a phrase). That is, a datastream is moved successfully from A to B. If that weren't the case, if the cable were somehow modifying the bitstream, then the results would be unlistenable noise (and, as a side note, none of us would ever be able to print a document again!). You were, I presume, using asynchronous USB, so straightforward clock variation and/or jitter shouldn't be an issue. We need another mechanism by which the cable can alter the system sound.

The only obvious mechanism that I can see is electrical noise, often referred to generically as 'RF'. Either transmitted from the PC to the DAC (or integrated amp, as in your test case), or picked up from the air *en route*, or conceivably self-generated within the DAC and reflected back by the USB cable or its terminations.

If – and I stress if – that is the underlying mechanism, then your test results are simply showing the ability of your chosen DAC to reject (ie, ignore) the spectrum of noise generated by your chosen source and

filtered by the currently-fitted cable. The conclusions, therefore, may only be valid for that particular source/cable/DAC combination.

I don't particularly like this conclusion, as one would hope that, by now, a well-engineered DAC would have good isolation and be capable of good noise rejection, but I don't see any other obvious answer to the identification of an underlying mechanism. This was certainly the conclusion that I came to as I listened to the sound of my supposedly very well engineered £2000+ DAC being altered by changes to a DC supply feeding the device which was feeding it an S/PDIF bitstream.

Peter Wood, via email

Paul Miller replies: You are absolutely correct in many of your assumptions, Peter, and I am not surprised you have encountered similar issues with electrical S/PDIF connections. Indeed, the USB test protocol I devised for our July report [and *HFN* Jul '13] was based on the S/PDIF cable tests I first published over 20 years ago in *Hi-Fi Choice* magazine! Circulating RF noise will be an intrinsic component of almost every PC-USB-DAC combination (only an optical S/PDIF connection will avoid this) but its impact extends beyond the digital realm as such noise may also undermine the analogue performance of the host DAC.

This is where computers, and all other digital apparatus, differs from hi-fi because we perceive the 'data' in the analogue domain where very specific distortions are invoked. Noise on USB will make the 'decision' as to where an edge is clocked less certain, but such jitter would need to be huge, and overlap successive data bits, for the information to be corrupted and, by your analogy, stop the printer!

Ordinarily, USB data is visualised as an 'eye-pattern' which represents multiple data packets of varying periods superimposed on one another. It indicates the quality of the signal in the time domain. For simplicity, our eye-patterns are generated from the initial 12MHz sync pattern – the 'start of packet' header – with persistence engaged to reveal any deterministic jitter or susceptibility to random EMI.

WIRELESS FRONTIER?



Not only are wires still very much the lowest-distortion highest-performance way to send both analog and digital audio information, but when it comes to sending power, "wireless" is just a nifty science project, not part of a home entertainment rig.

The challenge of not adding distortion as AC power goes from the wall to the electronics, and the challenge of not adding distortion as audio power is sent to a loudspeaker, are almost the same. The amount of energy transferred through these cables, and the size of the associated magnetic fields, puts them in a different class from all other audio and video cables.

Speaker cables need to maintain perfect integrity across the audio band and then some, while AC cables only have to try to be perfect in a narrower band. AC cable design is therefore a subset of speaker cable design because AC cables are subject to almost all the same distortion mechanisms, and benefit from almost all the same damage minimizing techniques.

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ABOVE: Our July Group Test saw ten USB cables lab tested and auditioned blind

On making hi-res copies of LPs

READER SHARES HIS SET-UP FOR RECORDING VINYL TO 96KHZ/24-BIT FLAC FILES USING HIS PC

I have just read Jim Lesurf's article on recording LPs at 96kHz/24-bit [see *HFN* Jul '14]. The Focusrite Scarlett 2i2 interface he used looked interesting but has no facility for directly attaching the standard twin phono RCA output cables from a turntable. Presumably, some sort of additional audio hi-fi component such as a phono preamp would be needed for recording to take place?

However, Jim asked for readers' comments, so here goes. You might be interested in the set-up I use for recording vinyl directly from my Thorens turntable to the FLAC format at 96kHz/24-bit via my PC.

Both turntable phono-out leads plug directly into a Soundblaster X-Fi HD soundcard which in turn is connected to my PC via a USB cable. The speakers also connect directly to the Soundblaster so I am able to monitor what I am recording with the choice of listening via the speakers or headphones.

Audacity software allows me to configure recordings in a variety of ways, which in my case is set at 96kHz/24-bit FLAC as default. The software also allows me to remove pops and clicks or other unwanted noise from tracks. I admit that as a new user of Audacity the learning curve was a bit steep – but not impossible – and the user instructions are extremely good. The range of recording options in Audacity is impressive and some night-time reading was necessary to get the most out of the software.

As you might expect, the end result is better than CD and really brings out

the high quality sound of LPs. It took me a couple of weeks to get everything setup properly as I experimented with different combinations of settings and configurations. But it was worth it and with my limited knowledge of music recording, electronics and hi-fi terminology things have turned out much better than I anticipated.

The ability to use quality front-end components (Thorens/Linn etc) is a boon and not wasted when the end product is so pleasurable and satisfying. An added bonus is that there is no need for other hi-fi components, such as a phono preamp, to be connected during the recording process. The X-Fi HD does it all. The cost? The Soundblaster X-Fi HD was £80, the Audacity software is free and MP3 Tag Pro cost me £24.

I searched for ages for a 'hi-fi only' solution that didn't entail a multitude of peripherals, additional hi-fi and electronics. And like Jim, seriously considered a Tascam HD-P2 recorder. In the end, the above solution seemed to be the easiest way round it all, especially as the preservation of sound quality was of paramount importance. If there's an easier way to do all this, with no sacrifice in terms of sound quality, then it would be good to know.

Roger Harris, via email

Jim Lesurf replies: We've received a number of reader's letters in response to my column on making digital copies of LPs. As a result I'm currently in the process of trying out some more devices for doing this. Alas, your approach means some form of recording device (ADC) is required, so one way or another your audio system becomes more complicated. And you have to come to grips with the software that handles the results.

There are various ways to go about making digital recordings. Until recently I've used a Tascam HD-P2 recorder, and fed it from the 'tape output' sockets of my preamplifier. This means I use the RIAA (phono) amplifier stage in my existing preamp to get the signals I record.

The HD-P2 is easy to use and works very well. But it is a perfectly viable alternative to use something like a USB ADC with its own inbuilt RIAA preamp if that's what suits you. I just like the sound of my established cartridge and RIAA amp, and decided that's the sound I wanted to capture.



ABOVE: The Focusrite Scarlett 2i2 converter

Also, since I'm using the old Shure V15s, I need a preamp that can provide the required loading to get the right sound. Many modern MC cartridges require a very different preamp, both in terms of loading and gain.

An irritating disadvantage of the Tascam (and CD-R audio recorders before that) is the need to then copy the results over to a computer for processing. The real advantage of USB ADCs is that this happens as you record. And whereas the Tascam is limited to a maximum Compact Flash card size of 8GB, a USB ADC can access all the storage space your computer makes available.

So changing from standalone to USB is a little like going from film cameras to digital ones. You can examine the results immediately with no fuss or wait. You can make almost insanely long recordings, etc. That's why I've now started to prefer using a USB ADC. Indeed, I'm now experimenting with recording directly to a NAS (Network Attached Storage) box, so that the results are available to all my computers as soon as recording is finished.

I don't think there is any universal 'easier' way than the approaches either Roger or I have used if you want good results. However you deal with this, you need to add good recording equipment to your hi-fi system. You also need to experiment and learn how to make the best quality recordings in the ways you find most convenient.

Again, so far I've used more basic methods than Audacity to make my own USB ADC recordings. This was to ensure I knew what was happening to the digital data stream. Indeed, I ended up writing my own simple USB recorder program for this.

I also plan to experiment with Audacity. However, I confess that I am wary of 'everything but the kitchen sink' software with pretty user interfaces. Such applications make me wonder what hidden settings I've not yet found and got right, or what's really being done to the sound.

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ABOVE: For more on the Soundblaster X-Fi HD soundcard navigate to <http://uk.creative.com>

Bit generation

ADVICE SOUGHT ON DOWNSAMPLING AND STREAMING OPTIONS

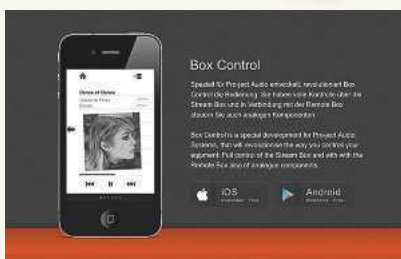
From time to time I purchase digital downloads from Linn Records, HighResAudio, Qobuz and the like. Could you recommend some programs and settings for downsampling these files to create 16-bit/44kHz or 320kbps MP3s for in-car playing or on other devices?

I listen to internet radio through a Pro-Ject Stream Box DS+. The company's Box Control app for the iPod displays both bitrate and sample rate. Is it possible that certain stations employ non-standard bitrates (for example, 68 or 120kbps)?

On its website, the Berliner Philharmoniker's Digital Concert Hall claims that the sound quality of its live streams is similar to that of CD (on the Spanish version of its website it says that it is better than CD quality). Under the FAQ section it is stated that the sound is 'in stereo 48kHz/24-bit to AAC encoding with a data rate of 256kbps'. I guess that this was chosen to make the stream compatible with iPod devices as well as TV sets. Technically, which is better? Lossless CD quality or lossy high res?

José Luis Pérez, Buenos Aires

John Bamford replies: As a Windows user, for ripping CDs I've employed Illustrate's dbpoweramp for several years [www.dbpoweramp.com], which is highly regarded due to its referencing the web's AccurateRip database.



ABOVE: Pro-Ject Stream Box DS+ (top) and the company's Box Control app



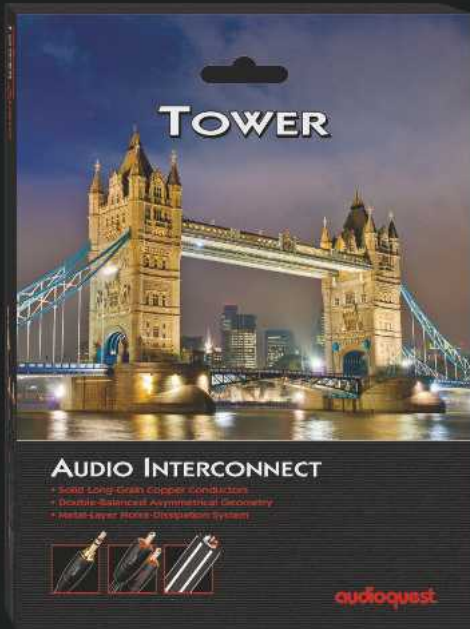
ABOVE: Berliner Phil's live streams can be found at www.digitalconcerthall.com/en/

Currently it costs £23 for a single PC, or £34 for a 'family pack' (up to five machines). One can engage settings to rip to any file format and quality level of choice. Naturally the software can also convert files from one format to another – *all* file types except DFF and DSF files which are in DSD's 1-bit format. On the rare occasion of needing to convert DSD to WAV or AIFF I use Korg's AudioGate.

If you're listening to 256kbps AAC, the quality of sound you will perceive is dependent entirely on the 'balance' of the recording rather than whether it started life as 'hi-res' or 'CD' quality. A BBC television broadcast of The Proms proves this. Whether from a terrestrial or satellite TV box, the sound is wonderful on a great hi-fi system, despite it being wa-ay inferior to uncompressed LPCM at 44.1kHz/16-bit!

Paul Miller replies: There is a host of plug-ins for the freeware media player foobar2000 and specific utilities that enable file conversion. If you are comfortable with the basic interface then it's a great solution.

Regarding internet radio stations, most distribute their content at 128kbps (some at 192kbps or 320kbps) with lesser quality 'broadcasts' at 64kbps. Very occasionally you'll see 56kbps or 64kbps.



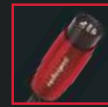
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Sony TTS-8000 turntable

A technological masterpiece, this direct-drive deck is also remarkable for its scarcity, the UK being one of the few countries to import it. How does it shape up today?

Review: Adam Smith Lab: Paul Miller

While the 1970s marked the beginning of the hi-fi industry's heyday, by the end of that decade things were starting to change. When it came to source components the turntable ruled, and belt drive was king – at least in the UK. Direct drive was viewed with suspicion by many, while for others it was little more than a sales badge seen on the front of high-street rack systems. Many felt that a turntable could only be taken seriously if it employed the appropriate quota of rubber bands.

This was in stark contrast to the likes of Japan, the US and Germany, where high-end direct-drive units from the Land of the Rising Sun were snapped up. As a result, designs like the Yamaha GT-2000, Trio L-07D and Marantz TT-1000 [HFN Sep '12] were rarely to be found on British shores while the Technics SP-10 only became well known thanks to its use in professional environments such as radio stations.

STERLING JOB

However, there was another contender to the direct-drive throne, and it is now widely regarded as the second best turntable Sony ever made. First place goes to the company's PS-X9, a magnificent and rare deck that was directly aimed at studios. But the runner-up, the Sony TTS-8000 tested here, did a sterling job of aping the Technics SP-10 in straddling the domestic and professional markets.

Interestingly, the UK was one of the few countries to import the TTS-8000 officially, and more than a handful found their way into radio stations.



ABOVE: The last independent motor unit to be released by Sony, these pages from an original Sony brochure show the TTS-8000 without one of the many plinths that would later become available

The TTS-8000 was the last independent motor unit Sony ever released. Its TTS model designation indicates that it was a design originally supplied without a plinth. Sony gave this moniker to all its decks of this type, irrespective of whether they were basic units destined for a music centre, or a high-quality motor unit intended for console or plinth fitment. The PS prefix was reserved for complete turntable assemblies. For example, the '8000's predecessor, the TTS-4000, magically

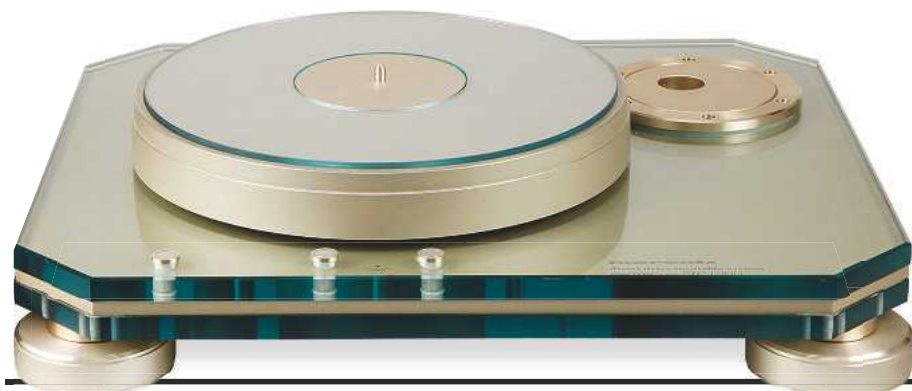
became the PSE-4000 once it was mounted in its base.

Interestingly, Sony chose not to give the '8000 a new designation once mounted, and the plinth situation for this model is more complex than most. Several pre-production prototype plinths were made in wood but these were then superseded by designs that made use of the company's Sony Bulk Moulding Compound (SBMC). This was a mixture of fibreglass and polyester said to have excellent resonance absorption properties.

DIFFERENT PLINTHS

The first plinth to feature SBMC was the TB-1000. This had a layer of wood supporting the compound and featured a lift-off lid. The TB-2000 took this further, being heavier (it weighed no less than 40kg with a TTS-8000 installed), larger,

LEFT: One of the Sony's main rivals was the Marantz TT-1000, but this was an integrated unit with the motor fixed into the plinth



VINTAGE HI-FI

RIGHT: With the platter removed, the magnetic head that 'reads' the platter's inner barium ferrite coating for speed monitoring can be seen, as can the holes for the transit screws

The TTS-8000 has the uncanny ability to deliver performances with just the right amount of realism. It does not seek to overblow things, nor is it backward in coming forward when required.

Moving to something with a little more grunge to it can often unseat a turntable that majors on crispness and clarity. 'Magic Man' from Heart's *Dreamboat Annie* LP [Arista ARTY 139] proved that the Sony was more than capable in this area.

Ann Wilson's vocals soared but the backing electric guitars had just the right amount of edge to them. This ensured that the performance not only boasted bags of energy but that it came across with plenty of soul. Equally, the percussive effects in the background were revealed in almost forensic detail. Nothing escapes the Sony – if it's in the groove then it will dig it out.

DIFFERENT TAKE

For those music lovers brought up on a diet of belt-drive designs, hearing direct-drive bass for the first time can come as something of a surprise and the TTS-8000 reminded me just how good this can be. I regularly use an idler-design Garrard 301 and the bass via this deck is seemingly bottomless with huge levels of punch and drive. But a good direct-drive like the Sony offers a somewhat different take on low-end performance.

Rather than take the piledriver approach that idler-drive designs do so well, the Sony digs deep, but with a much more fluid sense of rhythm when it comes to the upper bass. Plenty of detail, taut timing and a feeling of enthusiasm that draws you into the music is most definitely the order of the day here.

As a result, bass lines are fast, tight and blessed with a sense of pace that can leave

'Bass is blessed with a pace that can leave you breathless'

you breathless. If it hadn't been for the X-Tal lock system I would have sworn once or twice that the Sony was running fast!

This pays dividends with all sorts of music as it adds precision to the tempo of an orchestra, impeccable leading edges to the likes of acoustic guitars and real impact to anything electronic.

The latter was showcased perfectly by 'The More You Live, The More You

Love' from A Flock of Seagulls' *The Story of A Young Heart* LP [Jive Records HIP 14]. The track positively galloped along, the percussion sounding as sharp as a tack and Frank Maudsley's bass line as

spry as could be wished for.

At the top end, the Sony continues to impart its signature sense of neutrality. Once again, nothing is overblown and yet the deck offers a marvellous sense of insight and clarity. This means that aspects of recordings that previously lurked in the background suddenly appear more vivid.

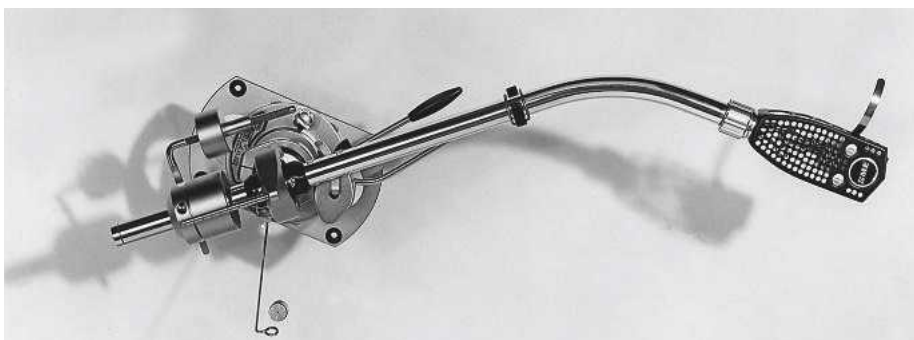
Aiding this is the turntable mat, which seems to have a very neutral character and is perfectly matched to the turntable. In the course of my evaluations I swapped it for a Funk Firm Achromat, a conventional rubber mat, a thin felt mat and even a leather mat. All offered their own sonic signature and wrought a few subtle changes in one way or another, but each seemed to be adding some sort of artifice – albeit not unpleasant ones. Returning to Sony's own OL-2K the sound of the deck gelled as a cohesive whole.

In soundstage terms, the Sony also scored highly. While it lacked the grand image width produced by my regular Michell Gyro SE turntable and didn't quite stretch the stage depth off into the distance as well as some, this was never an issue when listening. Because the Sony has no rough edges and is so precise and musically adept, it is far easier to concentrate on the music as a whole, rather than sit and play 'spot the location of the instrument'. The TTS-8000 draws you into the overall musical performance rather than trying to impress with any individual sonic facet.

BUYING SECONDHAND

TTS-8000s are relatively uncommon on the secondhand market but are not as hard to find as the likes of the Trio L-07D or Pioneer PL-50L, for example. Most are to be found mounted into one of the smaller ⇨

LEFT: Despite Sony offering more than one arm of its own, the SME 3009 was a common partner for the TTS-8000 and most plinths came with SME arm mounting cut-outs





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VINTAGE HI-FI

SONY TTS-8000 (Vintage)



ABOVE: While no-one is quite sure what 'Resinamic Sound' actually means, it does signify that potentially you have a very fine-sounding turntable in your possession

and solely SBMC plinths and an SME 3009 is a common tonearm partner which works well, although the deck is more than capable of being matched with a more modern arm.

Electrically, the most important issue you should check is that the X-Tal lock circuit is working correctly. Problems with this are highly likely to be the result of damage to the barium ferrite coating on the inside of the platter which in turn means that the signal to the reading 'head' will be interrupted as the platter rotates past it. Unfortunately, there is no solution to this, although any unit exhibiting these symptoms should operate with the X-Tal lock off without any issues.

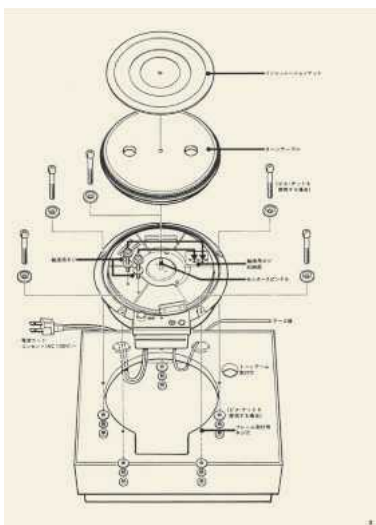
EDGE CASE

Meanwhile, the oil-filled platter mat can deform at its edges. After years of rotation the oil will tend to collect at the periphery of the mat which will result in it having a bit of a 'bump' around the edge. However, this does not unduly affect the

overall sound of the deck. In fact, as the mat is a very fine performer, only consider replacing it when it is found to be in a very poor state.

Capacitors can fail with age and also cause issues with the X-Tal lock operation as well as the strobe lamp. Smaller component failures are also not unheard of. When purchased, the review turntable would power up but the platter itself would not rotate. The fault was traced to a couple of failed transistors in the logic circuit for the touch-sensitive start/stop switch. The componentry is not unduly complicated, however, and the service manual is freely available for download online, facilitating easy diagnosis.

Finally, Sony assembled the internals using double-sided PCBs with each side linked in several places by short lengths of wire inserted into holes and soldered on each side. These can and do fail, leading to intermittent or broken connections, even though they can appear to be physically and visually sound. Re-soldering these during any maintenance or repair procedures is a wise precaution. ⚡



ABOVE: A nice simple cut-out and five securing bolts – what could be easier?

HI-FI NEWS VERDICT

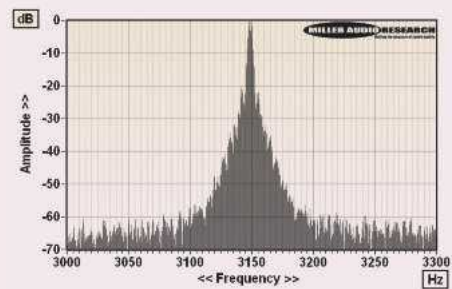
A superb unit from the days of high-end direct-drive turntables, the Sony TTS-8000 is now starting to become sought-after. A sturdy and well made turntable, it can still show a clean pair of heels to many modern designs and offers an authoritative and dynamic, yet fluid and musical, sound. Used models haven't quite attained stratospheric price levels yet – I suggest you buy one before this becomes the case.

Sound Quality: 84%

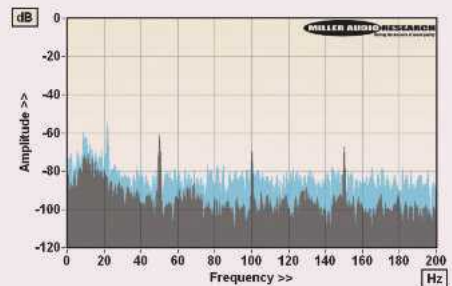


As you can see from the pictures in this review, our sample of the TTS-8000 direct-drive unit was mounted into a very heavy chassis with adjustable feet. The 320mm diecast aluminium alloy platter is also directly damped with a thick, rubber mat that helped yield a low -68.8dB through-groove rumble. It's possible the figure could be improved slightly by recourse to a record clamp, firmly mating the LP to the mat, but one was not supplied with the original deck. It's not uncommon for high-torque motors to generate their own noise/cogging components that pass up through the spindle in direct-drive decks, but Sony's brushless/slotless servo-controlled DC motor is remarkable free of such artifacts, offering a 'through bearing' rumble of just -72.0dB (DIN-B wtd). There is some evidence of noise from 58Hz-73Hz on the unweighted spectrum [black infill, Graph 2 below] but all such 'rumble' is well below the level of the background vinyl 'roar' [blue infill, Graph 2].

Starting torque is rated at 1.2kg/cm (motor power consumption increases from 11W to 35W here) and stable speed is quoted at '1/2 turn' but a figure of 2secs is more realistic. Final speed accuracy is excellent (quartz lock on) at $\pm 0.1\%$ while lower-rate speed variations resolve themselves quite clearly into $\pm 1\text{Hz}$ and $\pm 7\text{Hz}$ components amounting to a peak wow of 0.04% [see Graph 1, below]. Distributed flutter is a little lower at 0.03%. Drift is exceedingly low, however, so the TTS-8000 will inevitably sound very pitch-stable. Readers may view a comprehensive QC Suite test report for Sony's TTS-8000 turntable (in TB2000 chassis) by navigating to www.hifinews.co.uk and clicking on the red 'download' button. PM



ABOVE: Wow and flutter re. 3150Hz tone at 5cm/sec (plotted $\pm 150\text{Hz}$, 5Hz per minor division). Note the correlated wow at $\pm 1\text{Hz}$ and $\pm 7\text{Hz}$



ABOVE: Unweighted bearing rumble from DC-200Hz (black infill) versus silent LP groove (blue infill) re. 1kHz at 5cm/sec

HI-FI NEWS SPECIFICATIONS

| | |
|--------------------------------------|----------------------|
| Turntable speed error at 33.33rpm | 33.29rpm (-0.12%) |
| Time to audible stabilisation | 2sec |
| Peak Wow/Flutter | 0.04% / 0.03% |
| Rumble (silent groove, DIN B wtd) | -68.8dB |
| Rumble (through bearing, DIN B wtd) | -72.0dB |
| Hum & Noise (unwtd, rel. to 5cm/sec) | -60.9dB |
| Power Consumption | 35-11W (8W idle) |
| Dimensions (WHD) / Weight | 535x135x450mm / 18kg |



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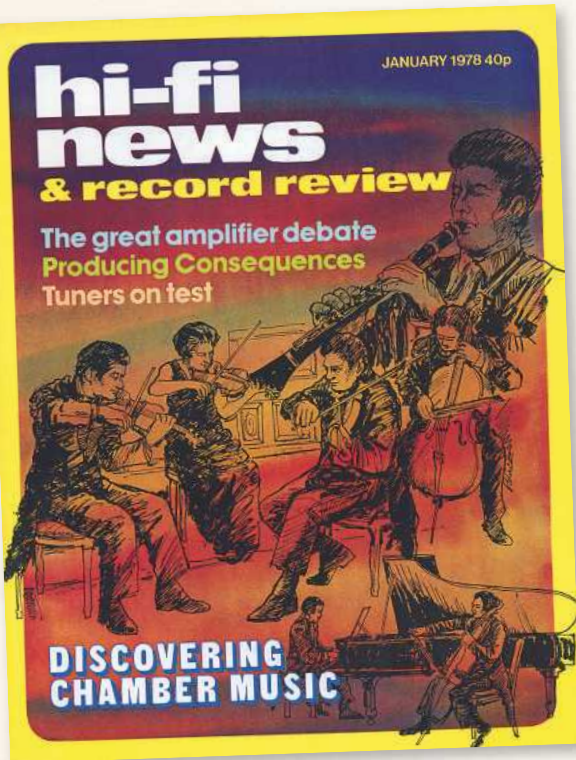
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The great amplifier debate

Richard Oliver and Ralph West talk transistors, valves and measurements



ABOVE: Quad archive shot shows QC II mono control units in action



Hi-Fi News January 1978

Each month HFN will bring you an article from our vast archive of features and reviews from yesteryear

During the last year [writes Richard Oliver] I have been fascinated to note that others have come to a conclusion that my ears indicated a long time ago – *ie*, all is not well with some transistor amplifiers.

Of course, there have been some stinkers of valve amplifiers too, but why is it all such a great mystery when it comes to transistor models?

The case is oft-presented that this is something that seems to be audible but cannot be measured. I doubt it. I suspect that the right measurements, interpreted correctly, would show very clearly why things appear to be wrong. But before making a suggestion for a measurement that might well show up one reason, I ought to make it clear that I am not interested in *crossover distortion*. The presence of this should be enough to disqualify any amplifier from the hi-fi stakes.

Let us look at the specification for an old and respected valve amplifier, the Quad II, designed

by Peter Walker of the Acoustical Manufacturing Co. And for the sake of this argument let us drop the 'hi-fi' criterion that anything over 0.1% total distortion is beyond the pale. We are unable to get a signal off disc with less than 10% a lot of the time, yet we don't hear people clamouring about this 'scandal'.

LOOK A BIT FURTHER...

Mr Walker's Quad II is 'rated' at 15W. But look a bit further. First, this is a minimum specification, probably with low mains volts. Second, look at the Quad II book. This shows an output/linearity curve that hits 0.1% at 15W and rises ever more steeply beyond that point. But what's this? 0.5% at 20W? Perhaps 1% at 25 or 30? And this is sine-wave power – what is its impulse performance like? Perhaps the Quad II will produce as much as 50W equivalent on a peak, lasting, as music peaks do, for a fraction of a second, and still the distortion probably isn't more than the limits obtainable from the disc.

Now for a transistor 'wonder', rated at 50W. True, that 50W may be at only 0.05%, but I can recall several reviews which have confirmed that the onset of clipping comes just above the manufacturer's rated maximum output. And once clipping starts, the only increase of

output you get is due to the increase of area under the waveform as it turns from a sine-wave to a square-wave. In other words, that 50W is near the absolute maximum output. Could that amplifier double its rated power at a fraction of the distortion from the disc? Could it produce a momentary peak corresponding to a sine-wave level of three or four times its rated output?

The rating of a transistor amplifier tends to be much more a maximum figure than a minimum specification. Perhaps this is why a 15W valve amplifier of respectable parentage can often be wound up to sound as loud as a 50W transistor amplifier. And let us not forget today's loudspeakers, which in the main are far less sensitive than speakers in common use when 15W valve amplifiers were standard.

Also, they tend to have a drooping bass response, corrected by a bit of bass lift. That bass lift may well call for four or five times the power needed in the midrange, and at frequencies where the speaker impedance has risen to several times its mid-band value. Under these conditions it is quite possible that the system is electrically incapable of producing its rated power.

This is a simplification, of course. But it is a situation that could be



LEFT: Quad II valve power amplifier – rated at 15W on paper, but Richard Oliver wonders whether, on musical peaks, it might sound as loud as a 50W transistor amp

ABOVE RIGHT: Peter Walker of the Acoustical Manufacturing Company, which changed its name to Quad in 1983



confirmed by making the right measurements and interpreting them properly – there's no mystery about rough sound then.

And ironically, the old valve amplifier, given the advantages of a regulated supply or at least a low-impedance semiconductor supply, plus fixed bias instead of cathode self-bias (today costing next to nothing but which would have been hideously expensive when the valve amplifier was designed) would almost certainly be even better than it is, perhaps even meeting the arbitrary 0.1% distortion limit at two or three times its original rated power, which was, in any case, a minimum specification. Here is an obvious field to explore, both in measurement and for cheap simple improvement of old but good valve amps.

By the way, in their *Old Amps For New* article published in October

last, Richard Elen and George Chkiantz 'libel' the Quad amplifier, saying that it has only one feedback loop. I can see either two or three, depending on what you mean by 'feedback loop'.

I am sorry they disliked its sound, particularly as they praised Quad transistor amplifiers. I believe that Peter Walker of Quad has demonstrated that one can't hear the difference between his new amplifiers and his old ones.

Perhaps Elen and Chkiantz had a Quad in which someone had substituted for the original KT66 output valves. For some reason, practically every

other valve has a characteristic like a dog's hind leg when compared with the Osram KT series.

RALPH WEST ASKS...

This writer [Ralph West] has been following with great interest the various views and discussions concerning 'transistor sound', culminating in the plaintive cry 'what has gone wrong with amplifier evaluation?' in the October issue.

There are several causes, and these have varied somewhat over the course of time with better understanding of transistors, negative feedback and better semiconductor components.

In the early days it was often mainly crossover trouble. One could see it clearly with a good 'scope and hear it, too, especially at low volume levels. Measured percentage distortion did not become vanishingly small at very low levels as with good valve amplifiers, but tended to be almost constant or,

sometimes, actually to rise with reduction of signal level.

The harmonic structure of distortion is a vital factor, as D E L Shorter of BBC Research discovered years ago when evaluating (valve) amplifiers to handle studio signals. Listening tests were made to decide on the maximum permissible distortion level to be written into the specification, but he found that there was no correlation between listening and lab measurements unless the distortion was analysed into its harmonic components and each value multiplied by a factor proportional to the order of the harmonic. Only then could a meaningful figure be quoted.

Our ears are more sensitive to high order harmonics – or, put another way, kinks and sharp corners on waveforms that should be smooth and rounded are very noticeable. This is why any (good or bad) slightly overloaded transistor amp sounds worse than a slightly overloaded valve amplifier.

However, crossover and overloading are not the only things that can produce kinks. A point that no one seems to have raised over the years is noise – but not the noise we usually measure via an agreed filter (boosting the higher frequencies) to get good correlation between measurement and audibility. With modern components and circuits this is generally low enough to be inaudible, but it used to be audible with early transistors, which also suffered from additional low frequency noise.

The latter was not audible in itself unless gross, in which case one changed the transistor. However, it was added to the

LEFT: Review of the Quad II power amplifier from *HFN* July 1957. The Quad II appeared in 1953 and was first sold with the mono QC II control unit to form a mono amplifier system

EQUIPMENT REVIEWED

Quad II amplifier

The Quad II is the latest version. A double ended push-pull circuit is used in a push-pull arrangement, giving the maximum output power of 15W. The output is taken from the anode of the push-pull stage through a transformer. The transformer is a special design, having a primary impedance of 1000 ohms and a secondary impedance of 16 ohms. The transformer is a special design, having a primary impedance of 1000 ohms and a secondary impedance of 16 ohms. The transformer is a special design, having a primary impedance of 1000 ohms and a secondary impedance of 16 ohms.

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FROM THE VAULT

signal, arithmetically at least, but algebraically if there was distortion in that stage.

Thirteen years ago I was investigating one of the first reliable transistor amplifiers. Distortion and measured noise were comparable with an equivalent valve amplifier, and audible noise noticeably less. With a good clean signal, at a fairly low listening level, it had however a slight roughness or 'haze' compared with the valve amplifier sound.

A 1kHz pure signal was fed into the pick-up terminals and progressively reduced, increasing the oscilloscope gain to fill the screen. At full volume setting the trace was visibly perfect; at -20 dB ($1/10$) the same; but at -40 dB ($1/100$) the trace looked as though it had been drawn slowly by someone with a shaky hand. At -60 dB ($1/1000$) it was almost lost in noise. Now, the pick-up (RIAA) input enjoys a very large bass boost, so the LF noise was being shown up clearly.

This meant that all sounds coming through that amplifier were being shaken, as it were; that is, arriving a bit early or a bit late. Now, we know our hearing sense is very sensitive to discontinuities or unexpected changes in a sound pattern. After all, we wouldn't be here if our ancestors hadn't been similarly sensitive!

MISSING INGREDIENT

Could this be the missing ingredient in our objective measurements? I know transistors are nowadays very much quieter and it would be difficult to repeat that simple 13-year-old experiment. However, it is probably like an old car – when one cures the major rattle a lot of smaller ones can be clearly heard.

Looking more closely at the noise from active components, we know that valve noise, assuming space-charge control, *ie*, well below saturation, is almost pure white noise, and the noise voltage with a noise-free load is proportional to the square-root of the current. One did sometimes encounter flicker noise from oxide coated cathodes, but this was rare and only likely to be troublesome if attempting to run under saturated conditions.

Now our solid-state devices do not enjoy the cushioning effect of a valve space charger. One's mind



ABOVE: In 1959 Quad released the stereo 22 control unit (centre of picture) which then saw the Quad II power amp sold in pairs

turns to electrons playing musical chairs as they wriggle between the silicon or germanium atoms. Moreover, the 'chairs' move about sluggishly (with some time lag) with the changing current. Has anyone published a really detailed account of the character of transistor noise? Has the old LF component or something akin really disappeared from modern transistors and ICs?

Returning to the 'chairs moving about' thought, this means a disturbance to current flow that only occurs when the (signal) current changes. This surely is modulation noise, and completes the circle of thought. When comparing a reasonably good transistor amplifier with a similar valve system, both played at a very moderate level so that there is no question of overloading, even momentarily on peaks, one could describe the difference as like that between a good original recording and a good copy with background noise still inaudible.

Hearing the copy first, one might be tempted to say it couldn't be bettered. Then, on changing to the original recording, it is better, clearer, smoother, sweeter – less modulation noise in fact. This comparison is most noticeable in the quieter passages, *ie*, well below overload – in fact at levels giving very low levels of distortion both in the original and in the copy, thus eliminating conventional non-linear distortion as the culprit.

To these noises I would add some 50Hz (and 100Hz?) mains hum, though this applies equally of course to both amplifier types. Again, a trace of 50Hz signal on its own will be inaudible, but will add to the signal just like the random

noise. I had proof of this years ago when Dennis Turville, one of my old students, wrote the article in *Hi-Fi News* [see Aug '70] on 'hotting up' the Quad II valve amplifier. Output power was increased and smoothing improved by replacing the rectifier valve with silicon diodes and putting extra capacitance in the vacated space (plus a bias increase to the output valves as HT volts rose a bit). Although hum was completely inaudible beforehand, on replaying familiar discs and tapes I was struck by an improvement that could only be described as 'sweeter'.

NO SMOOTHING

Whilst valve amplifiers almost always had real HT smoothing with passive components – choke and capacitors – most transistor power supplies

either have no smoothing beyond the reservoir capacitor, or a stabilised supply. In the former there will be a large 100Hz

'When one cures the major rattle a lot of smaller ones can be heard'

ripple, and to deal with it one relies on the push-pull balance, decoupling of earlier stages, and negative feedback. There will also be a little 50Hz ripple due to slight differences between the rectifier diodes and, in the case of the biphas (two diodes only) circuit, differences between the two halves of the mains transformer secondary.

The 50Hz ripple component, though small, will only be attenuated half as much as the main 100Hz component. Valve amplifier HT supplies also had a trace of 50Hz ripple for the same reasons.

In the stabilised supply, all the current comes through a large power transistor, not chosen for its low-noise properties! The 'stable' voltage is decided by a zener diode, ☺

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FROM THE VAULT

another active component and therefore producing some noise. Fortunately, this reference voltage can be smoothed by shunting with a capacitor, but again its LF noise will be less reduced.

One last thought: if we use very small currents then noise should be even less – but will the effective noise really be less? If one got down, say, to less than ten electrons per second, one would surely hear each one arrive? Under more realistic conditions, though, would not a ‘starvation current’ lead to signal roughness something like that due to coarse-grained recording tape run at low tape speeds?

PETER WALKER COMMENTS

It seems to me that reviewers believe there is some very important amplifier parameter yet to be discovered which, when found, will enable them in one go to correlate what they hear with what they measure. With this belief firmly embedded in the mind, they can with absolute sincerity state that ‘all the usual measurements were good but nevertheless it sounded muddy in the brass’.

Of course, it is realised that the reviewer can only state as he finds and that he does not have the time nor is he necessarily required to investigate the cause. Nevertheless, when many of the subjective comments in comparative tests can subsequently be shown to be quite unrelated to the amplifier under test, then everyone must surely agree that there is room for improvement, to say the least.

I suggest a simple diagnostic approach. If a particular type of A/B test is properly carried out and if certain specific conditions are observed, then there will be no audible difference on changeover. Is that statement true or false?

Chris Rogers’ letter in the October ‘Positive Feedback’ section of *HFN* implies that he will be able to hear a difference, but that the conditions should be changed. But this is to change the original statement! No way to prove its validity. The conditions are indeed artificial,



but nevertheless important. If the original statement with all its conditions is true, then a number of logical deductions can be made and subsequent experiments will reveal areas for further investigation unencumbered by other variables. In this way progress is made.

If Mr Rogers cannot accept the conditions and the deductions to be drawn from them, then I hope that as an alternative he will agree to take part in a much more general subjective experiment which The Acoustical Manufacturing Company

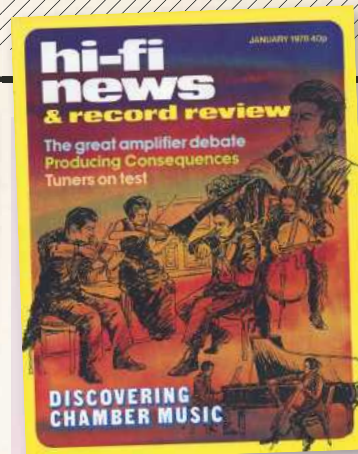
is preparing to carry out in March or April of this year. The test is based on Quad II, 303 and 405 power amplifiers. Since we have always

maintained that a good power amplifier does not degrade the programme, it must follow that the principal performance differences between these amplifiers is available power output.

Although there are other minor differences in favour of the later models, we do not expect these to be audible in normal use and we are prepared to subject this belief to a properly controlled experiment.

A varied music programme will be repeated several times via Quad II valve amplifiers, a 303 amplifier, and a 405 amplifier in random order. The procedure is designed to determine whether – and to what degree of confidence – the group can detect differences correlating with the power amplifier used. ☺

ABOVE: Pages from the Jan 1978 issue of *Hi-Fi News* in which Richard Oliver and Ralph West share their thoughts on transistor sound and Quad’s Peter Walker contributes to the Positive Feedback section of the magazine



Also in *HFN* this month in 1978

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Compact guide to a year’s articles, reviews and features.

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Some notes by Eli Sammett.

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Recent starred recordings re-examined for sound quality.

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Export-only power house model assessed by Gordon J King.

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Trevor Attewell listens to two rack-mountable graphic equalisers from the UK.

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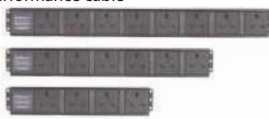
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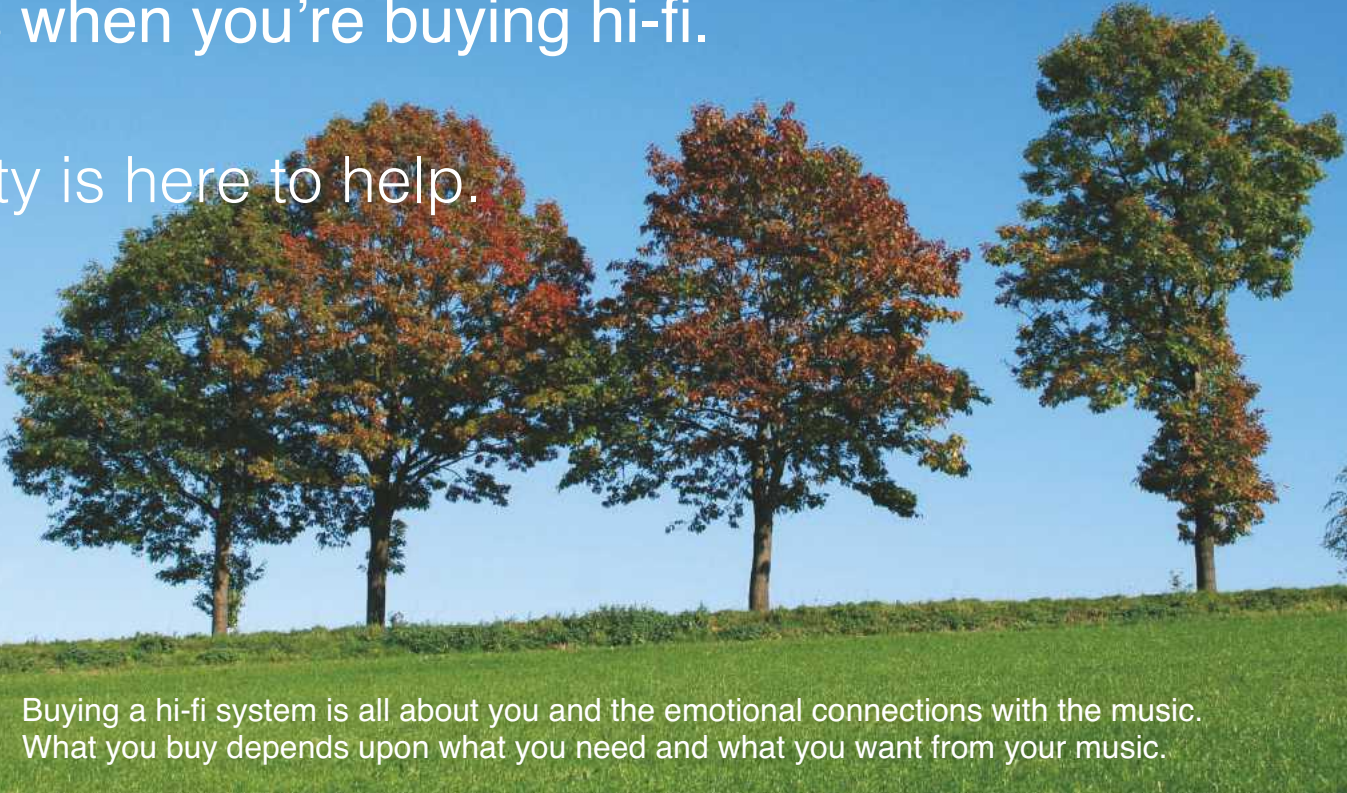
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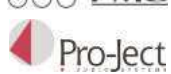
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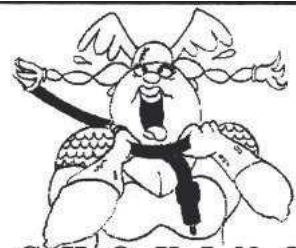
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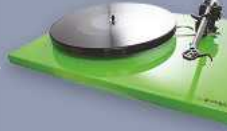
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OFF THE LEASH!

KEN KESSLER TELLS IT LIKE IT IS...

There's a trend against what once constituted traditional hi-fi. What's new, asks **Ken Kessler**?



What will it take for the world at large to covet 'real' hi-fi once more? What on earth do we have to do to restore the desirability of superior-sounding music playback in the home? Are the slackers, the Beavis & Butt-heads, the cretins with jeans below their butt-cheeks and untied Timberlands, the inebriated/laddered-tights ladettes that populate every high street on a Saturday night the sole market for music? Do we simply sit back and acknowledge that Beats is the new global standard?

OUT OF TOUCH

Since writing the last instalment of my monthly rant, Apple has gone ahead and paid US \$3b for Beats. It won't need my good wishes: I long ago learned that the lowest common denominator is a fact of life, and it's not necessarily the sole result of poor social engineering by the government of the day: *The Sun* will always outsell *The Times*. This acquisition is simply another indicator of how out of touch we are with the rest of the planet.

Conversely, the one company that should be shaking in its boots right now is Bose – surely the only target within Apple's and Beats' radar. Anything smaller simply doesn't matter. Expect Apple and Beats to come up with soundbars, iPod/iPad/iPhone docks,

'The one company that should be shaking in its boots right now is Bose'

streaming devices, radios and anything else that Bose offers.

Reaching 50 this year, Bose long ago commandeered the devotion of the speaker-buying public to a degree that no other brand has been able to match since AR's heyday in the 1960s. Not Sony, not JVC, not Panasonic – nobody. It has done this despite the exhortations of those who posit that the company's products are not the finest-sounding components on offer.

Whatever one feels about Bose, it has exercised commercial genius in a way that no maker of consumer electronics has done before. Until, that is, Dr Dre and his Beats first appeared. Yes, it was Monster (as in cable) that created this particular,

er, monster, only to be discarded after Dr Dre and his business partner Jimmy Iovine felt it expedient. Monster itself is now regrouping, while every week we hear of other companies coming up with their first-ever headphones

or headphone accessories, and for a good reason: industry pundits argue that the only serious growth area in consumer electronics is headphones and related accessories.

Beats owns the headphone market, with estimates ranging between a 40-60% share depending on your sources. It's huge, rivalled in its near-monopoly only by Montblanc with luxury pens, or Heinz with beans.

If you believe the pundits, you'll appreciate that it's not just number-crunching mega-brands which mitigate against the success of decent-sounding hardware: there is an unstoppable global trend toward *anything* smaller than what once constituted decent hi-fi. 'Er Indoors has won the war against hi-fi.

With delicious irony, only headphones themselves have gone up in size, the backlash against the contemptible earbuds that enabled the likes of Beats to flourish in the first place. One can only imagine what would have happened if Apple had issued decent headphones with the first iPods, in the way that Sony's first-ever Walkman had truly worthwhile cans as standard.

But then we are talking about the same company that prevents its customers from increasing the memory of their devices with affordable SD cards, or changing their own batteries when the internal ones start to die. For those who find fault with this aspect of Apple's behaviour toward its customers, Apple deserves Beats.

ALWAYS THE WAY

Perhaps I should say 'Sorry' for wasting your time because we all know that this is railing against a perpetual situation. It has always been thus. Look back on the history of high-end audio, and it has always been a pimple on the tush of mass market brands – whether they be local or international – that disparage the worth of sonic merit. For Beats, substitute 'Amstrad' to appreciate the 1970s, *ad nauseam*.

Sadly, any one of these giants has, in its day, been larger than the rest of the entire UK audio market, adding up every brand we call 'specialty audio'. Bose's 2013 revenue is estimated at US \$2.5b (£1.49b), or *ten* times what I have been told is the value of the entire US market for hi-fi separates. For the same year, Beats' revenue is believed to be US \$1.5b (£895m). The only players we regard as 'high-end', in this league or approaching it, are B&W and multi-brand groups like Voxx (which owns Klipsch), Harman International and Fine Sounds.

Beats+Apple? The biggest 'hi-fi' brand... ever. This is hi-fi's future. Repeat after me: *Oy Vey Iz Mir.* ☺

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