PCAS

50 YEARS OF HISTORY

HALF A CENTURY OF HUMAN AND INDUSTRIAL ADVENTURE

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EDITORIAL

Christian Moretti
Chairman

Vincent Touraille
Chief Executive Officer

The human adventure behind PCAS has been built around ideas and people. This book sets out the key dates in the company's history.

In the space of 50 years, PCAS has gone from being a start-up to an intermediate-sized company. Having started out with just a few employees, the group now has a workforce of around 1,000 employees. In 2012, the export market represents 70% of sales, 7% of which is invested in R&D, which employs some 10% of the total workforce.

PCAS operates and will continue to operate in two major fields: specialty chemicals and pharmaceutical products. In these two sectors, PCAS operates as a preferred subcontractor working on behalf of major international groups and a manufacturer of proprietary products. In the future, the latter activity will become a priority sector, of equal importance to subcontracting.

But the primary objective in the coming years will be to improve the company's economic performance. By doing so PCAS will be able to invest heavily in industrial facilities and innovation. In order to achieve this, the company needs to optimize its industrial organization, R&D, marketing and sales.

Our aim is to become the European leader in fine chemicals. We want to be a favored partner of major European, American and Asian groups and we will develop our own products throughout the world.

Our objective is also to be recognised as a reliable, effective, responsive and creative partner. To achieve this, our strength will be – as it has always been – the commitment of motivated teams driven by a solid corporate spirit.

Our development will be supported by three key functions: manufacturing, R&D and sales marketing. These three functions have to work in complete harmony, effectively and promptly.

The determination of some and the pugnacity of others have helped create a world leader in the fine chemicals sector. A company with history and a strong corporate spirit.

Our ambition is to perform at least as well as the men and women before us did.

We will thus be able to become a major European group in the next ten years, i.e. exceed a turnover of one billion euros and employ some 5,000 people.

Christian Moretti
Chairman

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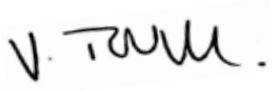
Chief Executive Officer



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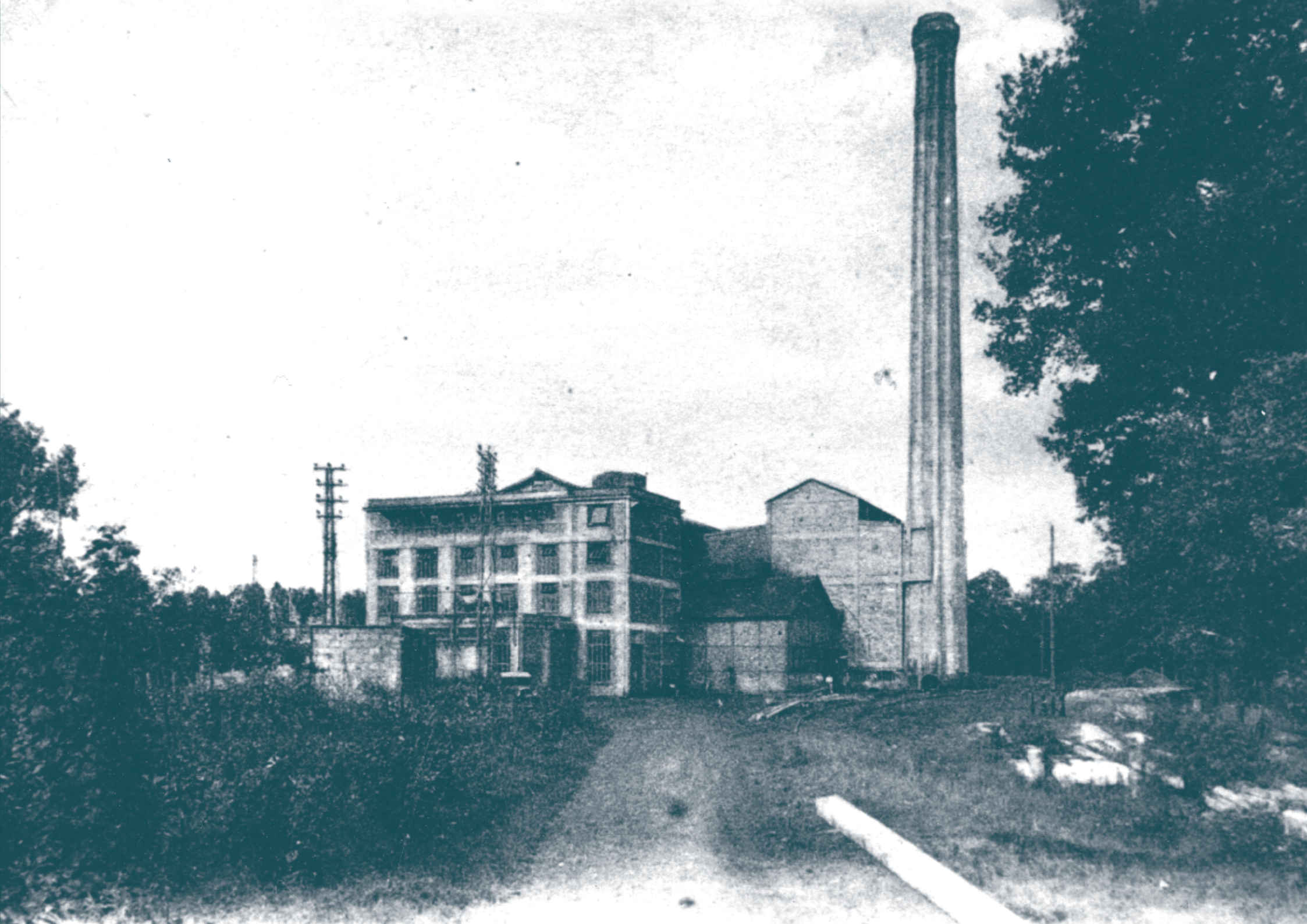
The former power plant at Couterne, in the 1950s.



THE **CREATION** OF **PCAS**

The founders

PCAS (*Produits chimiques et auxiliaires de synthèse*, or "Synthetic chemicals and additives") was created by two chemical engineers, Henri Barbier and Félix Le Pors, on February 13th, 1962. Henri Barbier graduated from the "Arts et Métiers" industrial art and design institute as well as the French Oil Institute's engineering school, the IFP School, while Félix Le Pors was an organic chemist. The two men met when they were working in the oil industry and became close friends.

PCAS was not the first company they had set up. At the beginning of the 1960s, the two entrepreneurs already owned and managed a chemical manufacturing company: SPCA (*Société des produits chimiques auxiliaires* or "Chemical additives company"). The head office was located at 61 rue du Dessous des Berges, in the 13th *arrondissement* of Paris. Three people founded SPCA: Le Pors, Barbier and Ruelleux, who Henri Barbier met while studying at the IFP School. The SPCA plant was located in Villeneuve-Saint-Georges and exclusively produced formulations for the motor industry and the military, principally for aviation.

However, the founders of SPCA had divergent views with respect to the strategic direction their company should be taking. This led to the creation of PCAS. Unlike their partner, Henri Barbier and Félix Le Pors wanted to move into synthetic chemicals and the pharmaceutical sector. So, in 1962, SPCA was split into two: SPCA continued to make products for the military and retained the corresponding accreditations, whereas PCAS took over some of the formulation activities, such as additives for the motor industry. The name PCAS was close enough to the previous company name to enable it to retain several accreditations. In addition to formulation products – and in accordance with what its founders had wanted –, PCAS developed new activities: synthesis and organic chemistry for the pharmaceutical sector. As its name implies, PCAS is made up of two principal divisions: Additives and Synthesis.

This strategic change of direction led to a radical reorganization of production. The Villeneuve-Saint-Georges plant remained in the hands of SPCA, while PCAS inherited the premises in Paris. But the separation was only made possible thanks to the acquisition of a new production site for PCAS: the Couterne plant.

Jean-Pierre Stéphan, Chairman of PCAS (1987-2004), speech of September 18th, 1992

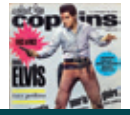
" Mr Le Pors was a kind, intelligent and modest man. He was kind because he wanted to make people happy. He enjoyed making them laugh, as though he wanted everyone to love life as much as he did. But, beneath his physical and moral stature was a man of immense perceptiveness, full of ideas and insight. He was the strategist behind the creation and growth of PCAS. But he was far too modest to take credit for his good ideas. Instead he sang the praises of his colleagues and his associate. But an idea, irrespective of how fantastic it may be, only exists if you make it a reality and that was the role Mr Barbier had assigned himself. And this just serves to illustrate the extent to which the two founders of PCAS complemented one another perfectly. It was Mr Barbier who, through good times and bad, slowly but surely nurtured the growth of our company with incredible tenacity and an unrivalled work ethic, He was driven by a desire to see the company grow and he had an unshakable conviction he would succeed. He was the person who, during the first serious crisis to strike PCAS in 1972, managed to maintain the spirit and impose the measures required to save the company and start again. "

Félix Le Pors, founder of PCAS.

Henri Barbier, founder of PCAS.

GENERAL **HISTORY** >

• **March 18th, 1962**
Signing of the Evian Accords bringing an end to the Algerian war



• **June 1962**
The launch of the Salut les copains radio show, featuring yé-yé music

• **July 3rd, 1962**
Proclamation of Algerian independence

• **July 30th, 1962**
Introduction of the Common Agricultural Policy (CAP)

• **October 28th, 1962**
Adoption, by referendum, of direct universal suffrage for the French presidential elections

1962

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• **February 13th, 1962**
Creation of PCAS

• **June 14th, 1962**
Creation of the European Space Research Organization

Chimney of the former power plant

Until 1985, the year of its demolition, an immense reinforced concrete chimney towered 52 metres above the plant. Built in around 1924 or 1925, this chimney with ten sides, an external diameter at its base of 5.1 m and a part-brick internal wall, was built to evacuate smoke from the former power plant. The old folks still remembers the kestrels and swallows that nested there every year. In 1972, once a Seum boiler had been installed, a network of pipes was fitted to the chimney to evacuate the plant fumes. In 1985, PCAS decided to demolish the chimney for safety reasons. The dismantling operation took three months.

Chimney of the former power plant prior to demolition.

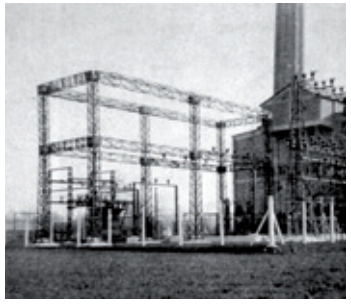
Dismantling of the chimney, in 1985.

The first plant

The two founders set up their manufacturing units in a former power plant in Couterne, in the Orne area of North-Western France. It had been bought by SPCA in 1959. Founded in 1912, the facility with a capacity of 1 200 kW was operated first of all by the *Société de distribution de l'énergie électrique de l'Ouest* from 1930, before being nationalised and handed over to EDF (the French state-owned electricity company) in 1946. Closed permanently at the start of the 1950s, the plant was falling into a state of disrepair when Félix Le Pors took an interest at the end of the 1950s. The choice of the location was partly due to chance: although he was looking for a site not too far from Paris, Félix Le Pors discovered that there was a former power plant for sale in Couterne. He knew the village well because he always stopped to have lunch there when he travelled back to his native Brittany.

Besides the reasonable asking price due to the condition of the buildings, the site offered a number of advantages. Since it was in a rural location, the plant was not affected by the environmental concerns facing urban chemical sites. There was plenty of water to provide an electricity supply: the Vée, a tributary of the river Mayenne, flows behind the plant. And lastly, there was a railway line, first used to bring coal into the former power plant. The rails ran right up to the immense entrance to the plant's main building: it was from here that the coal was transferred quickly to the furnaces. And so it was that the 17 km of track that ran from Pré-en-Pail, operated by the SNCF (French state-run railway company) up until 1987, was used by PCAS for almost 25 years.

Two other edifices bear witness to the plant's origins: the water mill on the river Vée, which produced electricity before being converted into a meeting room by the plant's first managers, and the large chimney that dominates the plant's main building.

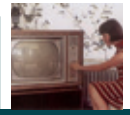


Views of the site of the former power plant at Couterne, prior to its purchase by PCAS.

• June 15th, 1963
The first hypermarket opens in France

• November 18th, 1963
Launch of the touch tone telephone

• December 14th, 1963
Inauguration of the *Maison de la radio* radio center in Paris



• April 18th, 1964
The second television channel in France starts broadcasting

1963

• February 14th, 1963
Creation of the French regional development organization (DATAR)

• March 1st, 1963
French miners' strike

• June 4th, 1963
Pégase nuclear reactor brought into service at the Cadarache research center in the Rhone valley

• June 14th, 1963
Chinon nuclear power station linked up to the French national electricity grid

1964

• July 23rd, 1964
Acquisition of Bull, the leading French IT company, by General Electric

In 1959, four men were recruited to return the site to working order. This was tough work and they were paid a salary of 41,036 francs, the equivalent of 650 euros in 2012. The company got off to a modest start. In January 1962, when PCAS first opened for business, there were just 9 employees working at the Couterne plant. At the time, it consisted of only a handful of workshops. The main task of the small management team was to increase the plant's internal growth. A year later, in January 1963, the first concrete results were in evidence: the plant had grown and now boasted 21 employees. This marked the beginning of an exciting period for PCAS: the managers and employees felt like pioneers and were conscious of the fact they were building something new.

Louis Leprince, production worker, Couterne, joined the group in November 1959

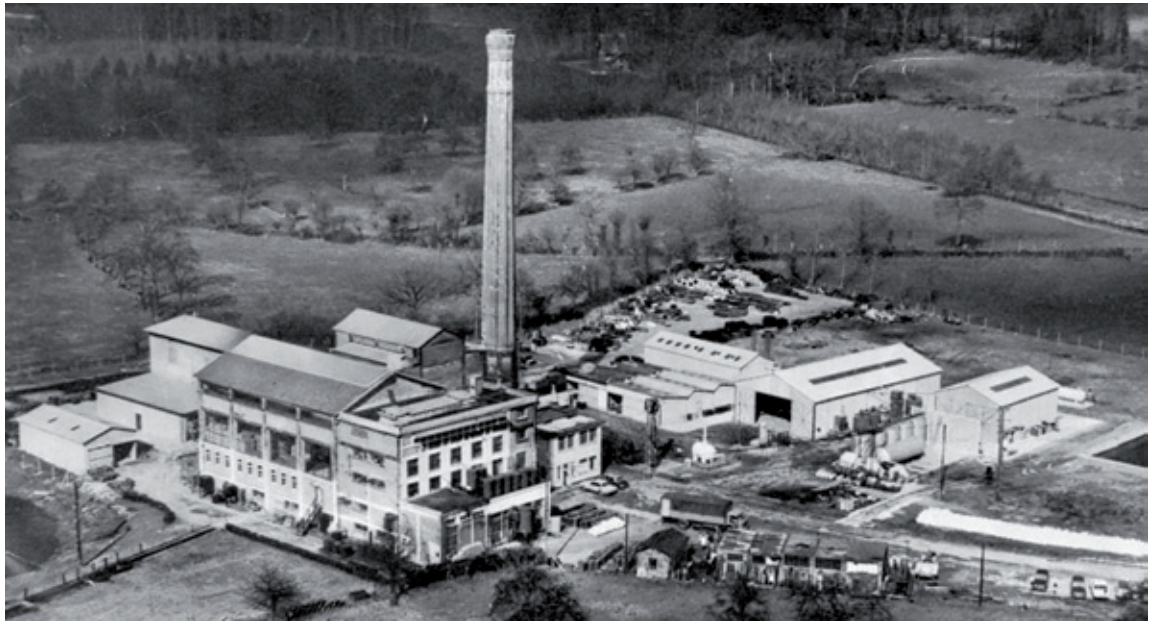
" In 1959, the site was abandoned, lying in ruins and overgrown with vegetation. It was the site of a former power plant and the place was littered with insulators that had been knocked over by children who came to play there It took an entire year to clean it all up and restore the buildings to working order. During the first year, we began to assemble the first machines. There were four of us back then, installing the first chemical reactors and other equipment as it arrived. Then there was the outside maintenance and cement: we turned our hand to everything. "

HEAD OFFICE: FROM PARIS TO LONGJUMEAU

The early days in Paris

In 1962, PCAS was the epitome of oral tradition. The management did not adopt any kind of long-term strategic planning and its management principles were largely paternalistic in nature: the benevolent omnipresence of the two owners, marked by twice-monthly visits to the Couterne plant and a high level of proximity with employees. The salary and benefits package the company's employees enjoyed was extremely generous for the time and included top-up health insurance. There were frequent parties organised for employees and management, etc.

The building in Paris that housed the head office was dilapidated and destined for demolition. Some fifteen employees were based there. Approaching from the rue du Dessous des Berges,



From top to bottom: Main building of the abandoned power plant (seen from the outside). Inside view of the main building of the power plant. The Couterne plant in 1974.

GENERAL **HISTORY** >

• July 13th,1965
Women no longer require the permission of their husbands to work and open a bank account

• July 16th, 1965
Opening of the Mont-Blanc Tunnel

• November 26th, 1965
The first French satellite is launched into space

• December 19th, 1965
General de Gaulle is elected President of France by universal suffrage

1965

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• October 23rd, 1964
First serious accident at the Couterne plant

• December 31st, 1964
Fall in French fertility rate marking the end of the baby-boom

• July 12th, 1965
Introduction of favourable tax arrangements for companies involved in merger operations

• 1965
Acquisition of CIF (*Colloïdes industriels français*)

One of the very first production workshops in the B01 building in the 1960s.
The "Sypa" workshop at the Couterne plant at the start of the 1970s.

visitors first of all entered a building containing the Administrative Department and the founders' offices. They then crossed a small inner courtyard to get to the laboratories. On the left were the analysis and additives laboratories, where most of the work carried out was dedicated to formulation. The equipment at the time was far from reliable: salt spray tests on anti-corrosive products intended for the army were regularly abandoned because the machines had broken down. To the right could be found the control and synthetic product laboratories. The equipment here was equally rudimentary: no hood, a small glass flask with a capacity of 50 litres and a stainless steel dish.

Two years after the company was created, PCAS posted a profit for the first time, with total turnover of five million francs. The company's trading account for the 1964 financial year highlighted that additives represented a little over two-thirds of total sales, synthesis a quarter of total sales. The analysis laboratory's activities accounted for 6.5% of income. These healthy results gave the company added impetus and it was able to consolidate its positions and develop. On the back of this renewed confidence, George-André Thiault was recruited to Synthesis in January 1965, followed by Jean-Pierre Stéphan to Additives in October 1967: it was at this time that the personalities of the company's two departments were moulded.

The heads of department, who worked extraordinarily hard for the company, had a broad range of commercial responsibilities and enjoyed significant autonomy. New markets were often conquered as a result of personal contacts patiently nurtured between PCAS managers and customers. Instead of formal contracts, business was based on long-standing relationships of trust between partners. Customers were loyal to the fledgeling company and the ones that had to stop producing a given product agreed to pull out of the company gradually, over a period of time.

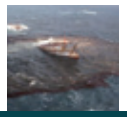
Françoise Teisset, Chemical Engineer, Paris

" It was a real pleasure working with the founders, Felix Le Pors and Henri Barbier. If you needed to speak to the boss, he was a very approachable man The bosses could often be seen on the shop floor and frequently came to see what we were up to. And Félix Le Pors was never slow to suggest discussing things over a quick drink. They were very close to their staff. We weren't on first name terms at the time as it wasn't the done thing. But mutual respect, enjoyment of the job and friendship united all of us working there back then. I didn't know anyone who wasn't happy to come to work or who didn't give their very best: everyone was cheerful and good-humoured. We laughed a lot in the offices but we worked hard and always went the extra mile. It was simple really: we had a job to do and we were all there to do it well. From the big boss to the storeman, we were all the same. Just one big happy family. "

Henri Barbier (middle), founder of PCAS, with close colleagues, at PCAS' 20th anniversary celebrations.

• March 7th, 1966
France leaves NATO

• July 2nd, 1966
First nuclear test in Polynesia



• March 18th, 1967
Torrey Canyon shipwreck off the Channel coast

• July 12th, 1967
Creation of the *Agence nationale pour l'emploi* (the French ANPE job center network)

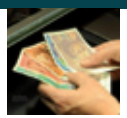
1966

• January 1st, 1966
Creation of ERAP (the French oil research and activity company)

• January 4th, 1966
Explosion at the Feyzin refinery: France's first industrial catastrophe

• May 1966
Merger of Ugine and Kuhlmann

1967



• January 10th, 1967
The "Debré reforms" in the banking sector allow branches to be opened all over the country

Transfer to Longjumeau

At the end of the 1960s, the premises in Paris had become too cramped and the laboratories were in need of modernization. Management decided on the Vigne aux Loups industrial zone, close to Orly airport, as the location of new premises. They wanted to move closer to their numerous customers - many from the oil industry - just outside Paris. And the company used its own lorry fleet - which only disappeared with the widespread development of parcel services in the 1980s – to deliver its products.

The head office was transferred to Longjumeau in 1971. It could finally boast modern research laboratories. And with the arrival of a new generation of managers, such as George-André Thiault, André Galigné and Yves Le Guen, R&D activities began to expand. A structured archive system was created and the chemists began to keep track of work carried out in the laboratory. It was also at this time that a product testing and development protocol was introduced. Generally speaking, the marketing and sales manager launched a project having identified a customer need or growth market. Next, once familiar with the customer's specifications, the manager of the research laboratory concerned would define the problems to be overcome. The first task then was to conduct tests in the central laboratories. The second phase, known as the consolidation phase, took place on the production sites. The aim of this phase was to verify the feasibility of the manufacturing process and adapt it to the equipment available in the workshop. Researchers moved between sites and tested formulas and synthesis reactions on small units in the pilot laboratory, working with the laboratory's managers and production personnel. Once this phase had been validated, the industrial production phase could begin in the workshop or on the customer's production lines.

The Longjumeau site.
Longumeau research laboratories.

Testing station on
Île Vierge.

Jean-Pierre Kerhervé,
Manager of the R&D
laboratory for additives,
Longjumeau

" PCAS had a small testing station at the foot of the lighthouse on ile Vierge, off the coast of Brittany. These experiments using test tubes exposed to sea spray gave us a better understanding of how products performed in real conditions: some products held up very well in accelerated salt spray tests and tests using wet chambers but performed badly in real conditions and hence could not be brought to market.

PCAS signed a contract with representatives of the French lighthouse department :a slap-up meal each year in payment! But sometimes we had to work in extremely difficult conditions, especially when picking up or delivering plates. I remember one pick-up, for example, which took place in thick fog. I was sitting at the front of a small five-metre long Breton dinghy with my feet sticking out over the side just in case we came up against another boat because visibility was so bad that we could only see three metres ahead. And then once during a storm, I even went out with Polmar plan teams (French sea pollution response) on their dinghy.

Jean Malgorn, who retired in 2005, was the last keeper we worked with. He helped us a lot. For example, he would hold on to the plates in case there was a gust of wind. In fact he regularly sent me photos of the panels: I would go out there to pick them up if their condition had deteriorated. "

SYNTHESIS AND ADDITIVES

Pharmaceutical synthesis

Prior to the arrival of George-André Thiault, the Synthesis Department was still in its infancy and its production resources were more suited to blending operations than to synthesis. Among the basic products manufactured at the start of the 1960s were bismuth nitrate, an antacid product used to treat stomach ulcers, and N-chlorosuccinimide, used for chlorination. But in 1978, the French bismuth nitrate market, which represented 800 tonnes per year in 1974, disappeared when the government banned bismuth salts following cases of serious poisoning. And N-chlorosuccinimide, although it was one of PCAS' very first synthetic products, was dangerous: it was the product that caused the company's first serious accident.

The first objective of the new manager therefore was to develop PCAS' product offer with the fine pharmaceuticals industry, made up at the time of national players such as La Roche-Navarron, Innothéra and Roussel-Uclaf. It was the manufacture of Insadol, a drug used in the supportive treatment of periodontal disease, on behalf of La Roche-Navarron, that changed everything. Thanks to it, PCAS finally had a leading pharmaceutical player amongst its customers. LN 107 and LN 1214, two synthetic products, made up the trilogy of products developed for La Roche-Navarron and consolidated ties between the two companies.

From 1967, synthesis research took its first giant step forward with the development of Fenpentadiol, an antidepressant manufactured from thiophene derivatives. Using these derivatives, particularly thenoic acid and Thenoyl chloride, PCAS developed its portfolio of raw materials and consolidated its positions in the pharmaceutical chemicals sector. At the same time, the company was acquiring new customers and new drugs such as Atrican (Innothéra), an anti-parasitic product used in the treatment of the STD, trichomoniasis, and Surgam (Roussel-Uclaf), a Bromo-2-Thiophene-based anti-inflammatory drug.

The challenge now was to get Roussel on board. And it was Piror, an antifungal product destined for the pharmaceutical company's "agro" division that made this possible. The product, made from nitromethane and bromine, was not without risk but the benefits for PCAS were numerous. That was because, as well as the large tonnages manufactured, the Couterne plant was acquiring new automated

• May 1968
"under the paving stones, the beach"

• April 28th, 1969
Resignation of General de Gaulle

• June 15th, 1969
Georges Pompidou elected President of France

• July 21st, 1969
Neil Armstrong sets foot on the moon

• October 1st, 1969
Concorde breaks the sound barrier

1969

• 1968
Creation of a perfumery product production unit at Couterne

• July 11th, 1969
Rhône-Poulenc buys Péchiney-Saint-Gobain (PSG) and Progil

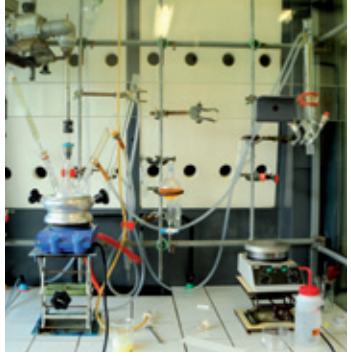
• August 8th, 1969
Devaluation of the French Franc

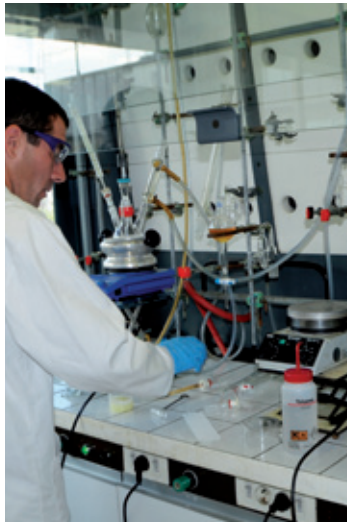
production facilities. The method was a winner and PCAS took full advantage of its new production operations to develop its expertise. Cedietil and its organolithium compounds (Innothéra) led to new cold installations, while Mercaptopurinol (Gremy Longuet) necessitated the installation of appliances to trap the unpleasant fumes given off during the manufacturing process.

The early 1970s saw the arrival of several flagship products. These included Ondogyne, which consolidated the company's ties with Roussel-Uclaf despite its nasty smell, Aotal (Meram), a drug used in alcohol withdrawal, which proved extremely profitable for PCAS, and Lipanthyl. And in 1970, it was thanks to a strategy of external growth that PCAS reinforced its synthesis activities. The purchase of *Synthèse et Catalyse* (meaning "Synthesis and Catalysis"), a company located in the Paris region, brought in new products, notably pyruvic acid, a synthesis intermediate that the company, based in Antony, was already producing in large quantities.

Additives

The principal activity of the Additives Department was the manufacture of protective products for the car industry and industrial detergents for the SNCF (French state-run railway company). In the mid-1960s, the acquisition of CIF (*Colloïdes industriels français* or "French industrial colloids") enabled PCAS to diversify its offer. In its Malakoff production units, CIF manufactured peel-off varnishes for aluminium, hand pastes and detergents and products for non-destructive testing. The Malakoff plant was sold, CIF's production operations were transferred to the Couterne plant and the analysis laboratory was transferred to Longjumeau.





Synthesis research laboratory at Longjumeau.

George-André Thiault, Head of the Synthesis Department, Longjumeau

"From 1972 to 1973, we produced Lipanthyl for the pharmaceutical company Fournier in Dijon, since it did not have its own production facilities. The active ingredient of this drug, which is used to treat high cholesterol, is fenofibrate. The drug proved to be highly successful commercially and we ultimately manufactured five tonnes of it every month. This was a huge boost for PCAS and it lasted 17 years! The development of production automation also enabled PCAS to specialise in Friedel-Crafts reactions, used in the first stage of the manufacturing process for fenofibrate. And, every year, PCAS bought and used up to 350 tons of aluminum chloride, the catalyst required in this reaction."

Organic synthesis apparatus.

GENERAL **HISTORY** >

• January 2nd, 1970
Introduction of the "Smic" (French legislation of minimum wages)

• April 10th, 1970
End of the pop years with the break up of the Beatles

• July 9th, 1970
Military service is reduced to one year

• November 9th, 1970
Death of General de Gaulle

• January 7th, 1971
Creation of the first Ministry for the Protection of nature and the environment

1970

1971

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• 1970
Creation of the photochemicals production unit at Couterne

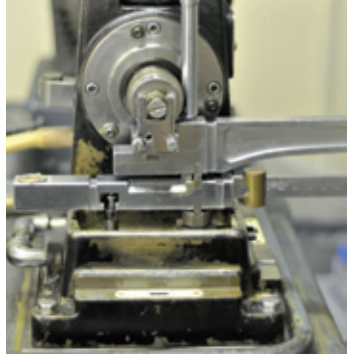
• January 8th, 1970
Creation of a safety team at Couterne

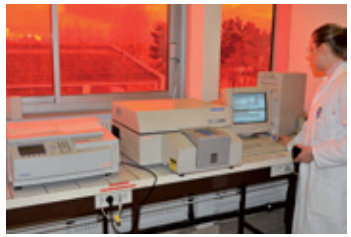
• July 1970
Félix Le Pors celebrates his 50th birthday

• July 1970
Organolithium synthesis begins at Couterne

• End of 1970
Creation of the Sypa production unit, Couterne

• January 1971
Henri Barbier's birthday celebrations





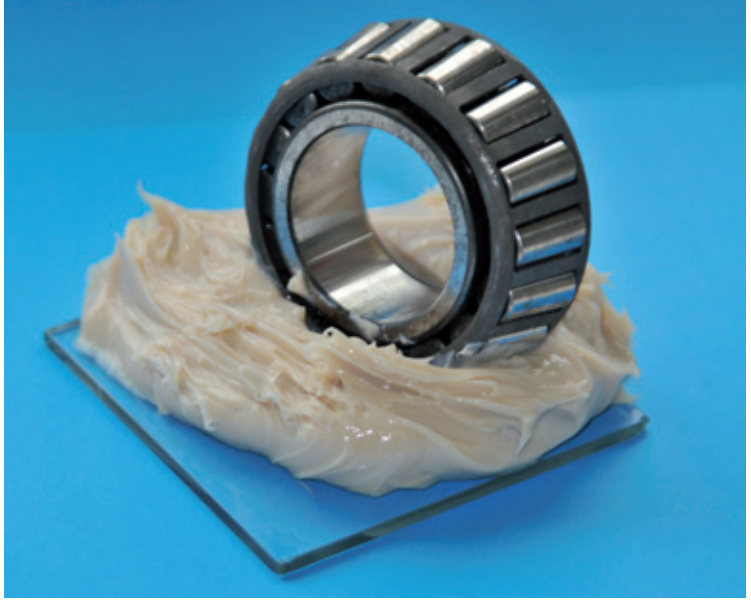
Additives research laboratory at Longjumeau.

At the start of the 1970s, oil solvent-based anti-corrosive products were enjoying a period of growth. These products were used to protect the aluminium paint on cars during storage once they had left the production line. Some of PCAS' main customers included Peugeot (Sochaux), Simca (Poissy) and Chrysler (Poissy). The PCAS product portfolio continued to grow, thanks to the work of its researchers and emerging innovations, particularly in LCE products used to protect car parts during shipping and in products used to protect hollow parts for the car industry (Blackson).

At around the same time, PCAS was turning its attentions to a new market: car door trimming products, particularly for Peugeot vehicles. These varnishes, produced using vinyl chloroacetate enabled door trims to be fixed on using an electric current. Couterne produced a dozen or so tonnes of the product every month.

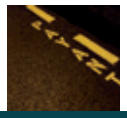
And lastly, the production of industrial detergents was being further consolidated, with increasingly effective formulas. One such product was PB2, an oxalic acid-based cleaning product used to remove rust particles from paint on the outside of railway carriages. The Couterne workshops manufactured almost 100 tons of it per month for the SNCF.

The workshop manufacturing brick greases and sulphurised products also saw its output increasing. Sulphurized spermaceti oil was also proving to be a tremendous success with customers in the oil industry, who used it to maintain the mechanical bearings of the grease boxes of their machines. In the mid-1970s, PCAS churned out around one hundred tonnes of the product every month for customers such as Esso and Mobil.



Claude Berson, Additives Workshop Manager, Couterne

"Towards the end of the 1960s, PCAS produced '*P. blanc*', a vinyl acetochloride-based varnish intended for covering Mururoa atoll during atomic testing. One day, after staff working at the Couterne plant had been working day and night to get the product manufactured and delivered on time, Henri Barbier took a phone call from Polynesia telling him the product was 'unusable'. Cue total panic!
But the misunderstanding was soon sorted out: the drums were locked and the customer didn't have the key. Once the key had been sent over by plane and the drums opened, it turned out that the product was perfect."



• July 1st, 1971
Introduction of paid parking

• July 12th, 1971
Work begins to dismantle the *Les Halles* central market in Paris

• November 6th, 1971
Demonstration in Millau against the project to expand the Larzac military camp

• 1972
The first cash dispensers are installed in France

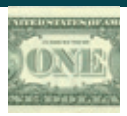
• 1972
Anne Chopinet comes first in Ecole Polytechnique, a competitive exam. Women had only been admitted to the prestigious school for the first time that year

• March 1972
First email sent

1972

• 1971
Acquisition of *Synthèse et Catalyse*

• Mid - 1971
Installation of the oil ultra-filtration unit at Couterne



• August 15th, 1971
End of the gold standard system by Richard Nixon

• September 1971
Head office transferred to Longjumeau

• January 1st, 1972
Creation of Rhône-Progil

COUTERNE: THE SITE AND WORKING CONDITIONS

In 1962, the plant was far smaller than it is now, in 2012. Back then, it comprised just a single building (B01), the main hall of the former power plant. The B01 building housed two production workshops: Synthesis on the ground floor and Additives on the upper level. These were the days of the 48-hour working week. Employees worked eight-hour shifts, but also did a lot of overtime. Gradually, some of additives workshops began to introduce two 8-hour shifts. Shift workers were rostered to work six shifts per week and the last team finished its shift at 6 a.m. on Sunday morning. The day shift worked from 7.30 a.m. to midday and from 1.30 p.m. to 6.30 p.m. There was something of a daily routine at the plant: a half-hour snack break at 9 o'clock in the morning, a long lunch break and, for some employees, work on the farm at the end of the working day at the plant. This was because PCAS recruited its staff locally and many of the those recruited were smallholders or farm labourers too.

A number of traditions were always followed at PCAS, depending on the season. A tree was put up every Christmas. In the early days it was placed in the Director's office, where the first handful of employees gathered. Later on it was moved into another office, in what is now the smoking room. Once the workforce had grown too big, a marquee was erected in the plant car park or everyone got together in Couterne or Bagnoles sur Orne. The birthdays of both the founder and the company itself were celebrated with great pomp: a banquet in Sauvagère with football match – and injuries to boot! – to celebrate the 18th anniversary of PCAS, feasts to mark the company's 20th and 30th anniversaries, etc...

Further buildings were gradually added to house production units but the equipment and machinery remained rudimentary. In 1969, Insadol was manufactured in the B01 building, the only equipment being a few distillation flasks and three ventilated oven recesses. The only production workshop was the HLM, easily recognisable due to its three enamel reactors and its minimalist architecture: a metallic structure built using the old EDF pylons and a roof. It was beneath its "onduclair" translucent corrugated roof that oxyester was manufactured, one of the company's major products at the time. The passageway leading from the B01 building to the HLM workshop was no longer tarred and filled with mud in the winter.

Michel Lesplingard, Synthesis Workshop Manager, Couterne

" In 1962, we only had two or three appliances protected from the elements in sheds. We were as good as working outdoors in the middle of winter. There was no heating and conditions were pretty harsh. The office was on the ground floor and the only furniture in it was a chair and a cardboard barrel. When it was really cold, we used a litre of ethyl alcohol. We also went into the village to get rum to make ourselves hot toddies. In the spring, we planted the garden plots inherited from the days of the old EDF power plant. The father of one of our colleagues, who had been a gardener in Paris when he was young, sometimes came to give us a hand. I would spend lunchtimes watering the garden, looking after the poultry we had on site or fishing for pike in the river Vée. Even the Site Director had a goat that he let graze alongside the railway line to keep it tidy. "

Production workers busy in the organolithium compounds workshop, July 1970.

GENERAL **HISTORY** >

• April 23rd, 1972
The United Kingdom, Ireland, Denmark and Norway join the EEC

• December 31st, 1972
Launch of the third French TV channel FR3

• March 2nd, 1973
Signing of the Treaty of Paris bringing an end to the war in Vietnam

1973

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• January 1972
Redundancies as a result of bleak economic conditions

• April 1st, 1972
Inauguration of the new head office in Longjumeau

• 1972
Heavy fuel oil-fired boiler (SEUM) brought into service at Couterne

• June 18th, 1973
Lip factory brought back into production by employees

• Summer 1973
Commissioning of a physicochemical treatment plant in Couterne

In 1969, the Additives Department comprised two main workshops: the “oils” workshop, which was located in the western part of the B01 building, and the “greases” workshop. In the “oils” workshop, the product was collected in drums and washed. The drums, rolled by hand, were stored in the hall of the B01 building, where they were painted and marked prior to dispatch. The “greases” workshop produced soaps, used as greases, and obtained via the saponification of animal fats. The grease was collected in a vat and cooled, before being sent to the wire cutting machine and wrapped by hand in paper. The grease blocks were then packaged up into boxes.

In addition to the Glatt and Aeromatic machines in the Additives workshops, the B01 building contained the modest control and pilot laboratories, which shared three employees. The equipment in the pilot lab, on the first floor, was rudimentary: two or three workbenches, a few glass flasks with a capacity of 10, 20 and 50 litres the “hedge” stirrer gathered from the bushes around the plant. These laboratories were later transferred to the B22 building. The cloakrooms were on the ground floor of the B01 building. Showers were only put in at Easter 1969. At the end of the 1960s, drums and fields occupied the area that would later be occupied by buildings B08, B40, B51 and B20. A communal path crossed this area that was still wasteland.

Working methods remained somewhat traditional. For example, bismuth nitrate, metal imported from South America, arrived at the Couterne plant in the form of metal ingots that had to be transformed into powder. Workers broke up the ingots with chisels, before attacking them with nitric acid in drums.

The plant had neither brine circuit nor cooling unit. For some hydrolyses, PCAS employees made the ice they would need for cooling processes themselves: pounded in an apple crusher and loaded by hand in the basement of the old building, it was mixed with salt in order to reach temperatures between -30°C and -40°C.

Insadol production also posed its own problems. API was extracted from the unsaponifiable fraction of maize oil. Since tons of oil were required to extract 1% of this residual fraction that is insoluble in water, every year, PCAS produced between 30 and 40 tons of unrefined solid matter, for which the company had no immediate market outlets. Bags of soap, stored in rows, began to accumulate along the plant railway line and stayed there until, one day, PCAS management, on the look-out for openings, came up with the idea of approaching the soap plants in and around Paris.

Handling operations in the B01 building in the 1960s.
Compressor in the organolithium compounds workshop.

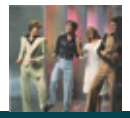
• August 25th, 1973
Larzac military camp march

• December 23rd, 1973
Start of the first oil crisis

• 1974
Invention of the smart card

• April 2nd, 1974
Death of Georges Pompidou

• May 19th, 1974
Valéry Giscard d’Estaing elected French President



• June 24th, 1974
The age of majority is reduced from 21 to 18

• November 30th, 1974
Discovery of Lucy, a 3.2 million-year old female skeleton

1974

• 1973
Closure of the Synthesis and Catalysis unit in Antony

• September 10th, 1973
Creation of Sanofi, a subsidiary of Elf Aquitaine, in the health sector

• June 19th, 1974
French Franc leaves the European Currency Snake

• June 26th, 1974
Citroën taken over by Peugeot

COUTERNE: SITE SAFETY AND DEVELOPMENT

In 1969, the plant had neither manufacturing water supplies nor pump: buckets were the order of the day. If the production workshops needed distilled water, employees sent up drums containing 200 litres of water using hoists. In the absence of a water treatment station, each workshop collected its effluent in a tank which then had to be emptied into the "swimming pool". And since there was no oven, one melts in hot water tanks or over gas burners where the thermostatically-controlled B09 area is now located. In the absence of the enormous Seum boiler (7,000 kg/hour), which did not exist at the time, the plant's requirements were met by two small boilers with a capacity of 300 kg/hour.

The administrative departments also had to deal do with rudimentary facilities. The plant had just two telephones to cover all its needs. The first one was in the director's office. The secretary, in the office next door, handled the calls. The second phone was in the workshop located in the main hall of the B01 building. By the start of the 1970s, the plant had six phone lines. There were daily calls between head office and the plant. The PCAS switchboard operator would regularly put a call through to the phone exchange in Couterne to ask for a line through to Longjumeau. The post office in La Ferté-Macé would call her back when the line was available. It could sometimes take up to 45 minutes to get through...

Employees at the time were working in safety conditions that were a far cry from the standards in force today. The only safety equipment they had: safety glasses and masks, even so employees would cough during reactions. They also had gloves which wore out very quickly. There were frequent little explosions in chemical reactors. Product manufacturing sheets were in manual form and operating methods were briefly described by hand in spiral notebooks. There was no systematic recording method. There was no on-site intervention team and the closest emergency services were in La Ferté-Macé, a dozen or so kilometres from Couterne. Since there was no incinerator, employees burned solvents in the open air. On October 23rd, 1964, PCAS experienced its first serious accident. Two employees were seriously injured in an explosion that occurred when they were disposing of waste in the outside yard of the plant. One of the men, who received a serious face injury, was left permanently scarred after the accident.

In the early 1970s, the plant began to expand its production facilities. New synthesis units – better equipped and heated – were gradually built, notably the organolithium compounds workshop. The unit boasted a compressor which turned down to below -80°C and reactors with a capacity of 70 litres. These enabled it to carry out reactions at temperatures of -70°C. The Additives Department was also

Alain Guittard, Plant Caretaker, Couterne

" I grew up with the factory, I watched the workshops being built and I know every piece of equipment. I was 14 and at school when I first heard about PCAS. My father and grandfather had both worked on the site when it was a power plant. When I arrived in 1966, the roof of the maintenance workshop was being propped up to stop it caving in. Modernisation didn't begin until the construction of workshop 18. The work was extremely hard. For example, we had to produce the cooling materials ourselves: we went out to buy four tons of ice in the morning or evening from a manufacturer in Teissé-la-Madeleine two kilometers away. The ice blocks weighed 20-25 kg and we had to load four to five tons of ice onto the lorry and then unload it again at the other end. Then we had to crush the ice for the night shift. "

The plant and the town

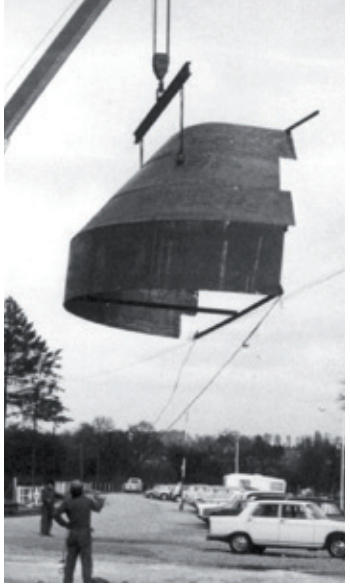
The PCAS plant was warmly welcomed in the Couterne region. The town's leading employer, it provided the community with a living and the business taxes generated for the commune of Haleine – strictly speaking the plant is in fact located there – supported local investment. Some initiatives went further still. Jacques Faucenstier, the very first PCAS Plant Director, was determined to build an aerodrome in the Bagnoles de l'Orne area. An aviation enthusiast, he dreamed of watching PCAS customers arriving by air! The Andaine Aeronautical Association, established on October 1st, 1965 and chaired by Jacques Faucenstier, acquired a plot of land at a little place called 'Les Bruyères'. Workers from PCAS volunteered to help build the club house but it wasn't until 1979 that the runway was built. The aerodrome project never really caught on with Félix Le Pors and Henri Barbier – they were more concerned with developing their company – and hence it was far away from the company that it eventually saw the light of day.

Production of *Dermocif*, a protective hand cream, in the "Sypa" production unit, at the start of the 1970s. Safety team at the Couterne plant.

expanding through acquisition of several new workshops: the B09, specializing in the manufacture of brick greases, and the "Sypa" unit (B08) which was acquired following the purchase of CIF. Abrasives, cleaning agents, varnishes and protective hand creams were produced in this workshop in open tanks. The new activities all had their own production structures. The B20 building, with its characteristic clean room and tanks, was dedicated to ultra-filtration, while the B12 building handled flavor and fragrance products.

In 1975, a new additives building was constructed on the site: the B40 building. The plant became more competitive. Production and handling activities became increasingly mechanized, thereby generating significant productivity gains: some manual preparation procedures were abandoned, a small train was installed at the end of the chain and volume meters were introduced. PCAS could now boast production volumes of up to 1,000 tonnes of additives per month, compared to 250 tonnes previously. The number of employees on shift was reduced from 36 to 21.

But it was not until the start of the 1980s that operational safety standards were introduced and the change only came about as a result of the accident on March 23rd 1981, an accident that left its mark on all former employees of PCAS and the history of the company as a whole. At around 6 o'clock in the morning, before the day shift had even arrived, a centrifuge-dryer exploded, killing one person. The tragic event had a profound impact on management in particular and the decision was taken to instigate radical changes in terms of attitudes to health and safety. The result was the creation of the "Methods-Safety" Department.



A reactor being assembled at the beginning of the 1970s. Construction of the treatment plant at the Couterne plant in 1973.

1977

• 1977
The barcode is born

• January 31st, 1977
Inauguration of the Centre Pompidou in Paris

• September 10th, 1977
The guillotine is used for the last time in France

• January 3rd, 1977
End of the policy to construct large housing estates in France

• April 1977
Acquisition of the Bourgoin-Jallieu plant

1978

• October 16th, 1978
Jean-Paul II becomes pope

• December 26th, 1978
First Paris-Dakar race starts

• September 29th, 1978
Implementation in France of Good Manufacturing Practice governing human medicinal products

• December 1978
Rescue plan announced for the steel industry

• December 1978
Liberal turning point in China with the arrival in power of Deng Xiaoping

SETBACKS AND RESPONSIVENESS

The first crises

The events of May 1968 highlighted the loyalty underpinning relations between management and employees. The Couterne site, which by now had around fifty employees, escaped strike action. However the plant did experience difficulties in getting hold of supplies. But it did not matter: the workers dug in their heels, while departmental heads fought their way through the barriers of occupied plants in an attempt to procure the raw materials needed to continue with production. Management also did their bit. In order to ensure salaries continued to be paid despite the difficulties, the plant's Director and Assistant Director made several return trips between Couterne and Paris, so that salaries could be paid in cash.

But in 1971 the resilience of employees at PCAS was severely tested for the second time. The company saw a significant fall in synthesis operations following the discontinuation of a product. This led to cash-flow problems. The turnover of a small company like PCAS was heavily reliant on markets. As a result the management had no choice but to lay people off for economic reasons: the number of people employed at Couterne fell from 122 in January 1972 to 97 in August 1972. It was not long however before business picked up again and new staff was hired.

In fact it was during the 1970s that PCAS really transformed into an SME serving industry, partly thanks to its external growth strategy. All company profits were reinvested in production. New departments and activities were introduced: photochemicals, flavors and fragances products, filtration. In Couterne, the PCAS plant was rapidly becoming one of the region's biggest businesses. At the end of the 1970s, the company's turnover varied between 150 and 200 million francs.

The ultra-filtration unit

The unit in charge of the ultra-filtration of oil for the aeronautical sector, created in partnership with a British company Thermal Control, was brought into service in mid-1971. This unit specialized in the production of oil that was completely free of pollutants.The oil was destined for use in the hydraulic systems of civil and military aircraft, highly sensitive systems prone to clogging if standard filtered oil is

Jean-Yves Lenoir, Photochemicals Workshop Manager, Couterne

"The founders always wanted to maintain a broad range of activities. So we had, for example, the Synthesis and Additives Departments and then came the launch of perfumery products and photochemicals. So even when one area wasn't doing particularly well, the company could stay afloat.
Synthesis has not always been a total success story; some years were not as good as others, and when that happened Additives were there to make up the shortfall. And vice versa. The three departments (with the Analysis Department) were complementary: the strategy of the company's leaders was to ensure a diverse manufacturing base and to avoid reliance on any single product."

Photochemicals workshop at the Couterne plant.

used. The French air force purchased all its ultra-filtered oil from PCAS and the company was producing up to 100,000 litres of oil per month at the end of the 1970s. The activity opened the door to other markets, particularly pollution control in hydraulic systems for the aviation and car industries. For example, PCAS teams conducted tests on robots at the Renault plant in Flins. Particles were counted under the microscope or using an automatic counter.

Analysis Department

The ultra-filtration unit worked closely with one of the company's long-standing divisions: the Analysis Department. Under the watchful eye of Mr Lallemand, this laboratory was responsible for analyzing additives for PCAS. Gradually, it started to work for companies other than PCAS. These customers included oil companies, car manufacturers and transport companies. In 1981, TOTAL represented 80% of the department's turnover.

The Photochemistry unit

Another production workshop would appear at the start of the 1970s: photochemistry. To begin with, it was just a small-scale activity, with the production of photochemical couplers, used as color formers in photography. PCAS had the formulas since the mid-1960s. The unit – headed by Hubert Digard, who joined PCAS in 1969 – worked in “yellow light” since the manufacture of yellow couplers for photographic films required colored windows. PCAS was the main supplier to Eastern Bloc countries, which preferred to buy from France rather than from the major American or German manufacturers such as Agfa and Kodak.

Over time, PCAS’ photochemicals portfolio expanded, thanks to the addition of products such as synthetic dyes (methyl-oxonol) and stabilizing agents. In the 1970s, PCAS began working with diazoresins, products for offset – a printing process replacing lithography – and for silk-screen printing, a technique using silk stencils placed between the screen and the substrate to produce inscriptions. The diazoic market, which was bigger than that of couplers, soon became established as one of the pillars of the department.

Filters in the photochemicals workshop at the Couterne plant.

1980

• **March 6th, 1980**
Marguerite Yourcenar becomes the first woman elected to the *Académie Française*

• **November 18th, 1980**
The comedian and actor Coluche stands as a candidate in the French presidential elections

• **October 3rd, 1980**
Party at Sauvagère for all employees to celebrate the 18th anniversary of PCAS

1981

• **January 1st, 1981**
Greece joins the EEC

• **March 23rd, 1981**
Very serious accident at Couterne
Creation of a “Methods-Safety” Department

• **May 10th, 1981**
François Mitterrand is elected French President

• **May 1981**
Creation of the French Association of Quality Circles

• **August 23rd, 1981**
Unveiling of the first personal computer (PC) by IBM

THE **DEVELOPMENT** OF **PERFUMERY PRODUCTS**: THE **BOURGOIN-JALLIEU PLANT**

The Perfumery Product Department takes shape

In 1968, a flavors and fragances product workshop was created at the Couterne plant. Shortly afterwards, PCAS bought Verley, a small company based in Saint-Denis, in the suburbs of Paris, specializing in base products for the perfumery industry. Verley's formulas, products and customers were a welcome addition to PCAS' perfumery activity. The Couterne plant also acquired equipment from the Paris area used for the distillation of aromatic plants, such as copper hot water bottles.

But this new production activity gave the plant something of a reputation in the local area: stored outside in the absence of an incinerator or any form of strict national regulations, the waste products generated by the activity gave off a foul odor, which could sometimes be smelled well beyond the plant walls, particularly at Whitsun in 1970. Against all expectations, the plant's neighbours discovered that the perfume industry didn't actually smell all that sweet!

But above all, it was following the purchase of the Dauphin chemicals plant in Bourgoin-Jallieu, some 50 kilometres south-east of Lyon, that the Perfumery Department at PCAS really took off. The plant, which had all the latest synthesis and distillation equipment, could manufacture all types of products used in the perfumery industry. The raw materials employed were either essential oil isolates sold as they were or subjected to synthesis, or synthetic products. The latter were less expensive than natural products, which were sometimes difficult to get hold of. The use of synthetic aromatics by perfumers in Grasse continued to grow, with amounts often representing between 12 and 15% of the quantity of natural essences used. One of the specific characteristics of the Bourgoin-Jallieu plant was its capacity to carry out distillation at reduced pressure, a process for separating liquids that cannot be purified in atmospheric pressure conditions.

The purchase of the Dauphin chemicals plant (MPCD)

Founded in the 1920s by engineer Elie Armanet in the heart of the Rhône-Alpes region of South-Eastern France, the Dauphin chemicals plant began by manufacturing levomenthol, a synthetic menthol for use in the pharmaceutical industry. Over the course of time, MPCD diversified its product base and began supplying substances to the perfumery industry. Its catalogue contained

The perfumery industry at the beginning of the 1970s

During the 1970s, the perfumery industry enjoyed annual growth of around 15%. Turnover in the sector exceeded three billion francs, one quarter of which related to the export of cosmetic products. With its 530 plants, workshops and laboratories belonging to some 460 companies, there was a significant trend in the sector towards commercial and financial mergers. Major Groups such as Ugine-Kuhlmann, Péchiney Saint-Gobain, Akzo-Hollande, Colgate-Palmolive, Unilever and Procter and Gamble dominated the manufacture of raw materials, such as aerosol propellants and "base soaps". L'Oréal, Hoechst, Air Liquide, Roussel Uclaf and Solvay were the main players involved in the manufacture of ingredients used in hair care products. Smaller companies such as MPCD mainly specialized in niche products, such as chlorophyll, which were manufactured and distributed in smaller quantities. These medium-sized companies with their traditional methods were perfectly adapted to toll manufacturing and packaging tasks carried out on behalf of larger partners.

In the perfumery sector, PCAS carries out numerous quality tests for its customers and, especially, uses a human nose to analyze fragrances (on the right).

several hundred product references. Its customers included Grasse-based perfumers such as Robertet, Méro-Boiveau and Charabot, who continued to source their supplies locally, as well as international companies such as Procter and Gamble, Colgate, IFF, Givaudan and Firmenich. Washing powder manufacturers too were customers of the plant, buying large quantities of raw materials. MPCD employed up to 200 people based in a dozen or so production units.

In the mid-1970s, Jacques Armanet, who had taken over from his father in the 1960s, had to deal with a number of industrial relations and financial problems. IN mid-July in 1976, MPCD went into liquidation. For a short period the administrators tried to oversee the continuation of production but work at the plant came to a halt at the end of July. Management at PCAS, impressed by the plant's capacity to carry out distillation at reduced pressure, as well as its relations with perfumers, went to court to buy MPCD.

The plant went back into production in 1977 led by Denis Leduc, manager at the Couterne plant. The name given to the operation was *Synthèse et Catalyse* (synthesis and catalysis). The name was chosen by management to protect PCAS should the merger fail. It was not until 1982 that the plant became an integral part of PCAS on a permanent basis. Around forty former employees of MPCD were kept on. The activities of this new unit were principally related to the transformation of turpentine spirit for the production of borneol, limonene, bornyl acetate, camphene, fenchyl acetate and terpineol. Production started up again in three workshops. A fourth workshop, which would be used for the distillation of oil fractions (separate from perfumery), was soon brought back into service, followed by a fifth dedicated to heliotropin, a substance found in Tahitian vanilla and widely used in perfumes and food flavourings. The plant's production capacity increased to the point it had six steel or stainless steel reactors, 17 distillers and four crystallizers each with a capacity of 2,000 litres.

The site, occupying an area of a dozen or so hectares, comprised three main buildings: building R, dedicated to the production of turpentine spirit, building B, dedicated to substance synthesis, and building L, which housed the reduced pressure distillation units. Some employees worked alternate morning/afternoon eight-hour shifts and there were also day workers.

Thanks to the renovation of its two production sites, its modern head quarters and its policy of external growth, PCAS was adapting to a rapidly growing and highly competitive fine chemicals sector. During the 1980s, the strategy adopted by PCAS' management started to pay dividends : synergies were taking place between the Couterne plant, specializing in solids and the manufacture of powders, and the Bourgoin plant, equipped for the distillation and handling of liquids...

Maurice Cattez, Bourgoin-Jallieu Site Director (1996-2002), joined MPCD in 1969

"When MPCD went into liquidation, the atmosphere was poisonous. There were strikes that went on for several months and hastened the downfall of the plant. These strikes were difficult to deal with because work stopped at the end of each shift, which made the situation impossible, especially in distillation. The former director didn't have an easy relationship with people and was forever clashing with them. Relations with the works council were extremely strained. When there was a pay agreement, employees ended up denouncing the management's practices when they got their pay slips. This was because the agreement had been reached on the basis that management and employees would 'meet each other half way'. Jacques Armanet's response to the criticisms was: 'I never said that we would meet *exactly* half way.' With PCAS, things were different: the people who got production moving again at the plant were delighted to be working again and were on good terms with Henri Barbier. What's more, PCAS invested a lot of money in the plant, transforming it into a clean, modern facility."

Aerial view of the Bourgoin-Jallieu plant, in the 1970s.

• January 21st, 1982
The age of retirement is lowered to 60

• February 24th, 1982
The birth of Amandine, the first test tube baby born in France

• March 2nd, 1982
The Defferre law on decentralization

• June 24th, 1982
First Frenchman launched into space

• July 27th, 1982
Homosexuality is decriminalized in France

• July 29th, 1982
A law is introduced officially authorizing private radio stations

• February 13th, 1982
Withdrawal of Péchiney Ugine-Kuhlmann (PUK), which became Pechiney once more, from the chemicals and special steels sector

• May 1982
Death of Félix Le Pors

• June 13th, 1982
Freezing of prices and wages

• June 24th, 1982
Official introduction of the Seveso 1 directive on the prevention of industrial risks

• August 4th, 1982
Adoption of the Auroux labour laws

• August 13th, 1982
Start of the developed countries debt crisis

THE MULTINATIONAL YEARS

1983
1991

Aerial view of the Bourgoin-Jallieu site.

PCAS IN THE **HANDS** OF THE **MULTINATIONALS**

At the start of the 1980s, a tragic event changed the course of history for PCAS: the death, in May 1982, of Félix Le Pors. Henri Barbier was unable to buy half of the company which had a turnover at the time of almost 200 million francs. The banks, hampered by the weakness of PCAS' financial structure as well as the non-formalistic approach of the company, were reluctant to provide the necessary funding. So he was forced to sell to the Stauffer Chemical Company. The American Group undertook to take over all the company's activities and retain its employees. In particular, PCAS would not be dismantled.

In 1983, Stauffer employed around 11,000 people and manufactured chemicals, with its global sales totalling in excess of 1.6 billion dollars. Positioned above all in the plant health sector, Stauffer wanted to expand its fine chemicals operations. But in order to achieve this objective, technology would have to be transferred from the United States to Europe. At the time, Stauffer's European division, based in Geneva, was still importing its raw materials from the United States. Customs duties were high and supply flows irregular: products were only sent over to Europe once the needs of the American market had been met and the American market was booming. So Stauffer Europe needed to have its own production units in Europe and PCAS' factories were of great interest to them. What's more, Ernest Bachofner, CEO of Stauffer Europe, thought that the acquisition of PCAS "would provide Stauffer with a production and research & development infrastructure for its specialty chemicals range". (Chimie Magazine, Nov. 1983.)

Henri Barbier, founder of PCAS, at PCAS' 20th anniversary celebrations.

Couterne

Le départ du PDG de la PCAS

M. Henri Barbier, fêté, mais regretté

350 personnes ont assisté samedi dans les salons du casino de Bagnoles aux adieux du PDG d'entreprise DCAS, M. Henri Barbier.

Manifestation de sympathie certes, mais mêlée de regrets de voir partir pour d'autres fonctions, le président - fondateur de la société - société qui a atteint à ce jour 383 personnes, regroupées à Longjumeau, Couterne (Haufine) et Bourgoin, Jallieu (Isère). La direction de l'entreprise était présente : MM. Bachofner, général manager Stauffer-Europ-Division, Holloway, directeur général à Longjumeau, Jacq, directeur à Couterne, Ledru, directeur à Bourgoin-Jallieu.

Outre le repas servi par les soins de maître Rémy Laquaine, le programme comprenait la visite de l'unité de Couterne, la plus importante en personnel, 189 contre 100 environ dans chacune des deux autres : Longjumeau et Bourgoin-Jallieu.

Le moment le plus émouvant fut la remise des cadeaux à M. Barbier, une horloge perpétuelle de la part de la société, un service à Cognac en cristal (avec Cognac) de la part de personnel.

Remise ponctuée de discours au cours desquels les hommages à l'égard du président fondateur furent nombreux et sincères.

M. JACQ « regrets de voir partir le fondateur de notre entreprise, et regret de voir partir un proche, et si vous le permettez, un ami... Le temps d'une génération et vous avez fait de la PCAS une entreprise performante et dynamique... Votre nom est connu et respecté même au-delà des frontières françaises et européennes ».

M. BACHOFNER. — « je suis partagé entre deux sentiments : la tristesse de voir s'éloigner quelqu'un que j'apprécie et la satisfaction de savoir que l'entreprise continue que tout a été fait, pour que tout se passe bien et que nous connaissions encore le succès et la réussite... M. Barbier, vous pouvez être fier de cette œuvre que nous poursuivrons dans l'esprit et le dynamisme que vous avez su y insuffler ».

Quant à M. Barbier, malgré une émotion compréhensible, il s'attacha à adresser ses remerciements. Puis il retraça, ce qu'il appela le « parcours effectué ensemble. » Il en nota aussi les changements effectués, l'évolution dans la vie professionnelle du personnel, les « soucis et les satisfactions qui ont scellé une communauté ». Il insista sur « le dialogue ouvert entre tous sur un pied d'égalité, tant au niveau de la compétence que sur celui de la considération humaine ».

Ensuite,il expliqua ce que serait son nouveau parcours « je vais de nouveau gérer, investir, agir... en un mot : entreprendre ». M. Barbier est appelé en effet à « créer et à animer une nouvelle société ».

Puis il termina sur quelques conseils qu'il estime primordiaux, « souvenez-vous de cet adage : ce n'est pas l'autorité qui donne la compétence, mais la compétence qui donne l'autorité ».

Pour la PCAS, ce sera la continuité dans le cadre Stauffer dont la volonté, depuis 3 ans s'est manifestée par des augmentations de capital, des investissements en hommes et en matériel... « une volonté de faire de la PCAS un rôle européen de chimie fine ».

PF

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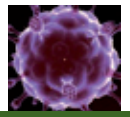
To mark his retirement, a party was held on March 21st, 1986 with representatives from all the group's sites in attendance.

GENERAL **HISTORY** >

• **March 1st, 1983**
The first compact disc is sold in France

• **April 1st, 1983**
Retirement at 60 comes into effect



• **May 20th, 1983**
Discovery of HIV by Professor Luc Montagnier

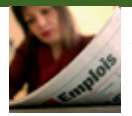
1983

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• **March 18th, 1983**
PCAS 20th anniversary celebrations at Longjumeau

• **March 21st, 1983**
Devaluation of the Franc

• **March 25th, 1983**
Austerity measures in France announced by the socialist government



• **April 1983**
Two million people are unemployed in France

Henri Barbier retires, April 1986

The retirement of Henri Barbier, on April 1st, 1986 marked the end of an era. A wonderful banquet, worthy of the most lavish feasts given by PCAS, was organized in his honour at the Bagnoles de l'Orne Casino on March 21st, 1986. Almost 380 people from the Couterne, Longjumeau and Bourgoin sites gathered to show their affection for the man who had been the driving force behind the company for 24 years. As was his way, Henri Barbier put his staff first, paying tribute to them in his speech: "You are, without doubt, the jewels in the PCAS crown, through your human and professional qualities. For a company's strength depends first and foremost on its people."

Max Léonard, Financial Director

"With Stauffer came an entirely different style of management compared to that of PCAS' founders. Jeremy Holloway and I had to oversee the smooth takeover of PCAS. We needed to preserve its qualities and avoid Americanising it too much. When he arrived at PCAS, Jeremy Holloway immediately ordered an enormous storage cabinet for the wall of his office, much to the amazement of the Administrative Department which didn't see the purpose of it. Everyone thought the cabinet would remain empty. What's more, Messrs Barbier and Le Pors, who hated paperwork, had just one desk each with four drawers. Two months later, Jeremy's cabinet was full to the brim of procedures, files and other paperwork."

Stauffer changed slightly PCAS management team. Only two new faces made their appearance in 1983: the CEO, Jeremy Holloway, an Irishman who left Geneva to go to Longjumeau, and Financial Director, Max Léonard. The two men adopted the company's values immediately and fitted seamlessly into PCAS. The newly installed Human Resources Department continued with the existing recruitment policy: internal promotion, promotion of managerial staff, rewards based on individual performance. The PCAS spirit and brand still had a bright future in the hands of Stauffer.

In 1985, Stauffer bought Chesebrough Pond's for 1.25 billion dollars. Chesebrough Pond's was an American Group with around 30,000 employees, specialising in consumer products such as cosmetics, clothing and sports equipment. At the time, Stauffer was experiencing problems in the agrochemicals sector, particularly its dispute with Monsanto Company for patent infringement. The dispute related to Round-Up™, a glyphosate-based herbicide, for which Stauffer had held the patent since 1964. The verdict was pronounced on June 18th, 1985: Stauffer lost, marking the start of a period of decline. The Chesebrough Pond's group saw the merger as an opportunity to resist a hostile takeover bid. But, at the end of 1986, the Anglo-Dutch Group Unilever (120,000 employees) bought Chesebrough Pond's for 3.1 billion dollars. Unilever had no interest in the Group's chemicals business and sold it a few months later to the British Conglomerate Imperial Chemical Industries (ICI) for 1.7 billion dollars.

ICI only wanted to retain Stauffer's plant health activities. The division would propel the group from 20th to 5th in the rankings of agrochemical manufacturers in the United States. In September 1987, ICI sold Stauffer's basic chemicals activity to Rhône-Poulenc for 522 million dollars. A few weeks later, the fine chemicals business too was sold, to Dutch Group Akzo for 625 millions de dollars. Akzo then appointed Jean-Pierre Stéphan to the position of CEO at PCAS. With the arrival of this Breton from Scrignac, it was the turn of the next generation of founders' protégés, some of whom were from Brittany like Félix Le Pors, to take up the reins.

• October 23rd, 1983
A terrorist attack in Beirut kills 58 French soldiers

• June 24th, 1984
Huge demonstration in Paris, against the Savary reform relating to private education

1984

• June 10th, 1983
Introduction of the research tax credit in France

• July 13th, 1983
Adoption of the Roudy Law relating to workplace equality between men and women

• Summer 1983
PCAS bought by Stauffer

• August 25th, 1983
New cereals agreement between the United States and the USSR

• 1984
Water treatment plant installed at Bourgoin-Jallieu

CHANGES IN THE **APPROACH** TO **COMPANY MANAGEMENT**

The arrival of Stauffer led to a radical change in managerial culture within PCAS. Much more cumbersome internal and external procedures, characteristic of major multinational groups, were introduced in areas such as financial reporting. But Stauffer appreciated the flexibility, speed of intervention and responsiveness of its new subsidiary vis-à-vis customers' requirements. While a large group took several months to produce a substance, from the point of initial contact to ultimate manufacture, via research and safety studies, PCAS required just a few weeks. It was the very flexible organizational structure that made this possible: the company was split into five marketing activities, each led by a departmental manager. Each section had its own R&D laboratory and a dedicated workshop within the production plants. Communication between the various departments was rapid, with paperwork kept to a minimum. Stauffer therefore did everything it could to retain its subsidiary's strengths.

PCAS was soon doing very well out of this multinational takeover. Stauffer recapitalized the company and invested in the plants. The Group did not take dividends when its subsidiary needed funds for new projects or to enhance site safety. Longjumeau retained control of its financial years since the multinational was only ever interested in the industrial trading accounts. The company also retained its internal control system, inherited from the previous era. However, some practices did disappear, particularly the late payment of salaries due to cash-flow problems. Management adopted a more rigorous approach to general accounting procedures, with a greater focus on cost and sales prices. The aim was no longer simply to sell at the highest possible price.

PCAS management was soon convinced by Stauffer's methods, despite the fact that occasionally they seemed to come from another world. When the CEO visited Couterne, he arrived by helicopter! And sometimes PCAS management was invited to sumptuous receptions on Lake Geneva. But, above all, it was the new opportunities and additional resources that really won over the management team at PCAS: international development and the discovery of new markets abroad, particularly in the United States. Business trips became a regular feature and the number of American customers increased. A supply facility was set up on the east coast of the United States to meet the needs of the market more rapidly.

Catherine Grégory, Management Controller

"The analytical accounting systems we use today haven't changed since 1978. The founders had brought in a Polytechnique (a leading French engineering school) graduate to install a new management control system. They were more interested in product profitability as a function of the activity carried out than they were in aspects of general accounting or profit and loss accounts. Few companies operated like that 34 years ago. We were pioneers. When we were bought by multinationals, we didn't need to change our management control systems to meet their needs. But some things amused us, especially under Akzo: financial reporting was an obligation, of course, but the only thing they insisted upon was that information was sent through on the date specified. In fact, they seemed to be more interested in this than what was actually contained in the document. PCAS was extremely small compared to their business portfolio. In fact we were the ones who told Akzo France we had been bought. Three weeks after the completion of the purchase deal, we had still heard nothing from them!"

In the 1980s, production procedures were rationalized, with the implementation of manufacturing data sheets and checklists.

GENERAL **HISTORY** >

• July 17th, 1984
The Mauroy government resigns following the failure of the Savary reform

• November 4th, 1984
Canal+ television launched

• March 11th, 1985
Mikhaïl Gorbatchev becomes General Secretary of the Communist Party in the Soviet Union

• June 12th, 1985
Europe becomes twelve with the arrival of Spain and Portugal

1985

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• June 28th, 1984
The Creusot-Loire Group goes into administration

• December 3rd, 1984
Bhopal industrial accident (India)

• Early 1985
Stauffer and Chesebrough Pond's merge

Sales reps and the heads of sales departments soon became established as the key players in the company's success. Often from technological and engineering backgrounds and extremely skilled in their particular areas of expertise, they were close to their customers - they were able to identify their needs precisely which reassured them - and close to the R&D department they managed. They were also attentive to the needs of production sites and their departments: every time a new contract was signed, there was a celebration in the plants.

The Akzo Group was less tolerant towards the way things were done at PCAS. Procedures were implemented to the letter and meetings and progress updates began to clutter up the schedule. It also imposed its own audits. PCAS was forced to hand financial control over to Akzo. Every investment request had to be submitted to the Dutch head office. Managers at PCAS were far from happy with the changes.

Formal working methods were introduced in the R&D labs and on production sites. PCAS moved from an oral culture to a written one. FROM 1983, all the manufacturing records were computerized and employees were obliged to systematically record each stage of the process implemented. At Bourgoin, production managers introduced their teams to the concept of checklists. Chemists at Longjumeau started to leave a trace of experiments they had carried out. During the 1980s, the introduction of experimental design led to a more scientific and mathematical approach to the formulation process. Experimental design consisted of the sequential series of tests conducted within an experiment making it possible to acquire new knowledge by testing one or more input parameters and obtain results validating a model. Experimental design led to resource savings since the number of tests required to achieve an objective was reduced.

Work in the offices also changed. It soon became clear to PCAS management that the company's international development required a certain grasp of the language of Shakespeare. English lessons were thus organized. Further challenges came along in the shape of new technologies. And once again, it was the administrative personnel who adapted to the changes. Electric typewriters gradually replaced mechanical ones. At the end of 1980s, the advent of the computer age revolutionized practices. But it was not until the start of the 1990s that all the offices were equipped with PCs. In 1986, a second floor was added to PCAS' head office. 85 employees were based there. Some commercial functions were transferred to these new offices, while support functions and the laboratories remained on the first floor.

Armel Querromes, manager of the "Additives Synthesis" unit, Longjumeau

" At Longjumeau, it was bit of a tight squeeze: in a lab where two people work today, there were five of us back then. To get a work station you had to arrive before the others. You almost had to go into battle to be able to work. But there was a fantastic atmosphere, we were forever "playing pranks on one another", perhaps because there were hardly any safety rules at the time. I remember one incident in particular when we had a placement student with us. We had large knives we used for cutting up polymers for additive blends: one of the lads shoved a wooden board under his white coat, plunged a knife into it and splattered his coat with red felt-tip pen. He waited for two secretaries to go past in the corridor before going out of the lab screaming with the knife protruding from his stomach; panic-stricken the secretaries rushed off to call the emergency services … "

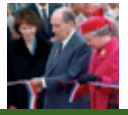
Longjumeau research laboratory, in the 1980s.

• June 14th, 1985
Schengen agreements on the freedom of movement in Europe signed

• July 10th, 1985
Start of the Rainbow Warrior affair

• October 25th, 1985
Eight-digit telephone numbers introduced

• December 21st, 1985
The first "*Restos du Cœur*" (soup kitchens) open in France



• February 12th, 1986
The treaty of Canterbury between France and the United Kingdom paves the way for the Channel Tunnel

1986

• June 18th, 1985
Stauffer loses the Monsanto trial

• September/October 1985
Dismantling of the chimney at Couterne

• 1986
Expansion of Longjumeau head office

SAFETY, A MAJOR CONCERN

Changing mentalities

In the 1980s, safety became a priority consideration in the study of industrial processes, alongside feasibility and profitability. At Couterne, everything began with the creation of a "methods-safety" department, led by engineer Jean-Paul Richard. New analysis tools were also introduced to manage risks. At the same time, PCAS management had to incorporate the Seveso classification of its plants. These regulations concerning industrial risks were brought in following the Seveso disaster in Italy. Toxic products stored on PCAS' sites could potentially cause toxic fumes to escape into the atmosphere. Within the framework of this legislation, every three years, the local prefecture requires PCAS plants to implement special intervention plans (PPI as they are known in France). The aim is to verify the effectiveness of action plans in place in the event of an industrial accident.

So the Couterne intervention team set about the task of risk prevention. The initial objective was simply to intervene in the event of an accident: In 1970, Marcel Caniou had set up this service following a fire in a production tank in building B01. Independent of the external fire service, this team is made up of around one fifth of the plant's total workforce. Volunteers consist of both day and shift workers. The team works closely with neighboring emergency centers. A red telephone has long since been in place with a direct line through to the closest fire station to the plant. And in 2012, the Orne fire department signed an agreement with PCAS regarding the use of the site for training purposes. Employees from other sites are also given safety training. But their needs are not as great as those at the Orne site: at Bourgoin-Jallieu, the fire station is just 50 meters from the plant and products are more homogeneous. What's more, the Couterne site is two and a half times bigger.

Members of the intervention team are trained on a continuous basis, several times per month. The training is backed up by regular drills held quarterly, half-yearly and annually. These simulations are used to develop and test logistical resources adapted to various incident scenarios, such as fires, spillages and accidents. Lastly, in close partnership with the prefectorial services, the POI (*plan d'opération interne* or internal operation plan) provides for the conduct of a crisis management drill, from the event itself to intervention by the local authorities.

Operations Point Rouge fire-fighting competition

Intervention teams from Couterne won numerous competitions held between safety professionals. And they enjoyed particular success in the *Operation Point Rouge* initiative, a fire-fighting competition that no longer exists today. The aim was to extinguish as quickly as possible a fire caused by a mixture of petrol and crushed paper, using powder and water extinguishers. The PCAS team reached three national finals. At the start of the 1980s, it was Marcel Caniou who led his team into battle for the trophy in Marseille. In 1989, the PCAS team won the regional final in Vernon (Eure region of North-Western France). They qualified for the national final and finished second overall. And in June 1996 the success was repeated: 1st and 2nd places in the rankings for PCAS teams and a spot in the national final!

The Couterne intervention team worked closely with the local fire service.




Extinguishing a fire during a training exercise at the Couterne plant.

Changes at the production sites

Over time, the production sites began to comply with increasing numbers of safety and environmental standards. In 1991, an HSE (Health, Safety, Environment) manager was appointed for each plant. Stricter recording procedures were introduced for equipment in the 1980s. They were brought in to detect potential gas leaks and verify the density of toxic products. The HSE team responsible for monitoring workshops had an increasing workload. In particular, it had to issue fire permits prior to maintenance work on Saturday mornings. Safety standards were also reinforced for the transportation of hazardous materials such as bromine. PCAS used special containers for these products and reinforced its packaging and shipment drums. In fifty years, not a single transport incident has been recorded!

At Bourgoin-Jallieu, a lot of money was invested to bring the workshops into line with safety and environmental standards. In 1984, a water treatment plant was installed. The first fire detectors were installed in the plant in 1988. And in 1991, a containment basin with a capacity of 1,800 m^3 was constructed to contain effluents in the event of fire or spillage. In the same year, the water tower supplying water to the buildings was replaced with a pump system.

Production facilities were also modernized. These reforms improved working conditions at the site, as well as profitability. Workshop B, which had become obsolete, was razed to the ground to make way for a new synthesis facility, workshop E. This versatile structure could produce some forty or so different substances. Building R, a vast facility 50 m long and 20 m wide, acquired several outbuildings: an enormous storage building, building Q, an electric utility room, a powder drying facility, storage tanks with a capacity of 680 m^3, a well and a water tower. It was equipped with reactors,



Water retention basin at the Bourgoin-Jallieu plant, built in 1991.
Around one in five production workers were part of the Couterne intervention team.

• **September 17th, 1986**
Seven people killed in the terrorist attack on the rue de Rennes in Paris

• **November 17th, 1986**
Georges Besse, CEO of Renault assassinated by Action directe in Paris

• **December 1st, 1986**
The musée d'Orsay is opened

1987

• **July 31st, 1986**
Privatization law: 65 groups and almost 40% of state-owned company jobs affected

• **September 4th, 1986**
Usinor and Sacilor merge

• **December 1986**
Chesebrough Pond's bought by Unilever

• **January 1st, 1987**
Liberalization of retail sales prices, subject to controls since 1945

distillers and crystallizers. Management reinforced the teams and installed more efficient equipment: in 1985, distillation columns that were better adapted (10 columns: 33 m^3), reactors that were better designed (9 reactors, steel, enamel, stainless steel: 42 m^3) and a new ventilation system. In the steam production workshop, an entirely automated gas-fired steam generator replaced the coal-fired system. Finally, in 1986, the plant was linked up to the domestic waste incineration plant that had just been built nearby, thereby gaining access to an alternative steam source.

At Couterne, a new incinerator was built in 1988 enabling the plant to process waste itself rather than storing it outside or sending it off to subcontractors. On July 4th, 1988, management held the very first Open Day, an event dedicated to the theme of industrial risks. It proved to be a tremendous success: more than 1,200 people turned up. The event, which was held again in 1995, was an opportunity to demystify the site and perpetuate the positive image PCAS enjoyed in the region.

PRODUCTION OPERATIONS IN THE 1980s

The laboratories and production sites continued to innovate. In the field of pharmaceutical synthesis, PCAS consolidated relations with its customer Biocodex, an independent family-run pharmaceutical company founded in 1953, thanks to the introduction of new products. The two companies had first started working together at the start of the 1970s with D207, an ingredient in Hepadial®. Thereafter came Dolal®, an anti-inflammatory manufactured at the Bourgoin-Jallieu plant, and, from the start of the 1990s, etifoxine, an anti-anxiety drug, marketed under the brand name of Stresam®. Relations with Rhône-Poulenc also grew stronger with m-methoxy-phenothiazine, an intermediate of the drug Nozinan®, used as an antipsychotic drug.

But the most important product in the Stauffer era remained Racer®. This weed killer was a hugely successful product. Stauffer already manufactured the active ingredient in the United States , before making the formulation at the Seneffe plant in Belgium. But the transfer of Racer to the Orne site significantly reduced manufacturing times. And as far as PCAS was concerned, this product, manufactured in large quantities and relatively easy to make, was highly profitable.

Bernard Sérot, Synthesis Workshop Manager, and subsequently HSE Manager, Couterne

"The Couterne plant lived through some pretty severe winters in the mid-1980s. Temperatures dropped as low as -15°C. It was only the dedication of our employees that enabled us to overcome the difficulties we encountered. Some areas of the units were in the open and had no heating, but work continued nevertheless. Night-shift workers were allowed to park their cars under cover, inside the workshops. Their day-shift colleagues heated the cars in the morning to help get them started. One day, the workshops had frozen. The problem had arisen because one of the boilers was no longer getting a water supply due to frozen pipes. Management acted quickly to reorganize production to avoid a complete shutdown of the plant. Half the employees were assigned to pipe thawing duties while the others had the task of getting water to the boiler using hoses. The initiatives paid off and production was able to continue."

The Couterne plant improved its waste management system with the installation of an incinerator in 1988. Bottom right: incinerator burner.

GENERAL **HISTORY** >

- **March 1st, 1987** M6 television channel launched
- **April 16th, 1987** Privatization of TF1, the first private television channel in France
- **June 3rd, 1987** French groups Moët Hennessy and Louis Vuitton merge: creation of LVMH
- **July 1st, 1987** Single European act comes into force
- **July 29th, 1987** Work begins on the construction of the Channel Tunnel

HISTORY OF **THE INDUSTRY** AND **PCAS** >

- **March 1987** Implementation of ISO 9000 quality standards
- **June 1987** PCAS sold to ICI
- **1987** Start of the quality initiative in the car sector

Production workshops
at Bourgoin-Jallieu.

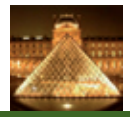
During the 1980-1995 period, meta phenoxy benzaldehyde also became established as a flagship product for the synthesis department. Manufactured on behalf of Roussel-Uclaf, which needed the ingredient for an insecticide used to treat cotton, the product illustrated the synergy that was developing between the Couterne and Bourgoin-Jallieu sites. PCAS used the Isère-based plant, specializing in the manufacture of liquids, for the first stage of production based on distillation, while the Couterne plant, equipped with drying ovens and smoothing filters used for drying powders and solids, handled the second stage. The Bourgoin-Jallieu site continued to develop its intermediate activity for the pharmaceutical sector following its purchase by PCAS and handled products requiring fine distillation, such as pimaldehyde, the raw material in Vincamine® used in the treatment of insufficient cerebral circulation.

But perfumery products continued to reign supreme at Bourgoin-Jallieu. In fact, between 1981 and 1988, the site housed the R&D section. Thereafter all the research units were definitively based at Longjumeau. Dihydromyrcenol was manufactured there and enjoyed tremendous commercial success. The plant adapted quickly and increased production, exceeding the symbolic thresholds of 10, 20 and then 50 tons of product manufactured. At the start of the 1990s, Lyral was also proving to be extremely profitable for the plant. This fragrance is recognized for its delicate floral note reminiscent of hydroxycitronellal. Used in products as diverse as alcoholic lotions, deodorants, fabric softeners and shampoos, this product soon established itself as one of the stars of the perfumery department.

In photochemistry, the main activity continued to concern diazoic products, still manufactured at Couterne. These products were used in the manufacture of printing plates, offset plates and screen printing films. PCAS offered a comprehensive range of “positive and negative diazo resins” meeting the specific requirements of customers. The leading photochemical product was a resin catalyst, consisting of a mixture of a resin and photosensitive product and used as a coating for offset plates. These products proved to be an international hit: PCAS exported 80% of the photochemicals it produced.

Perfumery product testing laboratory
at the Bourgoin-Jallieu plant.
Outside view of a production unit at
Bourgoin-Jallieu.

• **September 16th, 1987**
Signing of the Montreal
protocol on the ozone layer



• **March 4th, 1988**
Inauguration
of the Louvre
museum pyramid

• **May 8th, 1988**
François Mitterrand
re-elected French President

• **June 15th, 1988**
Launch of the CAC 40 stock
market index

1988

• **September 1987**
ICI sells its basic chemicals
activity to Rhône-Poulenc

• **October 19th, 1987**
Major global stock
market crash

• **End of 1987**
PCAS bought by
Dutch Group Akzo

The analysis department developed with the arrival of Alain Kohn as director in 1981. His objective was to diversify the customer base, at the time dominated by Total. He managed to reduce Total's contribution to turnover to 20%, without reducing profits. The aviation sector, based firstly at Orly airport and later on at Roissy-Charles de Gaulle, became the laboratory's biggest customer. The department, with its team of ten people, also worked on behalf of oil companies such as Shell, BP and Elf, as well as car manufacturers.

The Additives Department innovated and diversified. Production in the B40 building moved to a 3x8 shift system. PCAS even moved into conditioning at the start of the 1980s, manufacturing a liquid coolant, screen wash, and an anti-freeze on behalf of Mammouth and Renault Boutique. Flask labelling at Courterne became an entirely automated process. But manufacturing costs were too high and the activity was not profitable.

Commercial success followed soon afterwards with polymers, used as anti-corrosives for the car industry. This new range replaced the solvent and paraffin-based products of the 1970s. Led by Jean-Pierre Kerhervé and working closely with the high polymers unit in Strasbourg, the R&D team developed some highly innovative products: the polymer film was only three microns thick, but protected car bodywork for up to six months in extreme storage conditions. PCAS also dominated the detergent market offering customers a chemical detergent capable of cleaning polymer waste.

Another major innovation appeared in the 1980s: the production of organometallic products. PCAS already had expertise in glass coloring and luxury bottling, thanks to its knowledge of acetylacetonates. But its expertise in the field of organometallic products enabled it to extend its expertise to the glass sector. The aesthetic qualities and physicochemical properties of organometallic compounds mean that they are primarily used as glazing in the construction industry: Saint-Gobain therefore became one of PCAS' biggest customers. Examples of tin oxide-treated glazing, with its characteristic iridescent appearance, can be seen on some of the high rise buildings in the La Défense business district outside Paris, or on the second storey of PCAS headquarters. Organometallic compounds are also used for insulation purposes: these low-emitting glasses reduce thermal losses and lead to energy savings. But treating substances with organometallic compounds is a highly skilled process: applied in powder form to glass melted at a temperature of 700°C, it requires a uniform spraying process and very precise granulometry. This unique expertise resulted from research work carried out by the R&D team, which filed several patents in this area. Organometallic compound production was divided between the two PCAS plants. Bourgoin-Jallieu handled products for use in bottling, while the Couterne plant specialised in products for DBTF glass.

Alain Kohn, director of the Analysis Department

" A high-profile project was the launch of the TGV in 1983, the first high-speed Paris-Lyon rail link. The SNCF didn't yet know how the equipment was going to behave at such speeds, particularly with respect to the lifespan of the ball bearings. So, at the end of each return journey, PCAS analyzed the trains to assess the degree of equipment wear and tear. On one occasion, an analysis produced a result that at first sight seemed unlikely: the iron content was sky high. As a safety precaution, the SNCF stopped the TGV in open country and brought in another train to take passengers on to Paris. Result: a bearing cage was in the process of breaking up …"

Organometallic compounds are used in the composition of luxury perfume bottles.

NEW CONSTRAINTS AND STRATEGIES

The impact of the quality approach on the car industry

In the mid 1980s, car manufacturers still accounted for the majority of the Additives Department's customers and 80% of business at the Couterne plant. However, all this was about to change as a result of the adoption of a quality approach by car manufacturers. In 1987, Peugeot wanted to reduce the number of its suppliers and imposed new requirements on its partners. Although the quality of its products was still perfectly acceptable for Peugeot, PCAS had to increase the capacity of its plants in order to be awarded "class A" accreditation. The manufacturer also demanded a quality manager from outside the production department. Another problem was posed by different standards from one car manufacturer to another. Management realized just how reliant the group was on this industrial sector and saw that strategic choices had to be made: either increase the critical size of its plants, or change direction.

A number of reforms, including the rationalization of production processes and the adoption of more rigorous operating methods, were implemented. But these changes were not enough to allow PCAS to keep Peugeot among its customers. Their collaboration came to an end in 1991. PCAS's car sector formulation activities were sold. Some of these products were even taken over by SPCA, the first company created by Félix Le Pors and Henri Barbier. This change of direction led to a redundancy programme in 1992 and a wave of voluntary early retirements, with the support of the FNE (*Fonds national pour l'emploi* - State Employment Fund).

The group's management restructured the Additives Department and began to produce sulphonates-carbonates: instead of simply producing formulas for the car industry, PCAS thus began to make additives for lubricants. These additives were the raw materials for anti-corrosive products used in hollow parts and the undercarriage of cars. As a result, although Peugeot no longer worked directly with PCAS, its new formulation suppliers now sourced their additives from PCAS. This strategic change led to the emergence of new expertise since additives are synthetic products. PCAS gradually developed a range of anti-corrosive products capable of competing with the American equivalent, SACI, a varnish produced by Witco Chemical Company. The success of the French product forced Witco to sell this part of the business following the collapse of its sales. The financial situation improved for PCAS since it was no longer directly controlled by car manufacturers. In 1991, it had a turnover of 300 million Francs.

Anti-corrosives production unit.

1989

• **March 10th, 1989**
Announcement of the Brady plan, a debt reduction initiative for developing countries

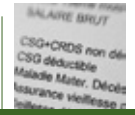
• **November 9th, 1989**
Fall of the Berlin Wall

• **July 17th, 1990**
Gilbert Hyatt officially recognized as the inventor of the microprocessor

1990

• **August 2nd, 1990**
Start of the Gulf War

• **October 3rd, 1990**
German reunification



• **December 29th, 1990**
Creation of the CSG national insurance contribution

• **1990**
Death of PCAS founder, Henri Barbier

• **December 19th, 1990**
Creation of ADEME, the French Environment and Energy Management Agency

Production workers at the Couterne plant.

Couterne had to make changes to its industrial facilities in order to manufacture these additives, particularly its B40 building that had previously been dedicated solely to mixing operations. The synthesis of sulphonates and calcium carbonate continued to develop in the 1990s in the grease sector. These products were manufactured under the trade names Arcot, Gelcot, S&C TBN and Roscan.

The additives unit changed its name to “additives and technical fluids” (AFT) and then “industrial and specialty chemicals”. This section took over the production of hydraulic fluids - previously based in the USA - in its product portfolio. These organophosphate fluids are used to maintain hydraulic systems and can be used to control the needle valves of nuclear power plant turbines.

The advent of quality standards

The advent of quality assurance made the industrial context more competitive at the start of the 1990s. PCAS had to have its plants ISO 9001 certified by September 1992. Whereas all the Akzo plants were already ISO certified, the PCAS sites had to fight to establish a compliant quality system. The stakes were high since this certification was crucial if PCAS was to maintain contracts in markets in which it was already present, such as the automotive subcontracting market. Standards reassure customers and help ensure their loyalty. Product traceability makes it possible to identify the root causes of problems and implement action plans in the event of complaints. Although most Western companies are ISO certified nowadays, 20 years ago this standard was a factor that differentiated between firms. At the time, the globalization of trade, the context of increasing standardization and the increase in the size of companies was transforming relationships between sales departments and customers. Personal relationships were

The production sites adapted to the new quality standards by training their personnel and implementing stricter control procedures.

Quality at PCAS

The quality system was formalised in 1988 with the appointment of Henri Subercaze as Quality Director. The primary objective of the quality assurance system, described in the "Quality Assurance Manual" is to manufacture products that comply with customers' specifications and reduce the number of complaints. This system also consists in taking advantage of the flexibility and reactivity of PCAS, by promoting the development of new products and high standards in terms of meeting delivery deadlines. Every month, quality indicators are calculated by quality managers at each site. And they are reviewed every six months in order to update the PCAS quality policy on the basis of their evolution and the company's direction.


pcas.

CERTIFICAT

CERTIFICATION ISO 9001

Satisfaire en permanence les attentes de ses clients a toujours été l'objectif de PCAS.

Depuis 1989, PCAS s'est engagé dans une démarche vers la Qualité Totale.
Aujourd'hui, le Système d'Assurance Qualité mis en œuvre par PCAS est certifié conforme à la norme internationale ISO 9001 par l'AFAQ, organisme de certification indépendant. Cette norme est la plus complète de la série ISO 9000 puisque son domaine d'application recouvre toutes les activités, de la conception des produits et de leurs procédés d'obtention jusqu'à leur livraison.

Une telle reconnaissance place ainsi PCAS parmi les leaders de sa profession en matière d'Assurance Qualité.

ISO 9001 certification awarded to PCAS in July 1992.

being replaced with relations founded on a quality system. Department 40 at Couterne drew on its experience of quality standards in the car industry to quickly make the required changes. The research units, initially more reluctant to change, quickly caught up with the commercial and production departments. In July 1992, PCAS became the first company in the Essonne region to be ISO 9001 certified.

These changes also affected pharmaceutical synthesis operations. Customers - particularly the Americans - were becoming increasingly demanding in terms of quality. In 1978, France introduced a "*Bonnes pratiques de fabrication*" (BPF) ("Good Manufacturing Practice" (GMP)) system for medicines for human use. This was reinforced on a European scale in 1991. PCAS was directly affected by this legislative landscape. In the early 1990s, when the company had just developed a product that was very interesting in terms of potential market and cost, it learned that it would be impossible for it to market it. Audits performed by pharmaceutical companies had revealed shortcomings at the Couterne plant: as a result of its versatility, it did not comply with American GMP (Good Manufacturing Practice) standards.

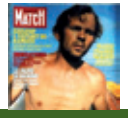
At the start of the 1990s, PCAS wanted to make its international development a reality. The company took advantage of its greater size and the cultural contribution made by multinational companies such as Stauffer or Akzo. The company, which was moving away from its car manufacturer customers and working more and more closely with glassmakers and oil companies, was ready to break free. The French market had become too small for the niche products that it was manufacturing. The solution: an external growth policy, the development of foreign subsidiaries and the fine-tuning of financial tools. All it needed now was the right opportunity. It was at this point that Dynaction arrived on the scene.

AT the end of the 1990s, the R&D Department gradually adopted quality standards.

• **June 12th, 1991**
Social security debt reduction plan announced in France

• **June 17th, 1991**
Abolition of the Apartheid laws in South Africa

• **July 19th, 1991**
War breaks out in ex-Yugoslavia



• **November 21st, 1991**
Gérard d'Aboville rows across the Pacific Ocean

• **December 8th, 1991**
Collapse of the USSR

• **December 31st, 1991**
Legislation providing for compensation to be paid to victims of contaminated blood transfusions in France

• **June 13th, 1991**
Implementation of European principles and guidelines of Good Manufacturing Practice for medicinal products

• **1991**
Construction of the large water retention basin at the Bourgoin-Jallieu plant

• **1991**
Additives activities sold to SPCA

• **1991**
Health Safety and Environment (HSE) manager appointed for each site

THE GROWTH YEARS

1992
2012

› View of the Couterne site.

FINANCE COMES TO PCAS

Purchase by Dynaction

PCAS had grown considerably since its beginnings. In 1992, the company had 370 employees and produced a turnover of 300 million francs (ie 46 M€), 50% of which was made in the export market. In order to ensure the sustainability of these results, management wanted to adopt an external growth policy, the aim being to establish the company as a major international player. Azko, however, was opposed to such a policy. The Dutch group had reduced its financial capacities considerably at the take-over of ICI and PCAS' activities did not fit well with its core business. Hence, the multinational decided to sell. The sell-off was actually carried out as part of a change in management and local restructuring programme launched at the start of January 1992 by Aarnout London, Chairman of Akzo. To improve its performance, Akzo decided to merge its basic chemicals and specialty chemicals divisions, to make further redundancies and to sell off a considerable number of operations considered to be too marginal.

And it was Dynaction who bought the Akzo subsidiary following a request by PCAS' management. As part of the deal, PCAS managers were given a stake in the capital of the company, which continued to be chaired by Jean-Pierre Stéphan. Dynaction, founded at the start of the 1980s by two HEC (prestigious Paris business school) graduates, Henri Blanchet and Christian Moretti, specialized in buying SMEs. In 1992, Dynaction owned some 44 companies in sectors as diverse as mechanics, electronics, boiler-making and papermaking. It had a turnover of 4.4 billion Francs (680 M€). The Dynaction story began in 1982 with the purchase of Cryo Diffusion, a small SME of 30 employees, from American group Beatrice Foods for a nominal value of 1 Franc. The company, which manufactured cryogenic containers was losing money: Dynaction put some order back into the accounts and and the gamble paid off. Just a year after the takeover of Cryo Diffusion, the company posted a profit of 2 million francs.

As far as PCAS was concerned, Dynaction was a breath of fresh air. There was complete decentralization between the parent company and its subsidiary. Accounts and human resources remained in the hands of PCAS. Excessive financial reporting requirements came to an end as did continuous audits! As for Dynaction, the purchase of PCAS gave it expertise in a new sector – chemicals – in which the cyclical nature of the business appeared to be less marked than for other sectors.

The Dynaction method

The Dynaction method consisted in obtaining 100% ownership of peripheral companies belonging to major French and American groups. The companies targeted were those operating in niche markets with genuine know-how. These SMEs, which were generally under-valued and under-managed, were those with the potential to generate the greatest added value. And Dynaction was designed specifically to exploit the reforms of the 1980s. The creation, in 1983, of the secondary stock market enabled SMEs to refinance on the financial markets, something that had hitherto been the privilege of large companies. The secret of Dynaction's success: firstly, the management of the companies purchased were given stakes in them and, secondly a number of subsidiaries were listed on the stock market while retaining a majority shareholding.

Christian Moretti and Henri Blanchet (died in 1995), the two founders of Dynaction.

GENERAL **HISTORY** >

1992

- **February 7th, 1992** Maastricht Treaty signed
- **April 12th, 1992** Eurodisney opens near Paris
- **June 22nd, 1992** Contaminated blood trial begins in France
- **July 1st, 1992** Points driving licence introduced in France
- **September 13th, 1992** Exchange rate mechanism (ERM) crisis

1993

- **March 23rd, 1993** Second period of cohabitation between French President Mitterrand and Prime Minister Balladur
- **May 1st, 1993** Suicide of former French Prime Minister Pierre Bérégovoy

HISTORY OF **THE INDUSTRY** AND **PCAS** >

- **April 15th, 1992** PCAS purchased by the Dynaction Group for €8.3 million
- **September 18th, 1992** PCAS' 30th anniversary celebrations at Chesnaie du Roy Conference Centre (Vincennes)
- **June 14th, 1993** Publication of the European medical device directive

Listing on the stock market

At the start of the 1990s, the main objective of PCAS' management was to make the company attractive to shareholders, with a view to listing it on the secondary stock market. The Executive Committee – led by Jean-Pierre Stéphan – prepared enthusiastically for this new challenge. Jean-Paul Boutellier, former CEO of Finorga, joined this dynamic team in November 1997 as Industrial Director. Dynaction provided PCAS with its financial experience and expertise. But the Moretti-Blanchet duo left the management of PCAS in charge of operations. It was their job to convince investors that the project was feasible. The CIC bank was responsible for the financial engineering part. The early demise of Henri Blanchet, in February 1995, hit the group hard but PCAS stayed on course.

PCAS's successfully floated on the stock market in April 1995. Shares were listed at a price of 128 francs (€19.51), and the demand for shares exceeded the number on offer. Following the stock market flotation, Dynaction had a 63.6% stake in PCAS, CIC Paris held a 2.1% stake, PCAS' managers held a 9.3% share and the public held 25% of the capital. A company savings plan was set up to enable employees to increase their income by building, with the company's help, a portfolio of securities. This savings plan replaced the company's original employee profit-sharing scheme together with subsequent profit-sharing initiatives set up at the end of the 1980s.

PCAS' listing marked a turning point in the company's history. Without surplus value, there would have been no future. Financial results had to meet with the ongoing expectations of shareholders and the share price had to continue rising. In order to carry on satisfying the markets, PCAS had to adopt a strategy of external growth and demonstrate that its business was prospering. PCAS' management took up the challenge, organizing annual meetings with a hundred or so financial analysts, as well as more restricted meetings with financial partners, private investors, banks and pension fund managers.

Dynaction's investment soon paid dividends. PCAS enjoyed soaring growth and posted outstanding financial results: in 1995, turnover reached 376 million francs, an increase of 34% compared with 1993. Six years after being purchased by Dynaction, the majority of PCAS' sales fell into four categories: pharmaceutical synthesis (43%), perfumery products (16%), photochemicals (20%) and industrial chemicals (18%). The company, entirely focused on organic synthesis since the sale of additives in 1991, did nevertheless maintain a diverse portfolio of operations with, firstly, high-tonnage production, and secondly, high added-value products. The next step for the company was to concentrate increasingly on high added-value products and implement a policy of external development. This implied increasing its capital, recruiting more people and expanding its scope.

Storage area at the Couterne plant

1994

- **July 19th, 1993** Privatisation act adopted affecting large-sized companies
- **August 1993** Purchase of St-Jean Photochimie (Quebec)
- **January 1st, 1994** Merger of Akzo with Swedish Group Nobel
- **April 15th, 1994** Signing of the Uruguay Round agreement establishing the WTO
- **May 6th, 1994** Inauguration of the Channel Tunnel
- **November 13th, 1994** Sweden joins the European Union
- **December 15th, 1994** Launch of Netscape Navigator, the first consumer internet browser

1995

- **January 1st, 1995** Creation of the World Trade Organization (WTO)
- **January 1st, 1995** The Europe Union increases to 15 members with the arrival of Sweden, Finland and Austria
- **January 1st, 1995** Single European market comes into force

Michel Bouquet, quality manager, Longjumeau

"I watched the photographic industry fall. Polaroid was an extremely good customer and we sold dozens of tons of products to them every year, particularly dyes. The business collapsed in the space of two years. And what's more, there were serious knock-on effects for the purchasing department whose raw material procurement plans stretched beyond two years. The customer did not even last two years! Other clients, such as Agfa, have now disappeared too. Because of this major industrial change in the 2000s, we had to seek business elsewhere. But it takes time to adapt machines and train people."

Saint-Jean Photochimie, PCAS' Quebec-based subsidiary. This innovative company specialized in the design, development and manufacture of high added-value chemical products destined for the microelectronics and graphic arts sectors.

THE **FIRST ACQUISITIONS** UNDER **DYNACTION**

Purchase of St-Jean Photochimie (SJPC)

The acquisition of Saint-Jean Photochimie in Canada, in 1993, was designed to meet a dual objective: to secure a bridgehead on the other side of the Atlantic in order to develop the group's sales in North America, and expand PCAS' new technologies and photochemicals division. During the multinational years, the company lost the photo imaging division, which manufactured products for the screen printing and electronics sectors. PCAS, shouldered by Dynaction, bought, at a very good price, a small operation owned by ICI USA, based in Saint-Jean-sur-Richelieu, around 30 km south of Montreal. Saint-Jean Photochimie, founded in 1989, manufactures highly pure products destined for the microelectronics and graphic arts sectors.

SJPC's products for the semi-conductor industry and microlithography for the microelectronics industry are used for the etching of integrated circuits and microprocessors on a nanometric scale. SJPC also works for the graphic arts and printing industry, for which it develops a range of products for CTP ("Computer to Plate") technologies. These products are used for the preparation of the sensitive layer of "offset" or digital plates, giving them high resolution and durability. By investing in SJPC and its technological expertise, PCAS was aiming to exploit the high growth potential of niche sectors.

Aerial view of Saint-Jean-sur-Richelieu, Quebec.
One of the site entrances at SJPC, founded in 1989.

GENERAL **HISTORY** >

- **February 9th, 1995** Guy Delage swims across the Atlantic
- **March 26th, 1995** Schengen agreements come into force

- **March 30th, 1995** Inauguration of the BNF (French National Library) in Paris

- **May 7th, 1995** Jacques Chirac wins the French presidential election

- **January 8th, 1996** Death of François Mitterrand

1996

HISTORY OF **THE INDUSTRY** AND **PCAS** >

- **February 18th, 1995** Death of Dynaction co-founder, Henri Blanchet
- **April 6th, 1995** Listing of PCAS on the Paris stock market ("second marché")

- **September 1995** Second "Open Day" at Couterne
- **November 24th, 1995** Start of a massive strike movement against French government policy (Juppe PM)

The Société Béarnaise de Synthèse is located on the SOBEGI site in Mourenx, at the heart of the Pyrénées-Atlantiques region. The production workshops at the SBS site focus on the manufacture of acrolein derivatives.

The reinforcement of the Analysis Department

PCAS also wanted to enhance the competitiveness of its Analysis Department. In the face of stiff competition from major groups, including SGS, Intertech and Veritas, small laboratories such as that of PCAS were forced to pool their resources in order to process a bigger volume of samples. In 1999, PCAS bought Vernolab from Shell, a small company of 44 employees specialising in oil analysis. Studying the determination and dosage of metals contained in a lubricant using an expert system makes it possible to establish the state of wear and tear of a vehicle's engine and thus helps transport companies optimize the maintenance of their equipment.

A new legal entity combining Longjumeau's departments and Vernolab's laboratories in Verneuil-sur-Avre (Eure) was set up under the name of Vernolab. The division, comprising 52 employees, analyzed 200,000 samples per year and in 1999 had a turnover of 31 million francs (5 M€). PCAS soon became a European leader in lubricant analysis. A number of customers were won over by the fact that the laboratory operated independently of oil product suppliers. These customers included oil industry sub-contractors as well as major accounts such as SNCF, Air France, Cogema and Michelin. The Longjumeau laboratory, which was Cofrac accredited for its quality system, specialized in complex whole and soluble oil cut analyzes as well as analysis of aviation oils, while Verneuil-sur-Avre was dedicated to serial analyses of used lubricants. But PCAS soon decided to focus on its pharmaceutical industry operations and sold Vernolab to SGS in February 2004.

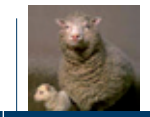
The Société Béarnaise de Synthèse

In 1996, PCAS created the Société Béarnaise de Synthèse (SBS), located in Mourenx (Pyrénées-Atlantiques region of South-Western France), in partnership with Atochem. PCAS, the majority stakeholder, invested 30 million francs in the company, dedicated to the manufacture of acrolein derivatives. It enabled PCAS to ensure compliance with evolving regulations governing the transport and storage of this hazardous material and to ensure the long-term continuation of the activity at Bourgoin-Jallieu. PCAS gradually established itself as the only European company capable of using acrolein in fine chemistry on an industrial scale. The site, located on a chemical platform managed by Sobegi (Société Béarnaise de Gestion Industrielle) and equipped with several large capacity reactors, was almost entirely dedicated to the manufacture of high-volume products aimed at mass markets, such as detergents, washing powders and room fragrances. Performance and safety standards at the site were very high: automated production, managed by around twenty employees, was geared to the specific conditions imposed by the reactivity of acrolein. Production began on February 26th, 1998. In 2005, PCAS's entire acrolein activity grouped together at the Mourenx site, where the production capacity was increased in September 2006.

The Société Béarnaise de Synthèse site by night.

• **March 25th, 1996**
End of nuclear tests in the Pacific

• **October 18th, 1996**
10-digit telephone numbers introduced in France



• **February 23rd, 1997**
Dolly, the cloned sheep

• **April 21st, 1997**
Jacques Chirac dissolves the National Assembly

1997

• **March 27th, 1996**
Ban on the sale of British beef following mad cow disease

• **April 1996**
Creation of SBS (Société Béarnaise de Synthèse, a synthesis subsidiary)

• **September 21st, 1996**
Signing of the "Stability Pact" by countries involved in the single currency

• **December 11th, 1996**
Creation of Hoechst-Marion-Roussell, following the takeover of Roussel-Uclaf by Hoechst

THE **CHANGING FACE** OF **HISTORIC SITES**

PCAS continued to invest in its historic sites, particularly Couterne. With a turnover of 21.1 million euros, i.e.11.8% of the group's global turnover in 2006, the site remained at the heart of PCAS' activities. The only plant to work for all the group's business units, it was manufacturing 400 products in a broad variety of fields. The site continued to produce substances used in anti-corrosive products for motor vehicles, compounds such as calcium sulphonates and carbonates for the development of high-performance greases aimed at the car, iron and steel, naval, paper and oil industries, as well as petrochemicals. The objective at the plant has always been to improve productivity, as demonstrated, for example, by the construction of a new 800-litre reactor in building B12 in 1997. The fusion, in 2008, of two production departments – the 40 and 50 – permitted the transfer of employees between the various units and made production more flexible.

The plant underwent its biggest change with the advent of additives for the oil industry. These products give lubricants or technical fluids used in metal working processes "extreme-pressure", "anti-wear" and "anticorrosive" properties. The story continued with the company's collaboration with Chevron in 1996: PCAS drew on its expertise in Friedel & Crafts reactions to successfully synthesise the products containing boron trifluoride (BF3) that the oil giant was looking for. This opened up new opportunities in the oil sector. The B40 Additives Department was quick to adjust to the challenges posed by this high-tonnage, hazardous production operation, equipping itself with a 22 m^3 reactor and a fully automated workshop.

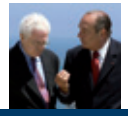
The other major revolution at production sites resulted from evolving environmental standards. Since the late 1990s, PCAS has dedicated 30% of its investments into making sure that its sites remain in line with standards. The Couterne plant is particularly concerned, due to the versatility of its facilities. At the end of the 1990s, a number of investments were made to improve safety and waste management at the site: reinforcement of containment at the plant, concreting of storage areas, improvement of the fire prevention and control system and, in 1996, installation of a new incineration system and water retention basin to replace the old tank that caused the entire plant to grind to a halt when it was used. Next came VOC (volatile organic compound) standards, which required plants to reduce their solvent emissions into the atmosphere. The Couterne plant was particularly concerned by this regulation, which applies to additives for lubricants. The solutions it implemented involved renovating the B39 pilot laboratory and installing a more efficient solvent condensation system.

PCAS Group's sporting challenges

There has always been a strong history of marathon runners at PCAS. The running team enjoyed its glory years in the second half of the 1990s. AT the time, the PCAS jersey could be spotted at numerous major events such as the 10 km Argentan run, Alençon-Médavy and the *cross du Figaro* corporate cross-country event Sport was also an integral part of the philosophy at Dynaction, with employees encouraged to take part in such events, driven on by the ambitious and pioneering spirit synonymous with PCAS. Races came thick and fast in Beijing, New York and Berlin. But there have been other sports too: football at Couterne and Bourgoin-Jallieu, table tennis at Longjumeau, and bike rides organized by Marcel Caniou and Alain Guittard out on the roads of the Orne region.

The Bourgoin-Jallieu football team in the 1980s. The PCAS marathon team in the 1990s. PCAS runners took part in major sporting events, such as the 5th corporate marathon, in Viriat in 1997 (above).

GENERAL **HISTORY** >



• **June 2nd, 1997**
Third period of cohabitation, between President Jacques Chirac and Prime Minister Lionel Jospin

• **August 4th, 1997**
Death of France's oldest citizen Jeanne Calment at the age of 122

• **August 31st, 1997**
Princess Diana dies in a car accident in Paris

• **December 31st, 1997**
Ratification of the Treaty of Amsterdam

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• **July 2nd, 1997**
Start of the Asian economic crisis

The Bourgoin-Jallieu plant also made changes. Regulations relating to allergens contained in perfume bottles or cleaning products disrupted production at the start of the 2000s. Manufacturers found themselves forced to use increasingly sophisticated product analysis and detection methods. The site also gave up manufacturing food flavorings – subject to draconian standards – turning, instead, to fragrance bases. At the end of the 1990s, €700,000 were invested in the site in order to develop a UV protection substance for a major cosmetics group. The plant gradually specialized in the production of sun screens, active anti-aging ingredients for cosmetics and soothing products for topical application, while at the same time continuing to manufacture a broad range of olfactory products used in laundry products, soaps, room fragrances and detergents. This diversification compensated for the decline in alpha-pinene, camphor and borneol chemical activities and revitalized the site, which employed up to 110 people in 2002.

At the end of the 2000s, it was PPRTs (technological risk prevention plans), introduced by the law of July 30th, 2003, that were making life difficult for the chemicals industry. PPRTs provided the framework for the definition of safety perimeters around Seveso II plants based on the analysis of the risks present, with a view to improving industrial risk management. The group's site directors mobilized. They readily organized public meetings to inform and reassure local residents and elected officials. There was no doubting the fact that their plants, all modernized and regularly controlled, had never been safer.

The latest reforms were the REACH reforms. This European regulation concerns the registration of certain chemical substances, particularly performance chemicals. PCAS has always stood out as being fairly zealous in this area, to such an extent that Nathalie Kosciusko-Morizet, French Secretary of State for Ecology – and mayor of Longjumeau –, took an interest and travelled to Limay on September 11th, 2008 to conduct a review of the pre-registration process. The figures spoke for themselves. By October 14th, 2008, PCAS had registered 420 substances out of 600, i.e. 70% of its products concerned by the process. But product approval had a cost. Some small tonnage products, particularly at the Couterne site, were ultimately discontinued.

The fire at Bourgoin-Jallieu

On February 4th, 1998, at the end of the day, a fire broke out at the Bourgoin-Jallieu plant. The fire broke out when a reactor in building E overflowed. Thanks to the fire extinguishing water retention basin, nobody was hurt and there was no pollution. But there was considerable material damage: building E was completely gutted. In order to maintain production, management transferred the activities affected to other workshops or some of the group's other sites, and set up a rolling work system. After nine months of hard toil, the new building was ready to go. In terms of safety, there were visible improvements: the installation of a more sensitive fire detector system, covering of the hydrolysis tanks, machine automation and valves and the introduction of up-to-date intervention procedures. Thanks to these investments, the site's contribution to PCAS' perfumery product operations doubled in the space of a year, to represent 24% in 2001.

The pilot laboratory at Couterne was entirely renovated to comply with French and European environmental standards.

• May 11th, 1998
First automated supermarket

• June 13th, 1998
France moves to a 35-hour week

• July 12th, 1998
France wins the football World Cup

• September 27th, 1998
Creation of Google

1998

• January 1st, 1998
Creation of Rhodia bringing together Rhône-Poulenc's chemicals and pharmaceuticals activities

• January 30th, 1998
Acquisition of Séloc France (Limay)

• March 27th, 1998
Marketing authorization in America for Viagra®

1999

• February 3rd, 1999
Implementation of the Seveso II directive

• April 1st, 1999
Acquisition of Vernolab

THE **BOOM** IN THE **PHARMACEUTICAL SECTOR**

At the end of the 1990s, PCAS began to adjust its focus to specialize in pharmaceutical fine chemicals. In order to break into the sector, the company had to gain access to the American market, which represented around 50% of the global market. To do so, it had to allow inspectors in from the FDA (Food and Drug Administration), the US public health agency responsible for issuing GMP certificates. The Bourgoin-Jallieu and Couterne plants were deemed to be too versatile to meet the standards. The solution: buy a plant that was already compliant. Since the mid-1990s, pharmaceutical companies, competing in a race to become as gigantic as possible, had been refocusing on R&D and marketing and gradually parting with their manufacturing units that were not considered to be profitable enough.

In 1998, PCAS acquired Séloc France, a company located in Limay (Yvelines are, West of Paris) that had previously belonged to Richardson Merrell and Marion Merrell Dow, before joining Schwarz-Pharma in 1993. The deal was beneficial to both camps. For a knock-down price, PCAS was acquiring a turnkey plant, audited by the FDA since 1978 and with a turnover of 163 million francs. Finally and above all, the acquisition contract signed with Schwarz-Pharma contained an exclusivity clause relating to the subcontracting of the site's products. For its part, PCAS, seeking alternative sources of income other than Schwarz-Pharma's already mature products, planned to enhance the plant's profitability by having it work at full capacity and reducing the cost prices of products. The German company also did well out of the deal.

In January 2001, PCAS bought cough-suppressant active ingredients from Sanofi-Synthélabo and started manufacturing pharmaceutical substances. PCAS' acquisition of Séloc proved necessary for this development, bringing 25 million francs to the group, i.e. almost 10% of its pharmaceutical activity, and vindicated PCAS' strategic reorientation.

The plant's infrastructure, which, in 1998, consisted of 25 stainless steel and enamel reactors, a chemical and biological treatment plant and a small fermentation unit, meant it could perform reductions, including catalytic hydrogenations. The site also had recognised expertise in cryogenic reactions, enabling it to control the stereochemistry around the carbon atom and use butyl lithium on an industrial scale. And from the 2000s, the site began working in the field of high added-value resins in a cGMP environment.

Pharmacie Centrale de France (PCF)

PCF, the oldest French pharmaceutical company, at 150 years old, boasted firmly established expertise in the fields of drug delivery and metallic salt and oxide preparations. Its takeover by Finuchem in 1999, enabled PCAS to break into the fine mineral chemicals sector and begin producing metallo-organic substances, thereby expanding the range of products on offer to its customers from the oil, microelectronics and cosmetics industries. In addition, synergies in the drug development chain could be developed between sites, with packaging at Voulte-sur-Rhône (Ardèche), PCF's plant, at the end of the cycle. But PCF's activities gradually proved to be too far removed from PCAS' core business, leading to the end of this attempt at vertical integration in 2006.

E-Pharma & Creapharm

In 2001, PCAS acquired a 50% stake in the pharmaceutical formulation company, E-Pharma, dedicated to the production of commercial medicines in solid, paste and liquid forms. Its plants, located in the Allier département produced over 47 million packs of medicines in 2002. On January 1st, 2003, the E-Pharma group took the name of the group's latest acquisition, Creapharm, a Bordeaux-based company specialising in the production and distribution of clinical batches. Thanks to this division with 278 staff, PCAS hoped to reinforce its position as a drug packaging subcontractor for pharmaceutical companies. But PCAS' debts and the technical challenges inherent in ensuring the long-term future of this division prevented it from retaining this business. At the end of 2005, PCAS sold its 50% stake in Creapharm to the Unither Group, thereby reducing its debt by 11.2 million euros.

GENERAL **HISTORY** >

• **November 15th, 1999**
Adoption of the PACS (civil partnership contract in France)

• **January 1st, 2000**
Introduction of the CMU universal healthcare system in France

• **January 5th, 2000**
Launch of the first online cybermarket

2000

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• **October 1999**
Acquisition of PCF (Pharmacie Centrale de France)

• **December 12th, 1999**
The Erika oil tanker runs aground off the French coast

• **December 20th, 1999**
Creation of Aventis following the merger of Rhône-Poulenc and Hoechst-Marion-Roussel

• **March 10th, 2000**
Dotcom bubble bursts

• **May 12th, 2000**
Inauguration of the new head office in Longjumeau

Workshops and aerial view of the Limay plant, which specializes in the production of active pharmaceutical ingredients.

The successful acquisition of Séloc paved the way for further acquisitions based on the same model. In 2001, PCAS secured a 50% stake in Finnish company Leiras Oy, with the German company Schering retaining a 50% share. Like Séloc, Leiras Oy specialized in the manufacture of active pharmaceutical ingredients. Inspected since 1982 by the FDA, the site had an extremely sophisticated quality control system and an "ultra-clean" environment. PCAS Finland went beyond customer requirements in terms of quality, thanks to its separate area for the final production phases and the expertise of its 120 employees, who, on average, had more than fourteen years of service behind them. The plant manufactured equal quantities of generics for the American market and catalogue products for the group's customers. PCAS wanted to retain the expertise of its subsidiary and made a number of investments on the site: several driers and reactors, a new water treatment plant and, with a view to enhancing safety, in August 2012, reactor safety systems were installed, along with an automated production control system.

2001 also saw the purchase of the Expansia factory in Aramon (Gard, South of France). This site, built in 1973, also specialized in the production of active pharmaceutical ingredients. The deal with the pharmaceutical company Ipsen-Beaufour, which sold its site, was so similar it was difficult to tell it apart from the deal signed with Séloc and Leiras: sales of brand-name drugs to Ipsen-Beaufour continued, especially with Troxerutin and Heptaminol used in the composition of Ginkor-Fort®, whilst Expansia diversified its product portfolio and gradually broke away from its former owner, which reserved three-quarters of the site for its products. PCAS had plans for Expansia and wanted to achieve cGMP certification for the plant. The objective was met in November 2005, following the first conclusive inspection of the site by the FDA. Expansia then set about conquering new markets. New products included an anti-diarrhoeal drug sold by a French pharmaceutical company

Jussi Torikka, General Manager of PCAS Finland

"The plant has existed since 1960 and the main building since October 1983. They originally belonged to a Finnish conglomerate, Huhtamäki, whose activities are now limited to packaging only. This company was the first in Finland to manufacture drug substances for the pharmaceutical industry on an industrial scale. Its incorporation within the PCAS Group was a great thing for us. We belong to the same family as PCAS, i.e. we are manufacturers.. When we were part of big pharmaceutical companies, such as Leiras or Schering, we felt out of place and that our core business was not really valued. PCAS has brought us genuine added value and a new vitality in the marketing of our brand-name drugs. At the same time, we have managed to retain our own specific advantages: PCAS Finland is a small, typically Scandinavian firm, with flexible management lines and a relaxed atmosphere."

Aerial view of PCAS Finland (Turku).

- **June 6th, 2000** Adoption of the law on equality
- **July 25th, 2000** Concorde crashes in Gonesse
- **September 24th, 2000** French Presidential term reduced to five years
- **January 1st, 2001** Greece joins the euro zone

- **January 29th, 2001** Law introduced recognizing the Armenian genocide
- **September 11th, 2001** New York hit by terrorism

2001

- **May 2000** Legal integration of Séloc France
- **November 2000** Implementation of version 2000 of ISO 9001
- **December 27th, 2000** Creation of GlaxoSmithKline, global pharmaceutical leader
- **January 2001** 50% share acquired in E-Pharma
- **April 2001** Creation of E-Pharma/ Creapharm
- **July 2001** Acquisition of Expansia (Aramon)

- **July 1st, 2001** Acquisition of a 50% stake in LEIRAS Fine Chemicals Oy (Finland)

Aerial view of the Expansia plant, located in the town of Aramon, 15 km from Avignon The plant's workshops have been inspected by the FDA since 2005.

and brand-name drugs destined for international pharmaceutical companies. Thanks to its "ultra-clean" production unit, the site specialized, with Expansorb®, in the field of biocompatible biodegradable polymers. These complex substances were associated with new therapeutic forms without having the status of active ingredients and were used as controlled active ingredient delivery systems.

Lastly, in 2004, it was the turn of VLG-Chem, an Aventis subsidiary based in Villeneuve-la-Garenne, to join PCAS for 15.4 million euros. Once again, the acquisition agreement provided for the subcontracting and manufacture of a flagship Aventis active ingredient representing around 75% of the site's activities. Other products also entered the plant's portfolio: Synercid®, one of the most powerful antibiotics available and only prescribed when no other antibiotic is effective, Mequitazine® an active ingredient used in the treatment of allergies, and an ingredient of Arsobal®, a drug used to treat African trypanosomiasis, more commonly known as sleeping sickness, developed by Rhône-Poulenc when it had owned the site in 1981.

The plant has ISO 14001 certification. This standard, acquired in 2002, is designed to minimize the damaging effects of industrial activities on the environment. It was particularly relevant for VLG-Chem, given its urban location. Despite its age, the plant had clean rooms and an extremely clean environment: filtered air, overshoes for employees and control of industrial waste emissions into the air, water and soil.

New sites were integrated within the framework of each site's identity, culture and specific characteristics. PCAS retained the former directors of these sites with a view to developing new expertise. And teams at the new subsidiaries were open to the

Patrick Lefèvre, Quality Manager at the VLG-Chem site

" Day-to-day life at the site was seriously disrupted during the takeover, which was finalized on June 1st, 2004. During this period, Sanofi launched a hostile takeover bid for Aventis and the 130 employees at the VLG-Chem site did not know whether the sale of PCAS would go ahead. The site, created in 1893, is one of the oldest plants manufacturing chemicals for pharmaceutical synthesis in France. Having been inspected by the FDA since the 1970s, it has very extensive experience in cGMP standards. This standard is necessary, since THE UNITED STATES is one of the biggest markets for the site's products. During the FDA's last five visits - the most recent of which was in February 2012 - no remarks were issued, which is relatively rare. This success in terms of quality approach is partly down to the significant efforts made by pharmaceutical groups to bring their plants into line with standards, and the resources deployed by VLG-Chem, particularly with respect to internal audits, personnel training and plant equipment. "

View of the outside of the VLG-Chem site, near Paris.

GENERAL **HISTORY** >

• September 21st, 2001 Explosion at the AZF plant in Toulouse

• January 1st, 2002 The euro comes into use in the twelve participating countries

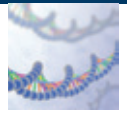
• February 18th, 2002 Appearance of the free press in France

• May 5th, 2002 Jacques Chirac re-elected President of France

• February 1st, 2003 The Treaty of Nice comes into force

2002 **2003**

HISTORY OF **THE INDUSTRY** AND **PCAS** >



• December 2nd, 2001 Energy giant Enron goes bust

• March 2002 Acquisition of Créapharm

• December 2002 PCAS holds 40th birthday celebrations at each site

• December 20th, 2002 Announcement of the reimbursement of generic medicines by the social security system

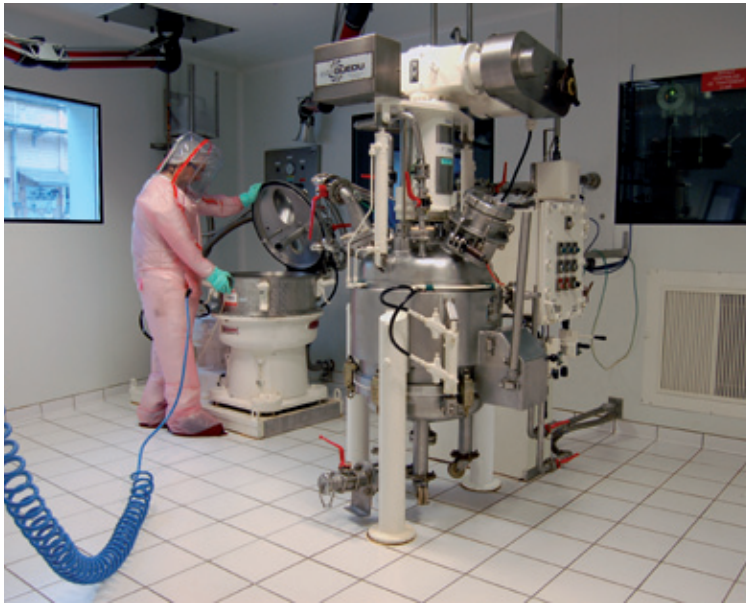
• March 1st, 2003 Creation of PCAS Finland Oy

opportunities that arose with PCAS. The pooling of critical resources, such as R&D, purchasing, HR, quality and regulatory affairs promoted inter-site mobility of personnel, knowledge transfer and the harmonization of operating methods. Synergies between the group's various subsidiaries appeared in the production of pharmaceutical substances: ISO sites such as Couterne and Bourgoin-Jallieu manufactured raw materials for cGMP sites, which focused on the more advanced production stages of synthesis intermediates. On some sites, PCAS developed an "in-house" quality system, half-way between ISO and GMP standards: the so-called MPPS system (French acronym standing for "raw materials for health products"), which went further in the analysis of raw materials and product traceability than ISO and had lower production costs than GMP. The increase in PCAS' scope also allowed the company to develop significant cross-functional expertise in niche sectors, such as polymers, acrolein derivatives and anticonvulsant production at Aramon and Limay. At the same time, each site developed its own technological platform: acrolein at Mourenx, organic thiophene derivatives at Couterne, phosphorous derivatives at Bourgoin-Jallieu, chiral synthesis and crystallization at Limay, as well as highly selective chemistry and biocatalysis at Aramon.

In 2001, pharmaceutical fine chemicals represented 53% of the group's total sales, and group turnover – 70% of which was made via exports to Europe and the United States – was up by 27% over the previous year. In 1996, the export market still only accounted for 59% of the group's income. These outstanding results confirmed PCAS' status as a supplier to the American market. Having led to an increase in the number of sites to 12 and the number of employees to 1,360, the external growth strategy allowed the group to grow by an average of 25% per year. Since the stock market listing in 1995, turnover had increased fourfold and share value had increased fivefold. To meet the needs of the expanding perimeter, in 1999, PCAS acquired a new head office in a second building close to the existing one. The new premises housed top management, administrative and financial departments, HR and the personnel department, the quality department and purchasing, marketing and sales departments.

Régis Pecquet, R&D Manager, Longjumeau

"We are 80% manufacturers: our efforts to innovate are primarily focused on our working methods, the tools we use and the knowledge of our chemists. There is genuine PCAS expertise. We work with major players, including Arkema, Rhodia, BASF, Dow N°2 and Dupont. We have real skills as developers, which is not something that is necessarily found elsewhere. That's why we are in high demand for the creation of partnerships. People know that PCAS is multicultural and multi-skilled, which is not always the case with our competitors. Some of them are too monolithic."



The "ultraclean" room at the VLG-Chem plant is used to produce active pharmaceutical ingredients in a microbiologically controlled atmosphere.

• August 2003
Severe heatwave in France

• May 1st, 2004
expansion of Europe to include ten new countries

• June 18th, 2004
Adoption of the European constitution

2004

• April 15th, 2003
Pfizer becomes the world's No. 1 pharmaceutical company following its merger with Pharmacia

• January 2004
Creation of Sanofi-Aventis following the merger of Sanofi-Synthélabo and Aventis

• February 4th, 2004
Creation of Facebook

• February 6th, 2004
Vernolab sold to the SGS Group

• May 2004
Creation de PCAS America Inc

• June 1st, 2004
Acquisition of the VLG-Chem plant

• June 18th, 2004
PCAS acquires the remaining 50% stake of PCAS Finland owning 100% of this company after this operation

Pierre Bonnardel, researcher,
R&D Laboratory, Longjumeau

" Fine chemicals, and in particular performance chemicals, where product ranges tend to be extensive and demand cumulative expertise, require knowledge and know-how that are not taught in universities and schools. It can only ever come with experience. In order to ensure this knowledge and expertise are passed on to the next generation, PCAS implements a buddy system to anticipate senior employees going off on retirement. Quality systems and operating conditions adapted to each customer are learned on the job. When I arrived, my colleagues were the people who trained me. In fact, they spent far longer explaining the quality system to me than they did chemistry. "

Lab technician, Performance Chemicals R&D - Ca Sulfonate Expert Grease Additives.

PCAS AND THE MAJOR CHALLENGES OF THE 2000s

When Christian Moretti arrived at the helm of PCAS in January 2004, the people who had created the company were on the point of leaving and there were changes afoot in the management teams. The focus was very much on R&D: the number of employees in the department had increased fivefold in the space of twenty years so that by the beginning of the 2000s, around a hundred researchers worked there. And the level of investment in the department has been maintained since: in 2011, 7.4% of the group's turnover was dedicated to R&D, compared with 6% in 1995. A Group R&D department was created in 1999. For their part, each of the company's business units had their own R&D facility so that market needs could be prioritized. Researchers began incorporating marketing and sales considerations into their work programs, taking on board each customer project in its entirety, from the procedural aspect to the industrial equipment required. This highly flexible and responsive system made it possible to tackle increasingly complex research projects.

The good relations PCAS built up with its customers were also down to the hard work of the support and administrative departments. On average, PCAS was signing between 150 and 200 contracts per year. These contracts generated an enormous volume of information that had to be managed and exploited. In 2006, the company reorganized into two entirely integrated divisions, Pharmaceutical Synthesis and Fine Specialty Chemicals. A new system of management control was introduced. Administrative personnel teams – responsible for an increasing number of sites – saw their numbers swell. The purchasing team, with a budget of over 70 million euros in 2012, doubled its staff in the space of a few years. New directors gradually took over the company's reins: Philippe Delwasse CEO took up the position of Vice Chairman of the Group in 2006, and was replaced by Vincent Touraille in February 2010. It was them who were to steer the company through an increasingly competitive economic landscape.

The major revolution has resulted from ever greater competition - sometimes unfair - from India and Asia. Perfumers are subcontracting to companies in China, where products are manufactured more cheaply, while oil companies are developing new additives for lubricants there. Asian companies, which now manufacture 80% of the generic active pharmaceutical ingredients present on the European market, dominate the drug sector, although a few French and European firms – such as Novacep, Minakem, FIS, Hovione, Lonza or Siegfried – and a few large pharmaceutical companies are still resisting this pressure. Although Chinese or Indian manufacturers have more restricted access to the American mar-

Jean-Marc Lefèvre, Quality and Technical Procurement Manager, Bourgoin-Jallieu

"This is my 35th year at PCAS. The company encourages internal promotion: I came armed with a vocational training certificate. I'm not a qualified engineer; yet I've climbed the career ladder to reach a senior management position at a production site. And I'm not the only one to have done so. There have been others who had similar qualifications and who have also held positions of responsibility. It all goes to show that we feel a close bond with the company. It's impossible to reach a senior position if you don't have the necessary motivation."

Employee training in the pilot laboratory at the Bourgoin-Jallieu plant.

ket, which imposes its cGMP standards in Asia, they are easily able to export their products to Europe, where there are fewer controls on imported APIs than in the USA. European manufacturers, hampered by the proliferation of environmental standards and the draconian requirements of the health agencies, are unable to rival the low salaries and production costs enjoyed by their Asian counterparts. Compliance with this regulatory environment increases production costs by around 30% at cGMP sites.

However, PCAS knows from experience that some customers are attracted to the extra guarantees brought by quality standards. And the world authorities are starting to take a close look at abuses in terms of environmental management. Around 50% of European certificates of suitability (CEPs) awarded to Asian producers subsequently inspected by the European authorities have now been withdrawn. In order to set itself apart from the competition, PCAS has placed product quality at the top of its agenda, while offering customers a global support package.

The response to the challenges outlined above has also been down to the dynamism of PCAS' teams. The company is relatively young: in 2008, 28% of its employees were under the age of 35. Production workers are mainly hired locally but the qualification level of those recruited has increased. Production personnel undergo a year's training and have to adapt to an increasingly demanding environment in terms of safety and traceability. In the fields of recruitment and environmental management, PCAS is having to comply with ever more exacting standards. Since the start of the 2000s, for example, auditors have been scrutinizing job descriptions - compulsory for every post - to verify whether or not the employee has received the correct training and to check that the post matches the relevant recruitment level.

But in 2009, following the financial and economic crises experienced in western countries, a redundancy plan became inevitable in order to adjust the group's industrial capacities. PCAS reduced its workforce by 10%. Redundancies took place at Longjumeau, Bourgoin-Jallieu, Couterne and Limay. Expansia had been having a tough time of it due to the decision by the French social security system to stop reimbursing one of its products – the venotonic drug –, a fall in orders for a high-volume generic and the discontinuation, in 2010, of a new substance in the development stage. The site was reorganized in January 2011 leading to a 25% reduction in its workforce and the transfer of its R&D unit to Nîmes (Protéus). This period represented a turning point for PCAS' employees who became increasingly sensitive to issues relating to company profitability. The sacrifices made were considerable, but they enabled PCAS to improve its results and consolidate its business: the company recorded a 4% increase in the latter between 2009 and 2010.

• February 18th, 2006
First cases of bird flu in France

• April 10th, 2006
CPE (First employment contract in France) withdrawn

• June 30th, 2006
Adoption of the Sarkozy law on selective immigration

• October 3rd, 2006
Privatization of the French gas company, Gaz de France

• January 1st, 2007
Romania and Bulgaria join the EU

2007

• January 27th, 2006
Birth of the steel giant ArcelorMittal

• May 18th, 2006
The Arkema group floats on the Paris stock market

• June 2006
PCAS is split into two divisions

• November 16th, 2006
Signature of the "Responsible Care" Charter (progress commitment) by PCAS

• December 2006
Agreement signed relating to the sale of PCF (Pharmacie Centrale de France) in two phases

THE **PRINCIPAL STRATEGIC DIRECTIONS** OF A **FORWARD-LOOKING GROUP**

In the field of pharmaceutical synthesis, the major market trends were being confirmed. Increasingly, pharmaceutical companies were outsourcing production to specialty chemicals companies. In the period 2007-2008, 14 of the 20 leading global pharmaceutical players announced they were closing down or selling production sites. And the generic market has continued to expand. Estimates put annual growth in this market at 10% in the United States and 11% in Europe for the period 2010-2015. PCAS has been doing everything it can to seize these new opportunities. In 2009, the company split its pharmaceutical synthesis unit into two business units to support the group's new strategic directions. The first of these specializes in the exclusive synthesis of substances for pharmaceutical companies holding the associated patents, while the second focuses on the production of multi-customer active ingredients.

In the field of specialty chemicals, PCAS prioritizes projects relating to niche markets where the company can, either alone or in partnership, acquire the position of global leader, particularly in the super-insulation sector. Silica derivatives have been of particular importance to PCAS since the company's involvement in a European research contract on silica pre-polymers. PCAS is well aware that environmentally-friendly thermal insulation solutions represent a potentially highly profitable market. And silica aerogel, a nano-porous, ultra-light non-combustible silica foam is recognized for its insulating properties, although the highly complex manufacturing process associated with this material renders its industrial application difficult. At the start of the 2000s, PCAS reinforced its silica polymer research programs. These programs, conducted in partnership with major agencies such as ADEME (the French Environment and Energy Management Agency) and specialist research laboratories such as the CSTB (French building science and technology center), the Ecole des Mines de ParisTech and Sophia-Antipolis, led to the development of a super-insulating material, patented in 2004 under the name of Isogel. In April 2010, the creation of a subsidiary specializing in silica aerogels, Enersens, marked the first step on the road towards marketing this product of the future. The potentially numerous applications of Isogel continue to drive a number of research projects: development of atmospheric pressure insulation panels for the renovation or new build market, development of a non-transparent material for conduits and pipes or hybrid products based on cellulose.

At PCAS, Saint-Jean Photochimie has played a key role in the development of cutting-edge technologies. The printing and semi-conductors industries are highly dependent on advances in materials and surface chemistry. SJPC's R&D department, reintegrated in 2002 following a period based on the

Christian Moretti, Chairman of PCAS

" In the field of chemicals for use in the pharmaceutical sector, PCAS' strategy consists of continuing to work for pharmaceutical companies, focusing on exclusive toll syntheses, under a confidentiality agreement, or generic substances as subcontractors, but also taking the lead on generics and developing its catalogue. It's a long drawn out process because the development of drug substance has to begin around four or five years before it reaches the public domain . Today, PCAS owns more than 50 APIs which it sells to 250 pharmaceutical companies.
In specialty chemicals, PCAS also continues to work closely with major groups, supplying large quantities of 'commodities' as well as operating as R&D subcontractors and developing new substances PCAS also gets involved in projects designed to test the robustness of a process on small and medium production runs, prior to scaling up to industrial production. "

For example, the ISOGEL® grade of silica aerogel in granular form can be incorporated into mortar used for façades in order to give a building a mineral skin with insulating properties that are significantly greater than other insulating materials of a similar thickness.

GENERAL **HISTORY** >

• May 6th, 2007
Nicolas Sarkozy elected President of France

• October 25th, 2007
French *Grenelle de l'environnement* environment round table action plan

• December 13th, 2007
Signature of the Lisbon Treaty

• January 1st, 2008
Law banning smoking in public places comes into force in France

• July 1st, 2008
France takes over the EU presidency

2008

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• June 1st, 2007
European REACH regulations come into force

• July 1st, 2007
End of EDF and GDF monopoly in the private energy market in France

• January 24th, 2008
Revelation of the "Kerviel affair" at the Société Générale bank

• September 15th, 2008
Investment bank Lehmann Brothers goes bust

Denis Désilets, R&D director, Saint-Jean Photochimie

"The technology involved in resolution in microlithography has changed considerably: electronic components have gone from a thickness of 200 nanometers at the end of the 1990s to 20 nanometres in 2012. Every time there is a change in technology, metal contamination also has to be reduced. SJPC specializes in the manufacture of chemicals in ultra-clean, very low metal environments. Today, SJPC can manufacture products with a metal content of below 5 ppb (less than five metal parts per billion) and is preparing to move into ppt (parts per trillion)."

PCAS is developing its activities in the heart of China.

premises of a neighboring military college, represents 18% of its workforce. The Kilo-Lab, set up in 1999, has increased the reactivity of the site during the transition phase between the laboratory and the pilot unit. SJPC has specialized in the optimization of processes and "copy exactly", i.e., the exact replication of substance manufacturing processes at the point of transition to the industrial phase. Investments in powerful research and analysis tools make it possible to verify that processes have not changed at the transition phase.

In 2007, SJPC turned its attentions to the organic photovoltaic sector. The aim of the project, developed in partnership with specialist companies and laboratories such as Konarka and the University of Laval, was to find solutions to replace silicon, an extremely expensive component used in the manufacture of traditional solar panels. Organic photovoltaics, cheaper and more eco-friendly, have enabled PCAS to invest in the renewable energies market. SJPC then entered a second rapidly-developing market, organic electronics in the surface printed electronics sector. This new technology using conductor polymers that are light, flexible, thin and inexpensive, represents an alternative to traditional materials. These electronic components, applied in very thin layers to various substrates, are used in the manufacture of liquid crystal flat screens (LCD), flat screens (OLED and PLED) and interconnects.

SJPC's strength is that it is able to accompany customers in each of their application segments, while adapting to very short industrial cycles. The human size of the company facilitates communication and the sharing and dissemination of information. Thanks to the flexibility of its teams, its peerless quality system and its reputation as a reliable partner, the company was well placed to quickly adapt to the emergence of Asia, a market widely considered to be difficult to penetrate. SJPC has established solid long-term relations with Japanese and Korean customers, despite the geographic distance between them. At the heart of this success: the commitment and dedication of its teams who brave language barriers and 14 different time zones every day of the week.

International Development

PCAS anticipated the development of new international markets by establishing commercial structures in Germany (Frankfurt), the United States (New Jersey) and China (Shanghai). These structures have several objectives: to offer customers a local service and reinforce the group's presence in its target markets. PCAS GmbH, for example, oversees fine specialty chemicals operations in Germany and bordering countries, such as Austria, Switzerland and the Netherlands. In 2008, the zone represented around 18 million euros for PCAS. PCAS America Inc is dedicated to custom synthesis for the

• September 2008
The financial crisis spreads

• July 2009
Bird flu (H1N1) reaches France

2009

• October 15th, 2008
Creation of PCAS GmbH (Germany)

• December 11th, 2008
Implementation of a recapitalization plan for French banks

• December 19th, 2008
Pôle Emploi employment centres created in France

• February 4th, 2009
Around 850 jobs lost at GlaxoSmithKline (GSK) in France

• April 21st, 2009
Creation of PCAS Biomatrix

• May 30th, 2009
The French government orders 90 million doses of vaccine against bird flu (H1N1)

North American market. And the presence of PCAS in China enables the company to meet the growing demand in the country for lubricants and base oils. These branches around the globe reflect a commercial offensive designed to secure new market shares via the reorganization of the company's distribution networks.

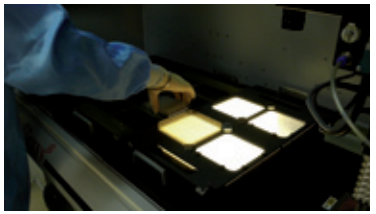
Partnerships with biotech companies

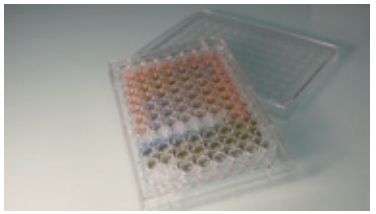
At the end of the 2000s, PCAS was adapting to the trend amongst big pharma to outsource their R&D activities, establishing itself as a favorite partner of emerging biotech companies. An agreement was signed with Protéus, a Nîmes-based start-up company founded in 1998 by Daniel Dupret, Jean-Marie Sonet, Jean-François Bloch and Gilles Ravot. Protéus specializes in biocatalysis, i.e. the engineering of proteins of industrial interest (enzymes) and the development of innovative biotechnologies that use these proteins in the fields of chemistry, the environment and bioenergies. Protéus develops its products in partnership with research centres such as IFREMER (marine resources research institute), IRD (French development research institute) and the CEA (atomic energy and alternative energies commission), as well as with industrial players such as Veolia Environnement, Firmenich, Thalès or Bioalliance Pharma. These partners help Protéus to develop and market its products and in return gain access to innovative technologies. Relations between Protéus and PCAS were strengthened in 2006 with the creation of a 50-50 joint-venture – PCAS Biosolution – that specializes in the pharmaceutical sector. Over time, PCAS has gradually increased its stake in the capital of Protéus. In October 2010, Protéus became a wholly-owned subsidiary of PCAS, leaving the parent company to steer projects and enabling the interests of the two companies to be aligned. Juliette Martin was appointed CEO of Protéus. Protéus aims at becoming a leader in the CLEAN TECH market.

And there have been plenty of projects for Protéus' employees to get their teeth into. These have included second-generation biofuels produced from non-food biomass, developed in partnership, with the Institut français du pétrole (IFP, the French Oil Institute), and "green note compounds", highly volatile substances well known for their fresh scent and flavour. In order to meet growing customer demand for so-called natural products and avoid using plants – a rare and expensive raw material - Protéus uses an enzymatic process starting from naturally-occurring linoleic acid to manufacture these olfactory bases. Lastly, enzymes represent a solution of the future for the chemicals sector. They make it possible to produce more precise reactions and hence achieve raw materials savings, by cutting down the number of stages involved in chemical processes.

Jean-Marie Sonet, co-founder of Protéus & CEO of PCAS Biosolution

"We invited our academic and industrial partners who operate in a quite different world to our own to help us celebrate the tenth anniversary of Protéus. This demonstrates our great capacity to communicate. Listening to the discussions, we had an image before us of what we were, of the positioning of our company in the various markets that have become our own. At the event, we were made aware of the multi-disciplinary nature of our business, of our dual foundations, and the fact that we are the bridgehead between the academic world and industry."





Outside view of the Protéus site, in Nîmes.
Robotized equipment for high throughput protein screening, Protéus.
Microtitration plates for microbiological analyses, Protéus.
on the right: Fermenter (bioreactor), Protéus.

GENERAL **HISTORY** >

• October 16th, 2009 Start of the Greek debt crisis

• December 1st, 2009 The Treaty of Lisbon comes into force

• February 2010 Winter storm Xynthia hits France

• April 10th, 2010 Volcanic eruption in Iceland grounds European air traffic

• May 1st, 2010 Shanghai world expo opens

• October 12th, 2010 Strike against pension reforms in France

2010

HISTORY OF **THE INDUSTRY** AND **PCAS** >

• July 2009 Creation of PCAS Nanosyn (California)

• January 1st, 2010 Creation of PCAS China

• April 2010 Creation of ENERSENS, a subsidiary specializing in silica aerogel

• May 19th, 2010 Launch of a rescue package for Greece worth 110 billion euros

• October 2010 Full integration of PROTEUS

A second partnership agreement was signed in 2009, creating PCAS-Nanosyn LLC, a joint operation between PCAS and a Californian start-up company, NanoSyn Inc. NanoSyn, founded in 1998 in Santa Rosa by two Russian engineers, Olga Issakova and Nikolai Sepetov, is a research body that offers drug developers medical chemical substances, evaluation and profiling services and batches of active ingredients for early phases. The company's success has been built on an "ultra-clean" environment and highly qualified personnel. More than 50% of its chemists are PhD holders, and since the purchase of Seres Laboratories in March 2009, its site has hosted six cGMP units, two of which are certified as class 10,000 clean rooms. This partnership has given PCAS privileged access to American biopharmaceutical companies and makes it well-placed to tap into the promising sector of integrated drug discovery services. In Europe, PCAS has been able to scale up production for all clinical trial phases at its cGMP sites.

Also in 2009, PCAS BioMatrix Inc was added to the PCAS business portfolio. This partnership between SJPC, the group's Quebec-based subsidiary, and Matrix Innovation Inc, a local start-up company, was established to market ChemMatrix®, a resin developed from polyethylene glycol used to obtain purer peptides and higher yields. PCAS thus gained a position in the polypeptide synthesis market, a sector enjoying considerable growth. To succeed in the sector, PCAS has been exploiting its considerable experience in the field of special polymers and monomers used in the composition of high-tech products: textile fibers with a very high thermal resistance, special functionalized resins for environmental and biomedical applications, proprietary products such as very high-performance polymers for aeronautical or oil industry applications, etc.

On the eve of its 50th anniversary, PCAS continues to evolve. With nine sites and more than 900 employees, its considerable experience in fine chemistry places the company amongst the global leaders in fields of the future, such as super-insulation, organic photovoltaics, performance additives and biocatalysis. The keys to its success: the pooling of resources, the mobility of skills and expertise and the transfer of technologies throughout the group's perimeter. And, above all, a vision. Whilst the company has maintained its presence in the pharmaceutical synthesis sectors - these represent two-thirds of its operations in 2012 - the diversification strategy implemented all those years ago by the founders remains, faithfully pursued by the generations of managers that have followed. In fact, over the years, the company's force has been the personal commitment and dedication of its men and women. They are the ones who have perpetuated the PCAS spirit. And Henri Barbier was well aware of the fact, alluding to it during his farewell speech to the little company he had created with his accomplice Félix Le Pors, one fine day back in February 1962...

Daniel Cottrant, Couterne Plant Director

"We're developing a major project at Couterne in the field of high-performance polymers for various markets, including aviation and the medical sector. This investment worth several million euros will ultimately enable us to produce dozens of tons of polymers for a major chemical-sector customer."

High-performance polymer (PEKK).

PCAS Nanosyn laboratories, Santa Rosa, California (United States).

2011

• **December 2nd, 2010**
Three month moratorium on photovoltaic development projects in France

• **March 11th, 2011**
Fukushima nuclear accident

• **January to April 2011**
The "Arab Spring"

• **May 14th, 2011**
Dominique Strauss-Kahn, IMF Chief arrested in New York

• **November 29th, 2011**
France switches over to all digital

• **December 5th, 2011**
France loses its triple A rating

2012

• **May 6th, 2012**
François Hollande is elected President of France

• **January 19th, 2012**
Kodak files for bankruptcy

• **November 6th, 2012**
Barack Obama is re-elected President of the United States

• **December 2012**
PCAS celebrates its 50th anniversary

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November 2012


Turku
Limay
Couterne
Frankfurt-am-Main
St-Jean-sur-Richelieu
Villeneuve-la-Garenne
San Francisco
New York
Mourenx
Bourgoin-Jallieu
Shanghai
Longjumeau
Head Office
Aramon

Created fifty years ago in the Orne département of North-Western France by two determined and visionary engineers, today PCAS is a global leader in a number of the speciality fields of the future. This is the story of half a century of industrial and scientific endeavour. It also recounts a wonderful human adventure. Takeovers have peppered the history of PCAS, but the group's innovative drive and constant focus on customer service have enabled it to weather stormy waters and remain true to the original vision and spirit of its founders.

And through the company's own saga emerges the story of half a century of French industrial history. Scientific research, technological progress, improved safety, the implementation of an environmental policy, the conquest of new markets: throughout its history, PCAS has demonstrated its capacity to adapt to a constantly changing world. This is the story of PCAS, and of the men and women who have made the group what it is today.

pcas
more than chemistry

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