From AFE to Safe

The Emergence of a World Champion

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Olivier Boudot

Mémoires d'Hommes,
Histoires d'Entreprises

“Nothing is more beautiful than sharing an industrial adventure in the service of humanity.”

Gérard Mura

The story of Safe's adventure recounts how, beginning with the merger of two regional foundries in deepest Franche Comté, two men – Marc Génot and Gérard Mura – have presided over the destiny of the Group for more than half a century, making it a world leader in every market, in industrial sectors that have been repeatedly shaken by crises and downsizing.

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I.
IN THE BEGINNING

I.1 GENESIS

In 1967, the heads of two small cast steel foundries in eastern France decided to merge. This was an innovative decision, a gamble on the future, and marked the first time two medium-sized foundries had come together. Ordinarily, when an industry is foundering, companies would rather go under than merge. But this time things were different. The decision was even more extraordinary because the families that ran the two foundries had the reputation of being enemies. The story went that Mr. Leroy, the rather short owner of the Sainte-Suzanne foundry, had once climbed on a stool to deliver a slap in the face to Mr. Maître, the owner and majority shareholder of the Colombier-Fontaine factory. To understand how the children and grandchildren of these two entrepreneurs decided to bury the hatchet and work together, a few words about the foundries are in order.

CASTMETAL FWF
Ingot pouring crucible.

CASTMETAL FWF
Ingot casting of a ladle bottom.

In Colombier-Fontaine

Spinning mills were widespread in along the Doubs river valley in the late nineteenth century. The Peugeots, powerful local industrialists, owned several. In 1904, one of the Peugeots opened a foundry in order to manufacture cast steel spinning machines locally. Until then, these parts had been made in Germany, which is why two Germans, Mr. Schwidessen and Mr. Krebs, hired as technical counsellors, became shareholders in the foundry along with the Peugeots. The production manager was also German.

In 1910 the Peugeots sold their shares to Jean Maître. This student from the École Polytechnique, brought up in a family of blacksmiths, was the first member of a dynasty that would reign over the foundry for more than half a century. World War I brought an end to the three men's partnership, however. The Germans were ordered home and the foundry was seized. Like most other industrial businesses, it went into production for the war effort, manufacturing armaments.
For greater efficiency, Toussaint Levoz, an internationally known expert, fit Bessemer converters with side channel blowers in 1915. This equipment enabled the foundry to produce steel machine gun sleeves. Until that time, these parts had been forged or stamped. Competitors such as Arbel, who tried to use cast steel to make these parts, were not successful, but the Colombier-Fontaine factory produced many thousands of them in just a few months, enabling the French army to secure the machine guns they needed. Colombier-Fontaine also manufactured wheel carriages for anti-aircraft canons. The company enjoyed a prosperous period at this time.

Around the same time a notary, André Leroy, arrived from Paris to oversee the seizure of the factory. What could have driven a Parisian notary to come to eastern France, and especially to the Franche-Comté region? Whatever his reason, Leroy liked Colombier-Fontaine, and when the shares belonging to the German shareholders were nationalised by the Versailles Treaty and put up for sale, he attempted to buy them. His efforts came to nothing, however; Jean Maître pre-empted the sale and retained complete control over the company. From that time on, Colombier-Fontaine would be known as the Maître Foundry.
By 1919, the second generation had taken over. Etienne, Jean's nephew, returned from the front and toured the factory in his artillery captain's uniform. Along with his brother Pierre and his cousins Alain and Jean de Boisfleury, he would now preside over Colombier's destiny. Starting in 1919 cast steel would replace malleable iron. In the sales department, Pierre Maître's wife along with Georges Mossard and Ernest Bonnot, ensured the foundry's development. When times were difficult, Etienne Maître would also step in and visit clients. These included plough manufacturers like Souchu Pinet and Beauvais Robin, but also the SNCF, de Dietrich, les Mines de Potasse d'Alsace and many others. Some of these names, such as Tourellier and Grégoire & Besson are still faithful to the group nearly ninety years later! In 1929

the family added an extension to the large house next to the canal. It had been built in 1904, at the same time as the factory. This so-called chateau, inhabited by Etienne Maître and his family, still boasts a classic gable roof.

A few metres away, barges unloaded the raw materials necessary to make steel. The entrance to the foundry was on the canal side. Only after World War II was it moved to the street side of the building, where it is located to this day. The core-making workshop was along the wall on the château side. The workspaces of a dozen core-makers consisted of tables against the wall, on which the cores were made with sand. Green sand cores[1] were often used, with "Belgian sand"[2] used for vacuum dried cores. The flames in the workshop did not reveal the foundry men's secrets; instead they lit up an extremely hierarchical world dominated by the modellers and hand moulders.

In the 1930s the one hundred employees included a dozen hand moulders. They were more like artisans or artists, and their knowhow has passed through the company's history from one site to another and on to the foundries that currently make up the Group. From Crewkerne to Sainte-Suzanne and from Arnage to Feurs, the same attention to detail has been passed along from generation to generation, and is still very much in evidence at the present time, several decades later.

A Few Kilometres Away, in Sainte-Suzanne

Although he had been denied at Colombier-Fontaine, the Parisian notary André Leroy did not give up. On 23 December 1918, he bought the Debard foundry in the village of Sainte-Suzanne, scarcely fifteen kilometres from Colombier-Fontaine. Debard specialised in products for the burgeoning automobile industry, including crankcases for motors, gearboxes, and other parts, which were made using a variety of technologies. Leroy renamed the company Aciéries et Fonderies du Doubs. Inspired by the experience he had gained in Colombier-Fontaines, he installed two convertors and began producing cast steel parts. Today all the ports of the world are equipped with bollards made in Sainte-Suzanne, which were marketed under the brand name Aciéroy. The Sainte-Suzanne factory, like its rival in Colombier-Fontaine, produced a variety of products, in accordance with the orders it received. After 1932 gray cast iron was no longer used, and the site became definitively specialised in cast steel.

It was here that our story began. The Colombier-Fontaine corner-stone was laid in 1904 and the foundry, which belonged to the Maître family, was inaugurated in 1907. To facilitate transportation it was next to the Rhine-Rhône canal and near the railway station.

CASTMETAL FWF Daniel Petitcuenot. Crane operator on the ground.

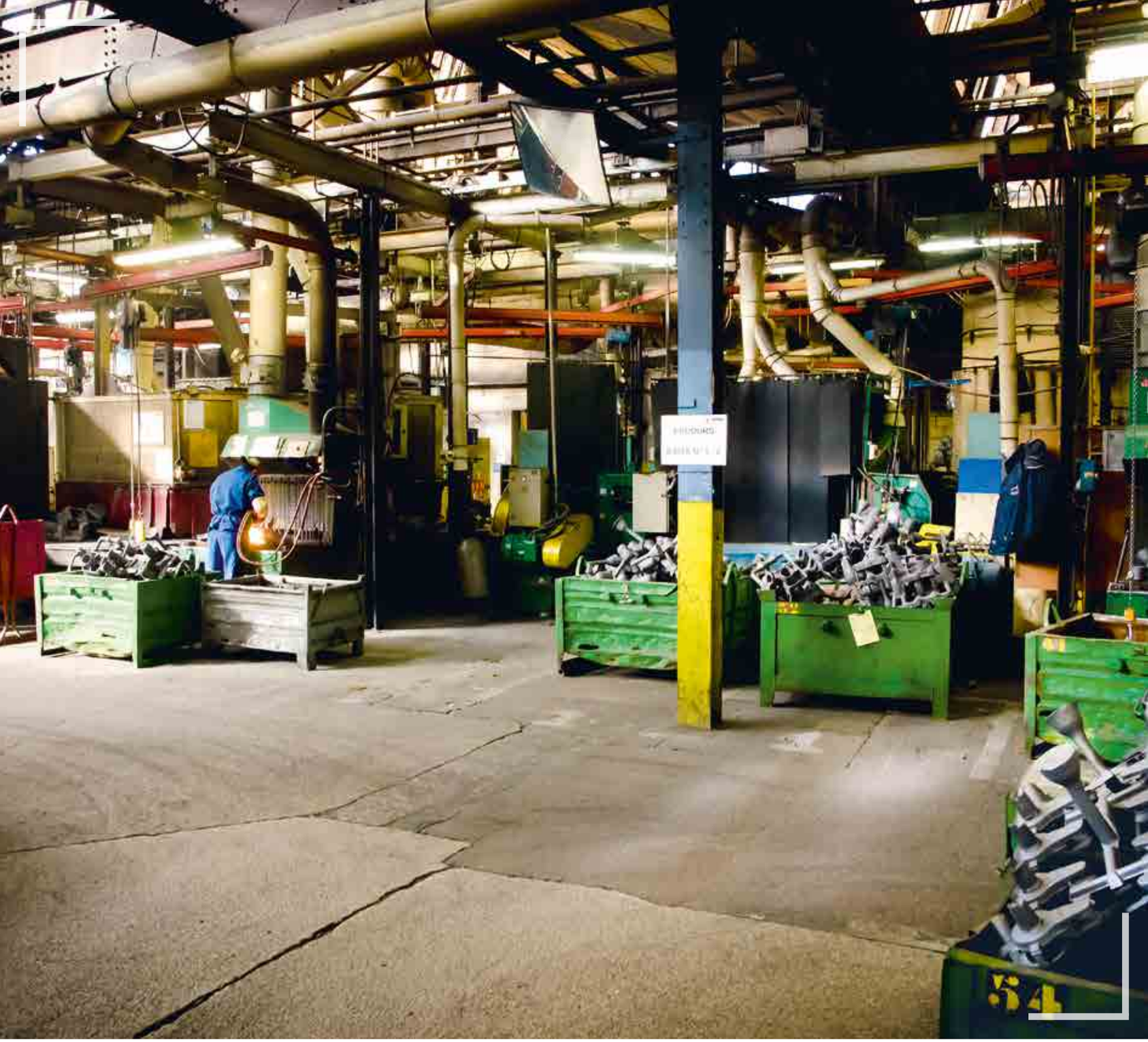
During and After the War

The two factories came through World War II without major difficulties. The story is still told of how Jules Pélier, a Sainte-Suzanne executive, housed the leader of the local resistance movement when Father Flory, the village priest, asked him to. The resistant's superiors regularly encouraged him to blow up the factory, and Pélier dissuaded him just as regularly. This went on until November 1943, when the order from above could no longer be ignored. The resistant said to Jules Pélier, "Just because you've given me hospitality doesn't mean the resistance won't accuse you of collaborating." He then added, "Come on, we won't hurt anyone, and it will satisfy everyone." That evening a huge explosion was heard. The resistant kept his word: damage was minimal, and production was soon able to resume.

Colombier-Fontaine had a similar experience a few months later. On 10 June 1944, two days after the Normandy landing, French resistance fighters blew up its machine shop. Paralysing businesses without causing serious damage was thought by the resistance to be a way of "liberating" workers and tempting them to join the underground.

The post-war period, characterised by rationing, was slow and difficult for industry. Conditions were unfavourable for increasing production because coalmines could not provide enough coke for foundries; many businesses closed at this time.
In 1954, the budget for the Indochina War reduced the amounts allocated to capital goods industries, Colombier-Fontaine and Sainte-Suzanne's traditional clients. During this period of reduced production, however, cast steel was accorded a guaranteed income. The shortage of direct shipping ore paralysed the competition. Foundries took advantage of the situation to make their clients wait several months for their orders. In later years these clients would take revenge by favouring gray cast iron and mechanically welded goods. Such stiff competition among technologies would determine the sector's future development.
The two factories followed parallel paths during this period. Colombier-Fontaine invested in modernity: in the 1950s a Piper moulding machine was installed along with nine semi-automatic Osborn jolt squeeze moulding machines. Conveyors for transporting moulds

CASTMETAL COLOMBIER Heat treatment.



CASTMETAL COLOMBIER Finishing.

were installed, greatly improving working conditions in the foundry, although deburring still remained very difficult. A shot-blasting tunnel identical to the one used by Camions Berliet was installed in 1952. This modern addition was the pride of the factory, and even Peugeot visited to have a look at it.

Etienne Maître handed on the executive management to Jean de Boisfleury that same year. Gérard Maître, Etienne's son, was appointed Deputy Managing Director.

“When I was 15
I got on my bike and rode
to the Baumann factory
in Colombier-Fontaine.
They weren’t hiring.
A bit farther on there was a foundry.
I went inside and the personnel
manager, Jean Dano, said,
‘Come back on Monday
and you can start.’
I was hired at 1.70 francs
an hour, with a 20% reduction
because I wasn’t 18 yet.
There wasn’t a contract; just a little
piece of paper on the table.”

Yves Christment, Castmetal Colombier

In Sainte-Suzanne, Jacques Génot, André Leroy’s son-in-law, had become the new CEO during World War II. Génot invested in productivity. In 1945 he introduced proportional salaries, which had been theorised by Eugène Schueller, the founder of L’Oréal, during the interwar period. Aciéries et Fonderies du Doubs coupled this scheme by giving the same amount to the personnel as was paid out in dividends. Sometimes its factory workers were better paid than those at Peugeot, which generally set the local standards!

It should not be forgotten, however, that working conditions were still difficult and would remain so for a long time. As Madame Flur, a former worker, recalled, “I cried every evening for a whole year. There were four of us women in the deburring factory, two on a huge grindstone, one with shears, and the last one with a manual shot-blaster to get rid of excess metal. In the winter we’d fetch wood we’d hidden during the day, and in the winter we’d use a wheelbarrow to get the coal we’d hidden in the snow, to build a fire in the workshop. There was a furnace to keep people warm on the production line. It was filthy everywhere. When we got out in the evening we’d be blinded by the glare, and when I walked home I’d stumble straight toward the headlights of oncoming traffic.

CASTMETAL FWF Ladle heater in front of the casting area.

"If you wanted to make
the boss happy, it was a good idea
to go to church on Sundays.
The Maîtres were very Catholic,
and built their foundry
in a Protestant village where
they funded the construction
of a church, whose buildings were
listed on the foundry's accounts.
The religious processions
they organised paralleled sporting
events put on by the Baumann
chair factory, the other company
in the village, whose managers
and personnel were Protestant."

In ***l'Amérique sur un plateau:***
FWF une odyssée de l'acier.

The two neighbouring and rival factories came through this period in relatively good shape. They accepted numerous orders and increased their clientele through efforts at improving product quality. As one of the old guard at Colombier-Fontaine recounts, the clients actually had little say in how things were done. In the early 1960s goods were delivered six to nine months after orders were placed, and further orders were not accepted if the clients complained. Work was plentiful and included orders for the railways, public works, and even the nuclear industry. One of the complex parts the factories had to master was the railway point operating apparatuses for Tourtellier.
Sainte-Suzanne produced numerous paddle wheels for hydroelectric power plants. The strength of these so-called "jobbing foundries" was their ability to produce a variety of parts in small, medium and large amounts for a wide range of sectors. Each month, both Colombier-Fontaine and Sainte-Suzanne made between 350 and 400 tonnes of parts. Both foundries ranked around seventh in France, a considerable accomplishment. And both were about to undergo a veritable revolution, which took place when one of the key figures in our story arrived on the scene: Jacques Génot's son Marc.

A Change in Management

In 1958, Marc Génot, a researcher at the Centre technique des industries de la fonderie (CTIF), came to Sainte-Suzanne to complete his PhD on iron/carbon alloys. The twenty-six year old had also enrolled in evening classes at the Conservatoire national des Arts et Métiers, and was working towards a degree in business management and the scientific organisation of work, in hopes of becoming an executive. In 1963, when Jacques Génot suggested Marc succeed him, the younger man accepted on one condition: that he would be able to put dynamic policies into action. This desire and his ambition for the foundry were inextricable and it would not be long before his ideas were put into practice.

Marc Génot had a lucid outlook on the changes that would soon occur in his sector, and was aware of the excess capacity of French factories. Many of the 90 foundries then active in France would not be able to survive, he felt, unless they formed alliances. And if that were true, why not merge with Colombier-Fontaine?

This was an extremely innovative idea for the time. Never before had steel foundries thought of combining forces; companies had always competed with one another. But in 1964 Jean de Boisfleury, the CEO of Colombier-Fontaine, had come to the same conclusion as Génot. His factory was vulnerable on its own, and an alliance with Sainte-Suzanne was an idea whose time had come. Marc Génot's marriage with a woman descended from the great dynasty of forge masters made the idea even more apposite. As Jean de Boisfleury haughtily said to Marc Génot when suggesting a merger in 1964, "Since you're respectable now, we can go ahead and merge."

It was time to decide on the conditions of the merger. For this the foundries called on the combined expertise of Mr. Moinet, the director of the trust company of the Syndicat general des fondeurs de France (the French foundries union), and Mr. Chatelin, a CTIF trust expert. The two men set to work, with Mr. Chatelin jotting down figures in his small notebook. The outcome was 53% for Sainte-Suzanne and 47% for Colombier-Fontaine.

Marc Génot still smiles, fifty years later, when he remembers how AFE's origins were defined by this division. In his opinion, the percentages could just as well have gone the other way, but his vibrant personality probably played in his favour. Nothing could stand in Génot's way. But the decision had serious consequences, as the families had decided

that only a majority shareholder might assume the chairmanship. How would power be shared? Gérard Maître of Colombier-Fontaine had earned the same degrees as Marc Génot, and was the older of the two men. What would he suggest to Génot? The new legislatixon governing limited companies, voted in 1966 and effective in 1967, came at exactly the right time.

The new law enabled an elegant solution. Two governing bodies were created, and Aciéries et Fonderies de l'Est (AFE) became one of the first French companies to have a Board of Directors as well as a Supervisory Board. Marc Génot was named President of the Board of Directors and Jean de Boisfleury President of the Supervisory Board. Because de Boisfleury's family was a minority shareholder and he could never hope to head the Board of Directors, he wanted to be able to leave the company one day. He even proposed a solution: "It's quite simple, all we have to do is go public." This was a mad and completely unrealistic idea for a group of around 700 people working in a historical industry. Marc Génot was aware of this, but the challenge stimulated him, perhaps because it was so outrageous. He decided to take up the gauntlet. The Aciéries et Fonderies de l'Est Group was officially created on 23 March 1968, with the objective of going public. All the company had to do was find the means to do so, and the young President and his teams would soon perform this extraordinary tour de force.

Getting to Know One Another

The two foundries, long -standing competitors and rivals, now had to learn to get along. The directors organised many meetings at every level between executives, personnel representatives, workers councils, supervisors, etc. This was not a simple task, and it took many years to create true understanding. Former employees recall what would happen during company trips before 1975: "The people from Colombier-Fontaine would sit in the back of the bus, and the ones from Sainte-Suzanne would sit at the front." They also pointed out that "it was only when they retired that everyone started getting on together!"

This backward glance elicits a smile today, and reminds us that the Group's unique identity was also forged through its capacity to develop the tools that allowed it to build and share common ground. In December 1969 the journal *AFE Informations* took the place of

The Sainte-Suzanne factory was quite near that in Colombier-Fontaine. The grandfather of Marc Génot, the future founder of the AFE Group, purchased the concern late in 1918. Specialising in cast steel by 1923, its emblematic brand was then Aciéroy.

Aciéroy, which had existed since 1953 in Sainte-Suzanne. Many years later, the in-house newsletter *Le Lien* would allow employees to get to know one another on an entirely different scale.

I.2 GROWTH BEGINS

Marc Génot built his Group according to a model that allowed him to gradually absorb other companies while restructuring the cast steel industry and becoming one of its leaders. The pillars on which AFE founded its future development were empowerment of its organisations, specialisation, and a dedicated sales force. One of the most important ways for the factory to progress was to become more independent, and raising the level of executives' knowledge was the means to this end. Marc Génot understood this and said, "Knowledge of cost prices is essential in estimating a factory's competitiveness, keeping track of its cost-effectiveness, and deciding how the work should be divided up." He himself set up a training programme, and opened up the company's account books to executives and personnel representatives, who were encouraged to take a 40-hour training session.

The events of May 1968 provided an opportunity to start the training sessions earlier than expected. Things had been fairly quiet that month at the foundries. Colombier-Fontaine published a list of grievances and went on a two-week strike to obtain satisfaction. In Sainte-Suzanne, everything was calm until 11 June. On that tragic day, two Peugeot workers were killed in a demonstration. The angry and saddened workers filled their pockets with steel scrap and bolts on their way to Montbéliard. The ensuing strike lasted several days. Each morning, Marc Génot went to the factory, where the same scene played out:

"So, still not back to work?", the boss would ask.

"No, not yet.", answered the workers.

"Are you making sure the melting equipment is safe?"

"Yes, yes."

This conversation over, the executives and supervisors repaired to a chalet near the Doubs River, where Marc Génot taught them the fundamentals of economics. As for the afternoons, they were given over to memorable soccer games…

By allowing management and labour, executives and supervisors a perspective on how the company was functioning and what was at stake, Marc Génot broke away from the paternalistic model, exchanging it for a dialogue between management and employees that was founded on reciprocity and transparency. Managers on every level took part in the decision-making process, and became well-informed instigators in developing their working tools.

Safety First!

Improving the workplace also meant increasing safety. One hundred and fifty accidents took place in the foundries of Sainte-Suzanne and Colombier-Fontaine in 1972, which represented a loss of 4,000 working days. A safety competition had been launched two years previously, with prizes given to the winners. Emile Roux won 100 francs (€15) for a brake shoe that stopped shakeout cars from backing up too quickly. Roland Ligliozzolo won 200 francs (€30) for an ingenious table that could be turned and tilted during the machining of rings for Creusot-Loire. The period was characterised by the real beginning of protective

CASTMETAL COLOMBIER
Non destructive testing.

CASTMETAL
FWF
Melting Shop
Sampling by
Djaimel Bara.

"Clients complain
that agreements aren't
honoured and deliveries
are made piecemeal.
They become furious when parts
they didn't order are delivered,
while those they urgently need
are late. They don't understand
that the moulder's tooling
wasn't available, that the pattern
had to be adjusted, or that
there were other problems!"

1953, Jacques Génot

equipment. When workers refused to wear protective equipment, the foreman would send them to the infirmary. The staff manager would come to see them, accompanied by a moulder who had had a terrible accident the day before Easter. His mould had exploded, spraying the man with molten metal and catching his clothes on fire. He was flown by helicopter to Lyons and treated in the serious burn victims' ward. He showed his scars to the men in the infirmary, and this somewhat cruel method succeeded in convincing them that protective equipment was in fact a good idea…

The Factories Specialise

The manager of AFE also decided its plants would become specialized to achieve productivity gains. The 1,100 x 1,100 mm and 1,200 x 600 mm moulding boxes were produced at Sainte-Suzanne, while the 600 x 400 mm moulding boxes were made at Colombier-Fontaine. Reducing the number of machines enabled the Group to make better-targeted and more efficient investments. One consequence of this strategic choice was that hand moulding was transferred from Colombier-Fontaine to Sainte-Suzanne. Fruehauf fifth wheels, for example, which had been produced on the Colombier-Fontaine Piper moulding machine since 1959, were now manufactured in Sainte-Suzanne. This change ushered in the epic story of the fifth wheels that would be manufactured on this site.

Conquering the Markets

Marc Génot: “Our policy was aimed at customer service; one might even say at a partnership with customers. We decided that the commercial aspect would be our tool when we went into the fray. I’m sure it was the main reason we were able to achieve our current market leadership.” Another important pillar of the young Group was its sales representatives, who were also committed to its policies and success. Unlike the sales representatives in Sainte-Suzanne, who worked for multiple employers, those in Colombier-Fontaine were salaried by and worked only for the company. The management drew its inspiration from the Colombier-Fontaine model as it built up a dedicated and efficient sales team. Through a partnership with the Lyons Business School, they put together a seminar that addressed their specific problems. The tools they developed were innovative for the time and adapted to their needs. For example, AFE and the Lyon Business School developed a method, a reference table, and a hierarchy of client requests that included methodical data processing and a framework for working with each structure. AFE’s sales representatives were soon operational, each in a specific geographic area of France, Germany and beyond.

During these years of over-productivity, the French sphere was too narrow to allow for success. In order to gain market share in other countries, the best strategy was to join forces. In 1970, therefore, AFE teamed up with other foundries that shared the same objective. Mutualising forces diminished costs while increasing the variety of products it could offer. Everyone concerned would reap the fruit of these efforts.

It's always first and foremost about people.

“We’re the European leader in ploughs and all our ploughs have cast steel parts. They come from AFE. Choosing cast steel matches our strategy and our position: Grégoire & Besson’s reputation is built on being top of the line, and the top of the line is cast steel. It’s helped us to progress in terms of technology. We’ve always moved forward thanks to our energy. But whatever decisions are made, they are founded first and foremost on relationships between people. The confidence between people in our partnership with the AFE Group is what really counts.”

Patrick Besson,
CEO of Grégoire & Besson

CASTMETAL FWF
Mould closure and assembly carried out by Jean-Marc Ressot as Edem Abdulbacki.

The above-mentioned objectives resulted in the creation of Framex, an economic interest group. The German speaker Jean-Luc Weber, from Alsace, was hired by Marc Génot at this time. “What have you done so far?” Génot asked the young man, who had not yet finished his military service. When Weber answered that he was a Marine, Génot was satisfied, saying, “Sailors have good values.” Loyalty must be one of them, because Jean-Luc Weber, hired in 1974, is now, along with Marc Génot, the oldest member of the Group!

The other Framex foundry men were not as perseverant as Weber, though, and lacked commercial aggressiveness. So Marc Génot decided to return the export department to Sainte-Suzanne. In 1980, the foundry landed a big contract with Thyssen Henschel in Kassel, Germany, to produce axle boxes for locomotives. The contract was for one million francs (€150,000), and was Jean-Luc Weber’s first significant contract. Above all, it showed that making efforts outside France was eminently worthwhile.

On the Road to Economic Growth

The Group’s goal, as Marc Génot put it, was to “create a group that would be strong enough for the French and European markets, and

would be as big as our main competitors. We maintained our production levels when that of others in the profession dropped by 16%."
Once the foundations for AFE's development had been established, it was time to put them to the test. The premise was simple: AFE would acquire new companies, which would manufacture products that were complementary to those already produced. Transferring certain moulds from one site to another would allow overall productivity to rise considerably! Another advantage of having multiple sites was that overhead expenses would be spread out. Since it was more profitable than its competitors, AFE's market share would increase and it would begin a period of growth. Things are rarely as simple as the model, however, and there were a few mishaps along the way, as well as both good and bad surprises. Generally speaking, though, AFE's external growth operations quickly increased its scope.
The merger with Legenisel & Blanchard in 1972 was the first of these. This foundry, established in 1857, was renowned for its innovation and technological precision. One of its jobs was casting the sculptures of César, the internationally renowned artist. Legenisel & Blanchard's

CASTMETAL COLOMBIER Final operation in melting shop.

CASTMETAL FWF
Arc furnace controlled by Denis Renard.

union with AFE was facilitated by the fact that the two CEOs were friendly, and that both felt a pressure to merge. Following Legenisel & Blanchard, AFE also joined forces with the Scey-sur-Saône cast iron foundry and its two factories in Scey and Chassey. The former, managed by Mr. Poinsotte, had an excellent contract with Algeria in its portfolio. The latter, inaugurated in 1969 on the Saône River canal, mass-produced lorry brake drums. When AFE merged with the Armoricaine de fonderie in 1976, it had reached nearly 100 million francs (€15 million) in turnover, up from a mere 55 million francs four years earlier. The number of workers had climbed to 1,420.

The merger with Redon was particularly important in sending a strong message about AFE, which was clearly recognized by other market players. As Marc Génot said, “The Breton Group Garnier, which produced agricultural machinery, was falling apart. They called us to help find a solution. We were the foundry that took over other foundries!”

Returning on the train from Redon with Mr Cabane, its CEO, and Mr. Lévy, its financial manager, Marc Génot studied the so-called “bed

sheets", enormous pages on which the profits of all Redon's output were printed, in order to get an idea of how the company had evolved. The future looked promising…

I.3 RESTRUCTURING CAST STEEL

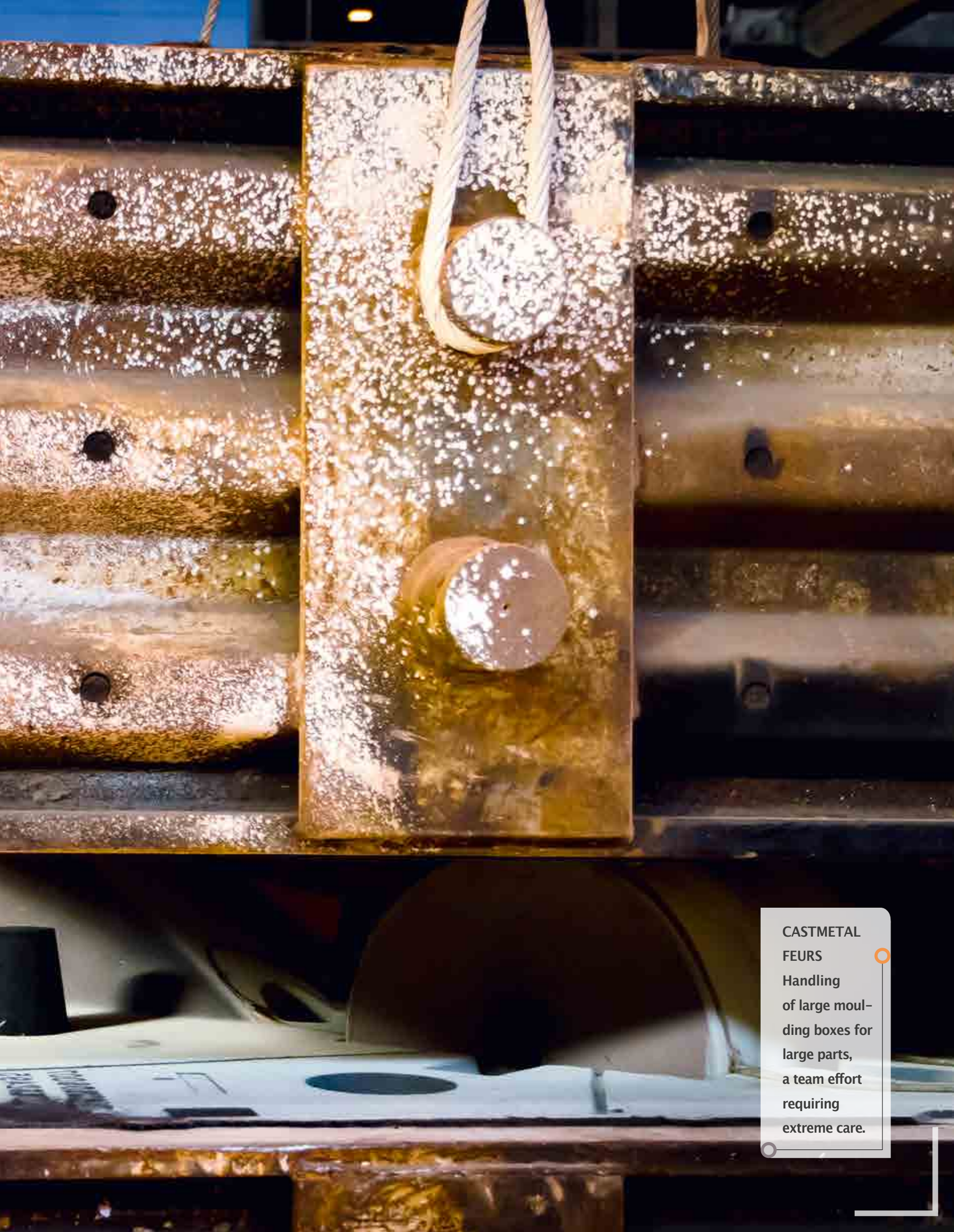
After a short respite, the first oil crisis of 1973-74 contributed to the decline of an already fragile sector. The downswing was worsened by the use of nodular cast iron, which was easier to cast and finish and thus less costly to produce. The severe crisis affected all industrialised countries, and consumption fell. Orders for steel fell by a quarter in England and Germany in 1978. In France, orders for train cars for the SNCF suffered a threefold decline. Competition raged and became increasingly international. It was particularly fierce within the Common Market, with French foundries competing against Belgians, Italians and Spanish companies. When French groups ventured outside the country, they were confronted by the English and the Germans, formidable competitors in the export market.

The largest Dutch foundry went under a short while later, followed by seven French foundries between 1976 and 1978. They were all medium-sized, with between 300 and 600 employees, and had been strangled by the spiral of falling prices and the impossibility of keeping up with heavy financial obligations. Foundries that were not frankly ruined faltered; one of these was the Fonderies et Aciéries électriques de Feurs, which fought against the inescapable erosion of its turnover. Faced with this emergency, France nationalised part of the steel industry through the so-called Barre Plan.

The enterprising and visionary Marc Génot positioned himself early on as a "rebuilder" of the French cast steel industry. Since 1973 he had been at the head of the cast steel section of the french foundries union whose renovation he launched. It was therefore quite natural that the authorities would turn to him to take over companies in distress.

Decazeville Joins the Group: An Unusual Adventure

Decazeville is a name that still resounds in French industrial history. A city entirely built around the coal industry, it was converted to the steel and metal industries in 1966. AUMD (Aciéries et Usines Métallurgiques de Decazeville), founded in 1968, was a colossus with feet of clay. In 1967 the government called AFE to the bedside of the



CASTMETAL FEURS
Handling of large moulding boxes for large parts, a team effort requiring extreme care.

CASTMETAL COLOMBIER
Melting shop.

company, which had been devastated by the crisis. “Put together a rescue plan,” demanded the Minister of Industry. Marc Génot agreed, on condition that he not be alone. This is how AFE found itself at the head of a new structure, les Aciéries et Fonderie de Decazeville (AFD),[3] in 1977. The takeover confirmed AFE’s pivotal role in restructuring firms in distress. Decazeville was slated to produce parts that weighed more than four tonnes and could not be made by AFE, and to provide fittings and valves for Schlumberger.

But the Decazeville problem was insoluble. AFE had hoped to convert the site into a small foundry and local steel plant, however turning coal miners into steel factory workers proved impossible. The workers felt humiliated, and let their new boss know it by detaining him in his grandfather's office in Sainte-Suzanne.

AFD was losing enormous amounts of money by selling its products at cut-rate prices. Although losses had been reduced, in the early 1980s they were still equivalent to 60% of sales revenues, and all at the taxpayer's expense! AFE, which was managing the company under state control, billed the government the losses every month, so was not in any financial danger itself. However, it was well aware of the chaotic situation and was forced to consider closing the factory for good. But the authorities were afraid of electoral consequences. As Paul-Marie Chavanne, Assistant Manager of the CIRI (Interdepartmental Committee of Industrial Restructuration) recalls, "For political reasons, Decazeville was kept on life support by the government, which subsidised it month after month. This was the only time this had ever happened! AFE had taken over the management. This was brave of them, from an industrial point of view. Marc Génot wanted to protect the sector, and make sure that unfair competition from Decazeville, which was selling at unbelievably low prices, wouldn't damage the entire sector."

One of the best-known anecdotes of the period recounts how the Prime Minister, Pierre Mauroy, along with his advisor Pascal Lamy, of the World Business Organisation, arrived to announce the closing of the factory. Standing in front of a crowd he became frightened and announced that it would stay open before an entire assembly of stupefied senior officials and AFD directors! It was clear from this moment on that Decazeville could only continue operating as part of a vast restructuring project.

The Group is Shaken Up

In 1982 AFE put its employees on a plan that paid them around 60% of their salaries to stay at home, without making them redundant. More than 30 people were affected at Colombier-Fontaine, and more than 100 at Sainte-Suzanne. Out of solidarity with the workers, Yves Chrisment, the Colombier-Fontaine union representative, also volunteered to go on partial unemployment. His counterpart at Sainte-Suzanne, a former soldier, did the same.

"We decided to pair off
the companies, such that
each dossier would save
one of the two. This method
didn't cost the government much
and the plan became standard.
Philippe Boulin, the former president
of Creusot-Loire, provided
the necessary moral authority.
He stood head and shoulders
above the other foundry men."

**Paul Marie Chavanne,
former Deputy Secretary-General
at the Ciri.**

In 1984, the sales representatives saw bankers file past their offices on an almost daily basis. They were on their way to see Mr. Levy, the administrative and financial director. But Sainte-Suzanne had something up its sleeve to calm its creditors down: a new client had recently placed a long-term order that would enable the foundry to hold on a bit longer. This was the American company Holland Hitch, which wanted to diversify its supply sources for fifth wheels. Sainte-Suzanne had approached Holland Hitch, which had signed a four-year contract guaranteed against fluctuations in the exchange rate by the Compagnie française de commerce extérieure (Coface). The implementation of a vast downsizing plan for the foundries completed the process of restoring the bankers' confidence.

Restructuring Cast Steel

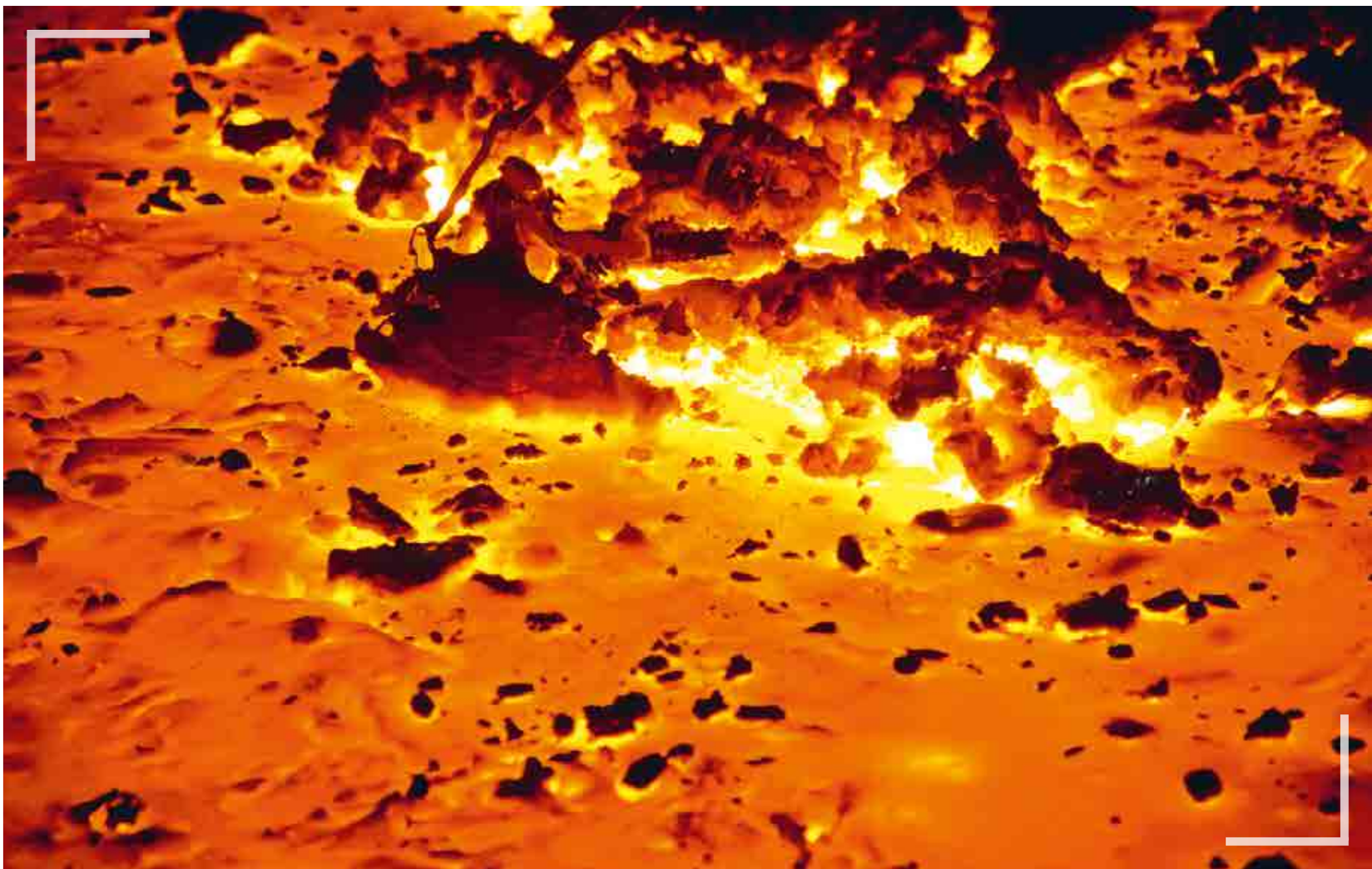
AFE's downsizing plan was based on an English model. Faced with a similar situation, English foundries had attempted an unusual experiment. Under the aegis of the Lazard bank, they put together the conditions of their upturn. Following this example, Marc Génot and his colleagues founded Aciclub with six different foundries. Its goal was to help club members progress together through lucid solidarity, based on intensive benchmarking. Foundry men travelled together to other countries, visiting the most successful foundries. Friends as well as rivals, they were ready to make the sacrifices the major structural

crisis demanded. As they travelled, the Aciclub members learned about the English experience, and decided to bring it to France where, in 1980, production capacity for cast steel had reached 300,000 tonnes, at a time when demand was only 150,000 tonnes! It was time to move quickly and efficiently.

The Syndicat general des fondeurs de France (the French foundries union), a group of cast steel professionals presided over by Marc Génot, set up an action committee. Philippe Boulin, who had just given up the chairmanship of Creusot-Loire, was recruited to head the restructuring of French cast steel. His scheme was quite unusual: foundries that would remain in operation would compensate those forced to close by paying them an indemnity representing 40% of their most recent annual sales. This sum would allow them to close factories under "socially acceptable" conditions. The terms of the plan were more complex, but we will not go into detail here. The strong commitment of industrialists and senior officials increased the probability that the plan would succeed, and convinced the French government to guarantee the operation through the CIRI and a fund set up by around forty banks.

CASTMETAL FWF

Molten lava ?
Liquid steel ?
No, it's slag.



CASTMETAL FWF
Last castings with the arc furnace by Philippe Cantrel.

Nothing had suggested that the CIRI would step in to save the cast steel industry. But the willpower of those who believed it was worth trying to find a solution through anticipation rather than assistance contributed to setting up this unusual plan. Its success highlighted the readiness of the foundry men to pull together at a particularly difficult moment. As Philippe Boulin noted, “In a sector with a limited number of players – a few cast steel foundries with international connections recognized the necessity to adapt to a more and more competitive atmosphere. After all, there was no law to compel foundries that continued operate operations to pay for the others. But they almost all contributed. And in the end, this restructuring was held up as an example.”

The new collective awareness driven by a small, clear-sighted group led by Marc Génot marked a major step in AFE’s development. Following the restructuring effort of 1984-1986, the managers could be proud of having turned two SME that merged in 1967 into one of the top two French cast steel groups. This was largely due to the merger with the Feurs foundry…

The Jewel of Forez

The Feurs foundry, located in central France on the plain that also lends its name to the city of Forez, was not unknown to AFE. Its history went almost as far back as those of the Sainte-Suzanne and Colombier-Fontaine foundries. Feurs was founded during and because of the First World War. In 1915 Antoine Drivet, the mayor of Forez, joined forces with François Blanc – an engineer with the French national mining and geological service who had founded the St. Etienne Forge company in 1906 – to found Aciéries électriques de Feurs. The site, which covered 4,000 square metres, was chosen because it was near a railway line. The foundry used an electric furnace from the outset, and was one of the first in France to do so. It originally manufactured shells for the war, and went on to specialise in cast steel parts.

Public orders that came in after the war stimulated the company, which was trying to make a fresh start. Feurs cast the parapet for a new bridge over the Loire River, for example, which was inaugurated in 1927! The foundry's halcyon days began with the Richier family's equity investment in 1942, which coincided with the beginning of cast steel manufacturing at the factory. From the heart of his industrial fiefdom in the Ardennes, Paulin Richier exercised influence throughout France and founded new factories that manufactured public works machinery. Feurs cast parts for these machines. Its other important clients were Caterpillar and Poclain, the other giants of public works equipment.

In 1958, the American Electric Steel Foundry Company (Esco), which produced skidder pads for public works equipment, contracted with the Fonderies électriques de Feurs to produce bucket teeth for the excavators it distributed. This example shows that public works provided the foundry with much of its work. "Our top five clients are from the public works sector. This makes us vulnerable", the managers worried in 1972.

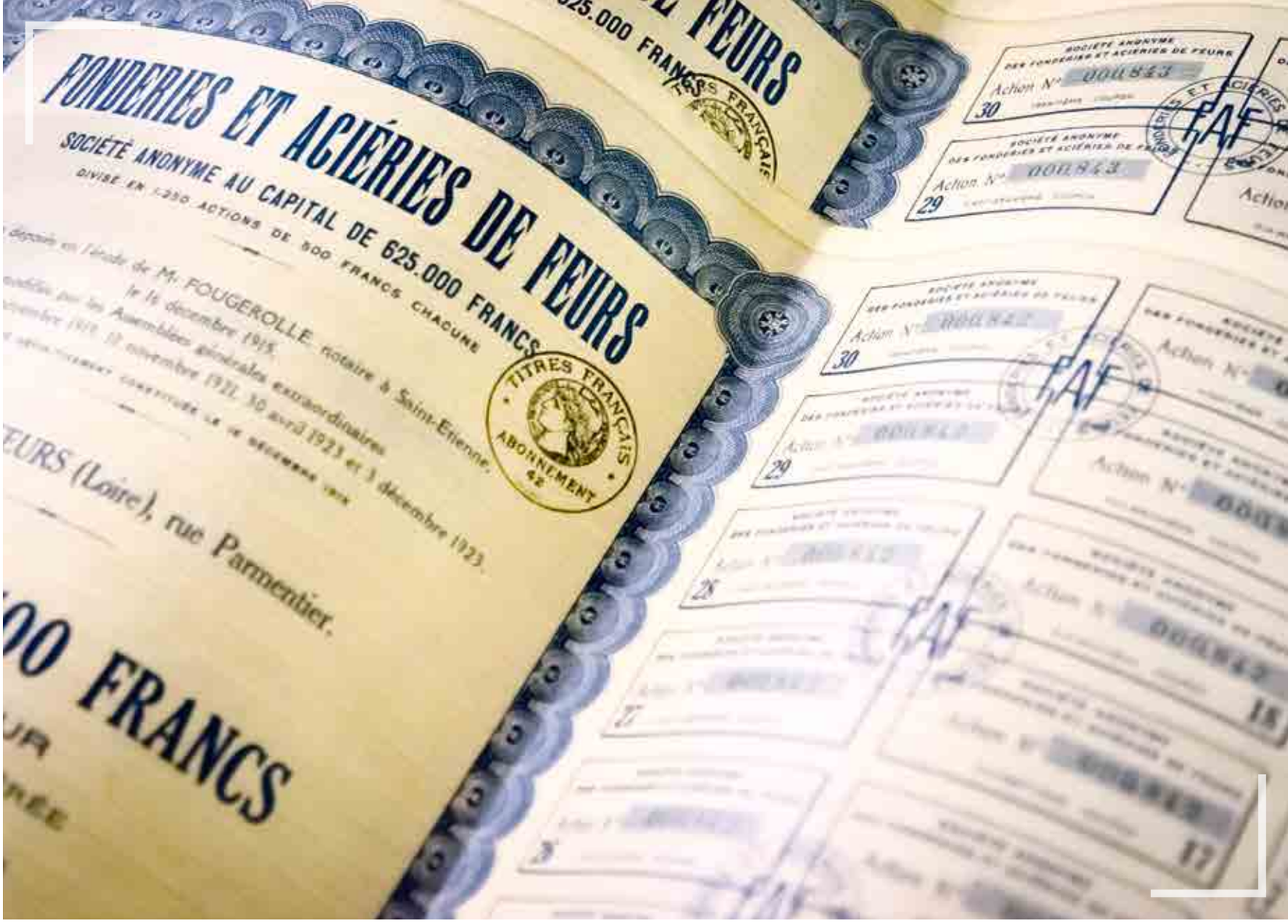
They Wanted Us Because We Were The Best!

As Marc Génot knew, the Feurs factory was magnificent. It had invested heavily between the mid 1950s and the 1970s. Visitors today are still welcomed in the Grand Bureaux, whose construction began in 1973. These buildings house the company's administration and management. Looking back over the years, one realises how ambitious the Richier group had been. In 1965, during a prosperous period, the company rented a piece of land in the Ardennes with the idea of building a sister

factory there. Three years later, following a merger,[4] Feurs found itself in charge of financial resources that would allow it to invest in new development.
The crisis cut the Ardennes project short, but the enormous Feurs foundry with its highly diversified production, huge grounds, and modern southern wing were still a sight to behold. The workers were aware of this, and were proud of their factory. As Noël Deux, hired by Feurs in 1977, half-jokingly pointed out, "That's why they wanted it, because it was beautiful, with its lawns and hedges trimmed by gardeners. And maybe that's why they got it, because we were too bourgeois… too profligate."

Rebellion!

When Feurs was taken over by AFE,[5] some people couldn't tolerate the change and fought against it. The factory guards, who lived in two houses on either side of the site, kept watch and protected the foundry from what they considered an unjust takeover. Roland Fraysse, Marc Génot's right hand man and envoy, was immediately informed about the situation. Fraysse, an engineer and economist, had been part of the Group since the Decazeville merger: when Decazeville was administered by the AFE, Marc Génot had asked this hardworking employee to become its manager. The two men quickly realised that they shared a common passion for sales, which they believed was the key to economic conquest. As the restructuring effort unfolded, they were able to weigh up the consequences for AFE and think about how it would be organised in future. This was to be Roland Fraysse's job in Feurs.
But he was in for a surprise. "We don't admit just anyone here, sir. Fill out an identification form", he was told when he arrived. The unflappable Fraysse slept at his hotel, and then went to work. His goal was to save money. He didn't realise that the manager also had firm ideas about the subject: "I'll tell you how to save money," he said, "Get rid of the sales representatives. The clients are ours no matter what, and we can just concentrate on production!" Roland Fraysse was unimpressed. "Your factory is empty, sir", he answered. "The first thing to do is fill it with merchandise." Fraysse recalls the tensions of the early days in Feurs: "I called the sales representatives in and we worked until midnight, only stopping for a sandwich break. That's when one of the factory teams turned up with some little dogs, and gave the sandwiches to them."



CASTMETAL FEURS
Bearer bonds. The company turned 100 in 2015!

Some companies that were brought into the Group, even if their futures looked bright, were initially unhappy about the change. The employees did not have an overall perspective on the sector. Yves Maret, a quality control manager who joined the Group in 1975, explains, "Getting taken over like that made our blood boil. And when I went to Sainte-Suzanne to see what might be transferred, I noticed a 3D setting plate in the middle of the factory, surrounded by sand. It was all black and really old. Why had we been taken over by two old companies? We were modern and our personnel were well-treated. But we didn't have either an industrial or a sales vision, and AFE's sales network strengthened us. AFE was much more highly developed."

Specialisation and Reorganisation

The Group continue to grow during this harsh period. In 1980, after merging with Decazeville, it employed 2,500 people; in 1984 that number had dropped to 1,300. The Group offered a wide variety of

CASTMETAL
FEURS
UPP
(small parts
moulding line)
pouring area.

"La Mancelle did something special that I never saw any other French foundry do. Starting with the client's drawings or samples, it would develop, at its own expense, a custom heat treatment would be designed according to the type of furnace the client had, the kind of heat treatment involved, and the part to be treated. Then it created specific equipment that it sold to the client."

Francis Gaspar, first CEO of La Mancelle, after the AFE takeover

products and processes, from white and grey cast iron to ductile cast iron, low alloy steel to high quality steel, from lost wax (a technique used in Legenisel & Blanchard) to ceramic precision moulding and green sand.

As part of Facifer, the holding company founded at the time of the Feurs takeover, Sainte-Suzanne handled medium – sized parts in small series and international mechanised activity for lorry fifth wheels. Automatized small parts moulding lines were located in Colombier-Fontaine. Feurs concentrated on medium-sized parts produced in automatized lines and bucket teeth. For several months the Group also considered transferring large single-part casting from Feurs to Decazeville in hopes of saving the Decazeville foundry.

But Decazeville was forced to close its doors, like several other companies, some of which were only associated with AFE for a short time. One of these was the Société des Aciéries et Forges de Randonnai (SFAR) and the historic factory of Scey-sur-Saône, whose downfall was caused by the bankruptcy of Gambin, the milling machine manufacturer that was one of its largest clients. The Scey-sur-Saône factory had a long industrial history dating back to 1790. Iron ore was mined in all the neighbouring villages, and the forests provided wood to fire the forge and the blast furnace that had once belonged to the Marquis de Bauffremont.

La Mancelle de Fonderie

The small number of failures in AFE's vast game were dramatic for

those involved, but did not hinder its advancement. Paul Pouliguen, CEO of the Société de la Mancelle de Fonderie, located in the Le Mans region, contacted AFE in late 1982. Pouliguen was also the son-in-law of Marcel Bollée, a descendent of the famous family that had founded the company.

The Bollée family was well known in the foundry world. Amédée Bollée, who descended from a family of itinerant bell foundry men, had designed remarkable automobiles, and one can still admire his "Obéissante" model, which belongs to Safe, in the Le Mans museum. Other Bollée family members manufactured voiturettes, and still others left the automobile industry to specialise in piston rings. This specialisation resulted from the fact that Amédée Bollée, Jr. was unsatisfied with the quality of the parts his supplier provided: he founded La Mancelle in 1935, and his company would become a supplier of AB Segments. In the 1960s La Mancelle was one of the first plants to produce hardening baskets that were used in heat treatment to harden parts for the automobile industry; these had

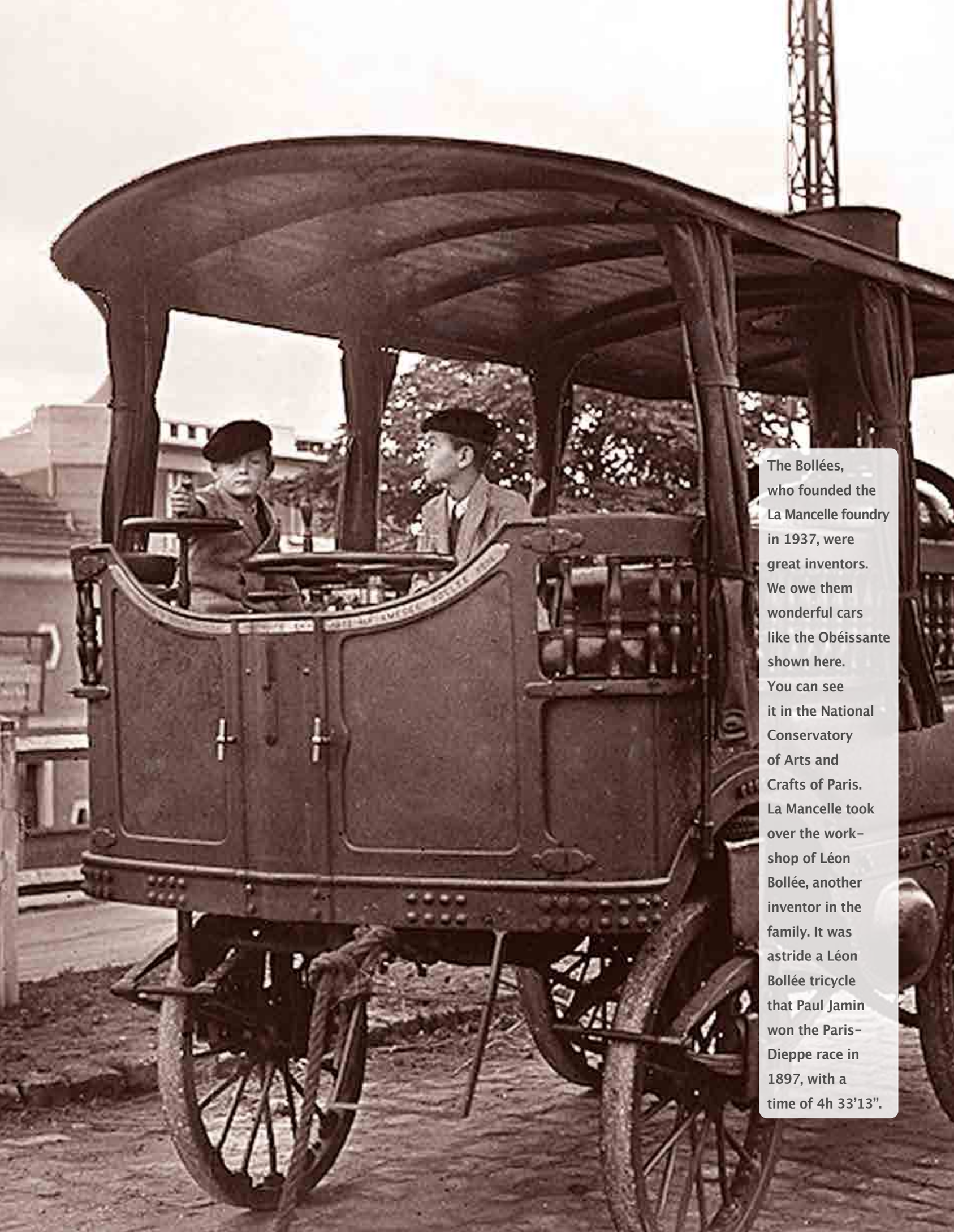
CRONITE MANCELLE

Cast grids in shot blasting handling system awaiting transfer from foundry to finishing shop.

previously been made by mechanised welding.
Cast steel, which provided greater rigidity and was longer lasting, quickly became one of La Mancelle's main products. But simply filling orders did not satisfy the company. Through a partnership with automobile industry research departments, it took complete responsibility for the parts it produced, from conception to delivery. This collaborative approach was rare between sub-contracting foundries and their clients. The strength of the SMF research department was a direct result of this original idea, and it was not forgotten when the company started to have problems. Like a fox, AFE was prowling in the background…

Recovery

La Mancelle was on its last legs by the 1980s. The two Georges furnaces, once cutting edge, were worn out. The technical director, François Bollée, constantly tried to improve them. Should they have been replaced by induction furnaces? The company would never have a chance to find out. La Mancelle, located on the wide Arnage plain since 1961, combined inventiveness, ingenuity and tradition. Its casting was mechanical but its handling was still manual. A real choreography took place with the workers carrying ladles of poured metal on stretchers and hung between the moulds.[6] Metal was carried from place to place by teams of two, three, or four men. On the outside world, the economic climate was becoming increasingly brutal. Following the second oil crisis, in 1979, car manufacturers that were La Mancelle clients deferred payment one time too many. The company was forced to block a Citroën truck that had come to collect parts, which had never happened before! The worm was in the fruit, and despite its outstanding qualities, La Mancelle did not have the strength to resist. Financially strangled, it went into a downspin. In this difficult context, Paul Pouliguen placed a call to Marc Génot, and things began to move quickly.
On 4 January 1983, La Mancelle went into receivership, in keeping with a law dating from 1967. Pouliguen's last move as CEO was to give the receiver a list of companies he had contacted to try to find a solution. The Aciéries Thomé was listed, along with AFE. The commercial court approved the latter, and a composition regime was set up with a repayment schedule for creditors. SMF received numerous orders in 1985, and by 1986, the company had paid back more than three quarters of its debts! It was clear that AFE had made a great deal.



The Bollées, who founded the La Mancelle foundry in 1937, were great inventors. We owe them wonderful cars like the Obéissante shown here. You can see it in the National Conservatory of Arts and Crafts of Paris. La Mancelle took over the work-shop of Léon Bollée, another inventor in the family. It was astride a Léon Bollée tricycle that Paul Jamin won the Paris-Dieppe race in 1897, with a time of 4h 33'13".

"All senior staff members
of French foundries will meet
on 4 May 1984 to address the topic
of restructuring. Production must
be reduced from the 300,000 tonnes
produced in 1980 to 120,000 tonnes
in 1984. Forty companies will be closed,
and will receive 40% of their most
recent sales revenues."

In ***Le Trait d'Union***-**In-house newspaper for AFE Doubs**

As Mr. Maes, the bankruptcy auditor, recalls, "The commercial court came down in favour of AFE because it had an industrial project, and also because it was very interested in La Mancelle." For Marc Génot and his team, this was the beginning of a promising and hitherto unknown market in heat treatment fixtures. Like a puzzle, or perhaps a mosaic, AFE continued to expand.

Going Public!

Unlike the Feurs situation, the La Mancelle takeover was greeted with surprise rather than anger. Astonishment had come earlier, when the redundancy plan and voluntary liquidation were announced. No one had expected this, and everyone feared his name would appear on the list of those who had lost their jobs. When the dust settled, those who still had jobs welcomed AFE's arrival, because the Group took over La Mancelle in a humane way and quickly showed that it had a long-term plan. It proved this in 1989 by installing a Goetze moulding machine, which made cluster unit moulding possible. This machine symbolised the mechanisation and automation process that characterised the La Mancelle recovery plan. The Goetze machine accomplished the work that had previously been done by twelve moulding machines!

AFE had adapted to its new framework and the arrival of industrial partners by creating intermediary structures and a supervisory holding company. May 1987 marked the twentieth anniversary of this arrangement and Marc Génot had a present for Jean de Boisfleury of the former Maître foundry: AFE was going public! When he heard the news,

CRONITE MANCELLE

Finishing booth of the medium-sized parts line.

de Boisfleury came to see Génot, saying, “You see, Marc, I told you so!” Thinking back on the many pitfalls and battles of the past, Génot smiled inside but remained silent, content to agree and share his partner’s joy.

I.4 TRANSFORMATION

Structuring

The following foundries were now part of AFE: Sainte-Suzanne, Colombier-Fontaine, Feurs, SMF, Redon (cast iron) and SMC in Châteauroux; the Moroccan Skirat foundries, which were in the hands of Legenisel & Blanchard, should also be included. Legenisel & Blanchard’s Gonesse factory, Scey-sur-Saône, Decazeville, and the Fonderies de Randonnai were among those that had been let go. This incomplete list illustrates AFE’s ambition and the strength of its restructuring plan, and also shows that it certainly contributed to saving a distressed sector.
No factory came through the crisis unscathed. Redundancy plans had been implemented everywhere: at La Mancelle before its bankruptcy; at Feurs, where 207 employees lost their jobs; and at Colombier-Fontaine and Saint-Suzanne, where 181 of the 514 employees suffered

CRONITE MANCELLE
Using a sleeker, the moulder trims the sprue by hand in a chemically-bonded sand mould.

the same fate. The number of employees had fallen by almost a third at the companies that weathered the storm!
Feurs lost 18 million francs (€2.5 million) in 1985. AFE put a complex plan of action into effect, including subsidies from the Fram (The Cast Steel Restructuring Fund) and the Direction générale de l'Industrie and loans from the Crédit National and the Fonds industriel de modernisation (FIM). It was thus able to obtain 48 million francs (more than €7 million) over a two-year period. These funds were used to improve Feurs' profits and finance investments. Factory modernisation was essential to increase competitiveness. AFE bet on specialisation, which it hoped would increase productivity. Competition among AFE foundries was not considered at this point, and product lines remained complementary. The idea of transferring mechanised casting from Sainte-Suzanne to Feurs was mooted. This change would have unexpected consequences for the future of the old foundry in Franche-Comté. As the transitional phase ended, Sainte-Suzanne was unrecognizable. All AFE foundries had undergone major changes, and the Group was justifiably proud in the early 1990s of having developed an automated casting system found nowhere else in the world.

Modernisation Continues

The twin processes of modernisation and specialisation were applied to each AFE foundry. La Mancelle received new furnaces and a new Goetze casting machine, which allowed it to begin mass production. The sand plant, the processes, the equipment…everything had to be adapted to SMF's new specialised role. An Italian engineer was hired to experiment with and develop numerous new technical products such as diesel piston inserts. These were used to manufacture Amédée Bollée piston rings and exported to England. The Goetze machine was also automated. Automation had begun in the 1970s, and along with computerisation, changed the way many industrial companies worked. AFE followed the same trend, as several major projects undertaken during this period (which in turn required major funding) showed.[7]

The lights in the north factory of Feurs went out for the last time. It had become impossible to work in good conditions in the enormous old buildings. The decks were not functioning at capacity and the moulds had to be raised on air cushions. The "home-made" industrial scrubber developed a crack. Work was transferred to the south factory, and workers crossed the road with ladles filled with molten metal. It was wintertime. Snow covered the ground and the bubbling metal created what looked like burning marbles. It was beautiful, recalled those who did the job – but also dangerous. The workers stopped traffic with a flag while the ladle was taken across the road.

"In the months before
we started using the automatic
BMD machine, we had to do things
differently. The old line was
in the casting area. When we made
parts for civil engineering,
the maintenance staff moved
the moulds each weekend from
one casting line to another.
In July 1990 we had our holidays.
When we came back in August,
we had to learn how to use a
completely new machine."

Jean-Marie Tschoffen, Castmetal FWF

LE SEGMENT AB

Visual quality control of piston rings with a hook joint.

New work areas were set up in Feurs. Parts that had previously been made in the north factory were now made on machine VI, with mechanical equipment brought from the Sainte-Suzanne factory. Large parts, including those from Franche-Comté, like the Bergeaud crusher frames, were manufactured on machine VII nearby. Feurs set its stakes on producing small excavator teeth for its long-time American client Esco, with which the foundry was about to renew its contract.

Feurs dismantled its old Pram machine and replaced it with another, the highly innovative NML machine. No one suspected it at the time, but the decision to stop producing fifth wheels in Feurs would have long-term consequences for Sainte-Suzanne. For in this historic bastion of the Group, things had become very difficult…

Sainte-Suzanne in Jeopardy

Sainte-Suzanne's faces were darkened in 1988. The Fram's plan of action dictated that the factory would specialise in medium-sized hand-cast parts. When Feurs turned them down, Sainte-Suzanne took on fifth wheel production through mechanised casting,[8] but competition from mechanised welding was rapidly detrimental to hand casting. Not enough

parts could be produced, cost-effectiveness fell, and losses increased. A bombshell came in early 1988: the managers decided to close the factory! Work came to a stop in several phases. Hand moulding ended in April 1988. 80 workers lost their jobs and much sadness, bitterness and incomprehension were expressed in the streets of the town. But the decision had been made and permanent closure was projected for late 1988. When the contract signed four years earlier with Holland Hitch came to an end,[9] Sainte-Suzanne would close. The destiny of the historic foundry seemed inescapable, and it was time to look back. Some of the old memories were surprising and slightly odd: during World War II there were no tractors, so oxen pulled the wagons filled with molten steel for castings. The oxen provided other benefits as well. The straw used for their bedding and their droppings were employed to make cores that could withstand up to 250 kilograms of pressure. These cores were flexible and prevented parts from breaking. Instead of making a complete model of the part, the workers chose an axis and a profile that they turned around the axis. The oxen became exhausted after two months of

LE SEGMENT AB

First machining on splits -piston rings cast as small tubes.

CASTMETAL FEURS

Pneumatic mould cleaning.

heavy labour; they were butchered and their meat divided among the factory workers. Marc Génot had seen these oxen as a child, and was impressed by the sight. Among Génot's employees were workers who had packed the sand with a board. This skill had disappeared, just as Sainte-Suzanne would soon disappear. Did Génot think of this when he approved closure of the factory? Probably not. Economic reality took precedence and his mind was made up. Marc Génot was a forward thinker; he might be impetuous, but he never looked back.

His decision was not yet irrevocable, however, when he sent Jacques Vincent[10] to the USA, hoping to find an alternative to Sainte-Suzanne that could fill Holland Hitch's orders when the foundry closed. How do we know this? By remembering that he did not deny the request of two Sainte-Suzanne executives, the engineer Jean-Paul Daval and the sales representative Jean-Luc Weber. Their request was modest, after all. What did they want besides two plane tickets to the United States?

Sainte-Suzanne: The Road to the Future

When he learned that Jacques Vincent was going to the US, Jean-Paul Daval realised that Sainte-Suzanne was in danger, and decided to act

“In 1976 at La Mancelle,
melting took place in oscillating
furnaces – like barrels with electrodes
inside. We loaded them by hand
and carried the cases, which
weighed between 50 and 80 kilos,
because the hatch was at head height.
The workers around the centrifuge
were practically naked because
it was so hot. Foundries are difficult
places to work in, but things
have improved. We’re proud
of the changes we’ve seen.”

Yannick Papin,
Cronite Mancelle

immediately. In May 1988 he was ready. He went to Marc Génot and Roland Fraysse and explained his plan: “convincing Holland Hitch that it was worthwhile to keep working with Sainte-Suzanne”. Génot and Fraysse were still open to discussion: “Bring back a two or three year contract”, they said. After all, the die wasn’t completely cast…”But two years won’t be enough to ensure the continued existence of the company”, thought Daval as he left them, “It’s got to be longer.”

Weber and Daval were welcomed by the American staff, whose CEO was Richard (Dick) Muzzy, Jr. The dollar, which had been at 10.66 to the franc when Holland Hitch placed its order in 1983, had fallen to 6 francs to the dollar, which penalized French companies. But with enough volume, Daval’s plan could work. The secret was in increased site specialisation, which would benefit everyone. The French would have work, and the Americans would get high quality products. The Americans felt confident about this.

Alain Jean-Pierre was a remarkable Sainte-Suzanne technician, and the Americans realised this at the time of their first orders. They appreciated Jean-Pierre so much that they would have liked to hire him themselves. During the first day of negotiations, Dick Muzzy

silently sat back in his chair, his eyes half closed. At the end of the day, a project began to take shape. “We need a contract,” said the French, who immediately upped the stakes, “A five-year contract.” Dick Muzzy then spoke for the first time. He knew how fragile Sainte-Suzanne’s future was. “That sounds good,” he answered, “but are your bosses, and especially Marc Génot, backing you up?” Weber and Daval ran to call Roland Fraysse.

“They’ve agreed to a five-year contract”, they shouted down the telephone. “Go for it!”, ordered their boss, whose intuition and business sense were his strongest points. Negotiations continued the following days to hammer out the contract details. As before, Dick Muzzy did not speak until the end of the day. “Has the contract been signed? By Marc Génot?”, he asked. When asked later about his silence, he affably answered, “Jean-Paul and Jean-Luc’s English wasn’t very good. The discussions were long and laborious, and I waited until they were over to speak.”

Back in France: A Surprise

Upon their return Daval and Weber met with Marc Génot, who was holding a copy of the contract Holland Hitch had faxed them. A surprise was in store. “This is all very nice. You got the commitments you wanted, but look at what arrived on my desk” spat out Marc Génot, who then showed them an exclusivity clause on the last page that had not been part of the negotiations.

From AFE’s point of view, the exclusivity contract would lock Sainte-Suzanne into dangerous obligations and dependency. What should be done? The idea of a real partnership began to take shape. If Holland Hitch would commit to a joint venture, sharing investment, risk and profits, exclusivity would no longer be a threat but an opportunity. Marc Génot immediately went to the US to convince Holland Hitch to agree to a joint venture. A few months later, the two parties met in Paris in the offices of Holland Hitch’s lawyer. Negotiations lasted until late in the night at Marc Génot’s apartment, with Dick Muzzy and Génot going over the details one by one.

“We stopped out of exhaustion,” confided Marc Génot, and Muzzy confirmed, “The negotiations took a long time. We had to consider absolutely everything….We worked really hard that day, and sweated like football players. We already respected each other, but when we parted at dawn, a real bond had been forged. We had become friends.”

The Bollées were itinerant bell-makers. Then they settled in Le Mans and went into producing rings for automobile pistons, a technically sophisticated part that La Mancelle was founded in order to make. Here are the original workshops of the Segments Amédée Bollée Company.

CASTMETAL
FWF
Pouring
operation:
2,912 °F.

"The lesson I learned
when we went public was that
you should never reject strategies
because they seem daft at first. But I'm
not sure I would do it all again."

Marc Génot

A Million Dollar Partnership!

These negotiations led to the establishment of FWF (Fifth Wheel Foundry). The official foundation date was 28 July 1989. AFE Doubs owned two-thirds of the capital and Holland Hitch one-third, thanks to a million dollar cash equity infusion! This significant amount allowed a plan conceived by Sainte-Suzanne executives to be set up. 30 million francs (€4.5 million) were invested in the factory. This was a considerable sum, the equivalent of half the factory's annual sales. The foundry acquired a BMD moulding machine that permitted each team of five workers to do 200 castings in eight hours. This was twice as many as had previously been completed by teams of six workers. Automated batching stabilised sand characteristics without ever varying the size of the fifth wheel. Mastery of this technique was the goal of specialisation. Producing identical fifth wheels allowed the company to achieve a new level in its progress towards hyper-specialisation.

In 1996 a prototype-robotised cell was set up under the stewardship of Christopher Vejux and Frédéric Grand. After stripping, the fifth wheels were lined up and sent up into a cooling tunnel, from whence a conveyer took them to the automated finishing cell. Once there, the robot's articulated arms would remove projections on the castings and transfer the plate to a station where flaws would be removed with an abrasive wheel.

Robots took over some of the most unpleasant jobs, such as deburring. Grinders did not entirely disappear from the factory, but it had become possible to use robots for mass production. The days when containers were carried across the courtyard on their way to the deburring area were over. Sainte-Suzanne, situated at mid-point between the old working methods and the world of automobile manufacturing, had now found its place, and was turning into a world-class site for the production of cast steel fifth wheels. The difficult days of the 1980s were far behind it, and the first phase of its history was completed.

In 1963 Marc Génot became the manager of the Sainte-Suzanne foundry on one condition: that he be allowed to implement dynamic policies. Four years later he brought together two rival cast steel foundries, something that had never happened in France before. His drive was responsible for restructuring French foundries, and under his management his small group was listed on the stock exchange. A mad yet successful gamble.

II.
THE FOUNDATIONS

II. 1 VARIED DIVERSIFICATION

In keeping with its spirit of conquest, AFE continued to absorb and modernise the foundries it acquired through the Fram as well as taking over other companies. The reasons for the takeovers were varied, and AFE's appetite appeared unlimited. It comes as no surprise that someone like Marc Génot would continue to invest in numerous businesses. When one takes a closer look, though, some rather startling facts emerge.

What was AFE thinking when it absorbed Demo, the leader in plastic bi-injection, in 1989? And what about Sofaco – specialised in kits for heavy goods vehicle bodies – or Sefac, whose activities were stamping and lift equipment?[11]

DEMO INJECTION

Assembly and logos control.

DEMO INJECTION
Particulate matter.

Of course, both were leaders in their fields: Sofaco was the major French producer of kits for industrial heavy-goods vehicle bodies, and Sefac was the chief manufacturer of mobile lift equipment for heavy goods vehicles, trains and automobiles, but neither had anything to do with Sainte-Suzanne, Feurs, La Mancelle or Colombier-Fontaine.
What did AFE's management have in mind by taking off in so many different directions? The explanation is simple. Once AFE had gone public, it attracted shareholders who finance businesses in order to fund its growth. They influenced AFE to venture into new areas and to diversify in a variety of ways.[12] The Group's friends and business relations suggested establishing a wide range of products for the automotive industry. The Châtelet foundries, which manufactured SG cast steel automobile brakes, were the pivotal point of this operation. In two years, from 1990 to 1992, AFE's annual sales rose by 40%. One of the companies involved in the automobile industry that AFE took over was the plastics manufacturer Demo, whose activities were cutting and stamping, moulding and tooling.

Demo!

The desire to develop a wide range of products for a specific sector motivated the Demo takeover in 1989. The company had originally manufactured moulds and tools and then became a plastics processor. It was a far cry from AFE's traditional foundries, with plastic substituting for steel and cast iron. There were no furnaces or melting at Demo, but it did produce cast parts. The company was founded in 1964, with three friends making moulds in a garage 9.3 miles northwest of Paris. When the three split up, one of them, Guy Macrez, developed Demo.

In 1989, Demo's situation was the following: approximately half of its 150 employees worked for Demo SA (in Andilly, in the Oise region). The other half worked for Demo Technologie in Marines (Val d'Oise region). The Andilly site had a wide range of clients, the largest of which was the Swedish company Autoliv, for whom it provided seatbelt parts. The factory also worked with large perfume companies, supplying stoppers for Lancôme and bottles for Yves Saint-Laurent's "Jazz" perfume. Demo's secret in attracting such prestigious clients was its mastery of bi-material moulding.

Demo occupied several sites. Large parts were manufactured in Marines, where injection and assembly of car control panels were also carried out. Ermop, located in Soisy-sous-Montmorency, had around twenty employees, including lathe operators, milling machine operators, erosion technicians and polishing technicians, as well as three people in the research department. A new client, Valeo, resulted in fresh developments, particularly in the area of control panels, where

"The hardest thing
was precision, that and the fastenings
locks. We rose to the challenge
and made a lot of small technical
parts. We also made
little figures for Majorette
and other small technical parts
like interior gaskets
for laboratory pipettes..."

Michel Levasseur, Demo Injection

Demo was given to believe it might play a subcontracting role. Such was the overall picture. And, of course, before this, the company had recruited a young man who used to loiter around its garage. This was Albert Lopes, who became Ermop's manager.

Albert had provided the contact with Autoliv, Demo's star client. His right hand man was Michel Levasseur, who helped him run Ermop so that he could spend more time on sales. Growth was steady, the atmosphere was cordial and the future looked rosy. But suddenly Guy Macrez, the CEO, decided to sell his company to AFE, and immediately bought a small company in the Vendée region. This sale, which took place without any resistance, was a veritable thunderclap, as Macrez had told no one his plans. Albert Lopes recalls, "We saw Marc Génot, a foundry man, turn up. He didn't know anything about parts manufacturing or the components of plastic. He didn't have the right frame of reference. We felt like we were being excluded and didn't understand what was happening. They were the ones who initiated the contact but we felt like ugly ducklings."

From the employees' point of view, the beginning of the association with AFE was incomprehensible. What had Guy Macrez told the foundry men to make them want to buy his company? Would AFE become a second-rate parts manufacturer for the automobile industry? Would control panel production cease at Valeo? If these things happened, thought Albert Lopes, as he accompanied Michel Boeuf, the new manager, in his quest for a new factory for control panels, the company was drifting off course. He had no doubt that the future was in Andilly, where safety parts for Autoliv were produced. That is why neither he nor his team moved into the building he had found. This was a former chick hatchery with its eggs still inside. The decision was made to leave the eggs to hatch and to stay in Andilly, where everyone was happy. No matter if AFE didn't really understand what the employees did or why it was worthwhile to produce plastic parts. They would develop Demo and find new clients.[13]

A financial crisis occurred in 1992, and intensified in 1993. Annual sales fell by 20%, and Albert Lopes sometimes had to write a check to pay suppliers on the spot. At the same time, however, a magnificent industrial opportunity took shape. Like all of the chapters in AFE's long history, it grew out of a relationship between people, out of trust and unflagging commitment. This selfsame trust and commitment are the founding pillars of the Safe Group today.

Early Airbag Days

It all began one evening in 1993, the year that was so difficult for businesses. A little after 7:30 p.m, as he was leaving his office after a busy day, Lopes received a call. It was from Autoliv's technical manager. "Mr. Lopes, I've just arrived from Sweden. I'm at the Roissy airport. I have a part with me. I think we can come up with something interesting together. I'm on my way to see you." Interested and intrigued, Lopes decided to wait. His visitor arrived around 9:00 in the Demo offices.

He was carrying a first generation airbag cover, the very thick type used in luxury vehicles and manufactured in small volumes. He excitedly asked Lopes, "Can you make these?" Lopes didn't hesitate for a moment. "We can't make the same one, but with our technology I can suggest a different solution." The Swede answered, "Think it over and see what you can do. We believe that airbags are going to be widely used. We need to know about feasibility conditions and prices by Monday night." Autoliv's intuition about how a market would develop had encountered the masters of bi-material technology at Demo.

DEMO INJECTION QC inspection of parts at the injection workshop in Chambly by Ridha Boussetta (right), Loic Brispot (center) and Mohamed Elghoul (left).

Albert Lopes

Surrounded by a strong and durable team, Albert Lopes has built and implemented projects for Demo since 1989, making it a leader recognized for innovation.

In less than two weeks, Demo sent a prototype to Autoliv. Three months later the first six airbag covers left the factory, thus launching the first mass-produced European-made airbags. They were made for the Peugeot 306, produced in 1993 with platform N3 in Australia. Autoliv, forerunners in airbags as they were for other safety parts had accurately predicted the generalisation of the technology. Now it was time to find a way to produce them in large volumes to significantly lower their cost. Bi-material manufacturing provided the perfect answer to these requirements.

The rapid expansion of the airbag market began in 1994. Demo conquered much of the German market with a contract for Ford Mondeos and Scorpios. Demo's relationship with AFE changed at this time. AFE management, reinforced by the recent arrival of Gérard Mura, who came from the world of automobile parts, did an about-face. Despite significant financial difficulties, AFE decided to invest in a painting line that would solve the quality problems experienced with sub-contractors. Investing in a painting line was a highly significant gesture that showed AFE's confidence in Demo's activities, which it had had such a hard time coming to grips with. In 1999, Demo moved to a brand new factory, from Andilly to Chambly (in the Oise region). As Demo began to experience AFE solidarity, it came to understand the true values and philosophy of the Group.

These developments were a turning point. Demo, which AFE had originally planned to close, became one of its mainstays. "Amidst all our

DEMO INJECTION

Driver-side airbag. Demo is the world leader in airbag covers.

companies involved with the automobile industry, there was Demo, a real gold nugget", Marc Génot would say later.

The Feurst Adventure

While Demo was taking off, the Feursmétal factory in Feurs was coping with the "betrayal" of an American company, Esco, its long-time client. In 1991, when the foundry had just inaugurated its NML moulding line for producing the range of teeth for Esco, the latter suddenly decided to break the historical association between the two groups. Why? In order to produce the parts in American factories, which were in dire straits and needed the work, and to benefit from the dollar's very low exchange rate.[14] This was a doubly harsh blow for Feursmétal, because the foundry had already sustained losses of 20 to 25% in its other markets. Its monthly production of 1,200 tonnes had dropped to around 950 tonnes. Esco had been one of Feursmétal's top three clients since 1958.[15] What was to be done? But AFE held the last Esco contract. When the latest contract was signed a few months previously, a party was thrown at the foundry for the

Passing the torch:"I do hand
moulding and I love my job. But
I'm worried because I'd like to teach
the younger generation about it, and
there aren't any young people coming up.
So I bring in the new people from
key positions, the foundry men and
casters, to show them how it's done.
People shouldn't be afraid
of getting their hands dirty.
A manual worker can earn just
as good a living as an intellectual
and do fascinating work."

Patrick Denis, Cronite Mancelle

American clients. Without imagining that anything would go wrong, (or so he said) Roland Fraysse had added to the traditional license renewal a partnership clause that both parties confidently signed.
AFE brandished the contract at Esco, demanding 25 million francs (nearly €4 million) in damages, which was well over their annual sales of approximately 15 million francs (€2.3 million). The chairman of AFE Metal added, "We're going to launch our own line of rival products." Roland Fraysse recalls, "They laughed at me because they thought I was joking." What Esco did not realise was that Charles Pasqualini had not taken the split at all well. The small NML moulding line had been designed especially for size casting 16 bucket teeth.[16] Charles had an idea to make the site profitable: creating parts without using clients' plans. Fraysse was willing to give it a try. This unusual development, a premiere for AFE, gave rise to Feurst. To establish its place in the market, the young company first had to organise and develop a distribution network. While waiting to launch its own line, it offered adaptable Caterpillar teeth (repainted blue for the occasion) to potential clients. These teeth, which were no longer Caterpillar products, allowed Feurst to enter the market. The first step had been taken. The initial distributors – Blanchard in Brittany and Payen in the Paris region – were willing to take the new teeth on, and would long remain faithful Feurst clients.

During the same period, Feurst also acquired a promising new client that brought its own plans with it. Fiat Hitachi ordered 40 tonnes of teeth for its entire range of backhoe loaders, on condition that they be ready for the German “Baoma” fair in February 1993. The enthusiastic teams worked flat out. In September 1992, the Orca line was ready. Fiat Hitachi was impressed, and Feurst went on to develop 36 models in 6 sizes, as well as around forty adaptors for the company. Unfortunately, the overly busy managers forgot to take out patents. This youthful error would cost them dearly. Mr Gramaglia, Fiat Hitachi’s marketing director, frantically announced that imitators had already put similar backhoe teeth on the market. Gramaglia gave an ultimatum: come up with a new line in a year. The Stickey range was the result. The company had won its gamble, found clients, and developed new ranges that raised the general quality of the market. The future looked promising, and Esco's betrayal had been more than avenged.

CASTMETAL FEURS

Decarbu-risation.

CRONITE CASTINGS

Johnny Webb checks a new pattern for an ultra-light stacking tray used in automotive HT furnaces.

And in 1995, AFE won its case against Esco. The 15 million franc settlement couldn't have come at a better time.

Hiring

To handle all these developments, AFE first and foremost needed to organise an extensive recruitment campaign. How could they convince young people to come and work in a place reputed to be dirty and noisy, and haunted by negative connotations in the collective imagination? "You stink of the foundry", a young recruit heard his fiancée say to him after his first day at work…

In the past, every possible trick had been used to find workers. Sainte-Suzanne, which had feared competition from Peugeot in terms of salaries, would try to intercept workers getting off the train from North Africa. But a large Peugeot van whisked them away, and AFE's personnel director found himself alone with the factory's little truck. The time had come to improvise, to find another solution. Jean Schlumberger recalls this era: "We put ads in the papers, all the way to the Voix-du-Nord. We said, 'If you're interested, be at a certain bar at such and such a time', and then I'd go to all the bars in Roubaix to talk to the

people who turned up." Recruitment took place in Feurs on the local football pitch, among other places. As Roland Nalin remembers, "We hired continuously, up to thirty people would turn up on Monday, some of whom had been recruited the day before by our executives on the football pitch or some other place. On Tuesday, only three of them would be left. The job made quite an impression on those who didn't know anything about it." The search for workers was ongoing, and in some cases intensified, even though up until the 1980s many people combined small-time farming and foundry work. In Colombier-Fontaine, La Mancelle and other foundries, this source of workers gradually dried up. Training programmes leading to a diploma were rare.

The combination of all these difficulties, which were particularly serious as concerned certain jobs like fettling, led to the opening of a foundry school in 2002. Roland Poillet, personnel manager of the Doubs factories, defined the school in these terms: "Its objective was to prepare qualified young people to enter the factories, whether they came from the outside with an apprenticeship contract, or from the inside seeking career progression." Meanwhile the question of hiring remained open in France, and in other countries, particularly for the tasks related to fettling, which had not yet been automated.

II.2 BEYOND BORDERS!

As AFE began to acquire more and more companies, the international aspect became an important and ongoing developmental axis. The management realised from the start that the French market would not allow the group to expand indefinitely. This was vigorously confirmed at the time the Fram stepped in. Although some AFE factories were doing well internationally, annual export sales rarely went beyond 20% for Feurs and Colombier-Fontaine. Sainte-Suzanne's production of fifth wheels allowed slightly greater international sales, but they were well below the objective of 50%. Doing business outside France was not easy. But it was vital to develop this facet, especially as concerned thermal processing. La Mancelle alone provided for 95% of the French market.

La Mancelle was doing well, of course, but weren't the real growth areas outside France? La Mancelle's export perspectives were dismal, and it was faced with strong competition from Klefisch in Germany

CRONITE KLEFISCH

Alfried Hübner forming a tube at the press.

and Cronite Castings in England. Both companies had prestigious pasts and outstanding qualities. Cronite Castings had crossed the ocean long before to conquer the US market. But AFE's managers were not discouraged. When discussing the problem they came up with such a simple solution that it was surprising they hadn't thought of it before: buying out the competition, starting with Klefisch. This was a huge challenge, a real gamble. As Marc Génot explains, "Klefisch in Germany and Cronite in England were unassailable. So we came up with the mad plan to take both of them over." And as we know, crazy projects were quite to Génot's liking.

Klefisch Joins the Group

Located in the suburbs of Cologne, Klefisch was, like Feurs, nearly one hundred years old, with a history going back to World War I. It was founded in 1916 or 1917 in Wuppertal, an area with a long-standing artisanal tradition. In the beginning, it was a small workshop that produced modular gauges for sprockets and threading tools. It

soon found its niche in the enamelling industry. Klefisch provided tooling in heat-resistant steel to the specialised factories in Schwelm, including annealing furnaces, grills, HT handling systems, and HT handling hooks.

It also manufactured sheet metal quench tanks and other parts for hardening plants. In 1933 the company moved to the suburbs of Cologne. It was still a small business, more a group of workshops, including a new metalworking workshop, and some small offices run by the founder's widow and a few employees. But all the ingredients for the future were present, from heat-resistant steel to designing soaking containers. Mrs. Klefisch's three young sons gravitated around the family business. Rudolf, the youngest, abandoned his studies to take over the company from his mother. He was an inventor, an unusual man. He would make Klefisch not only into the German equivalent of Cronite Castings and La Mancelle, but also the worldwide pioneer in thermal processing design.

CRONITE
CREWKERNE
Spacers.

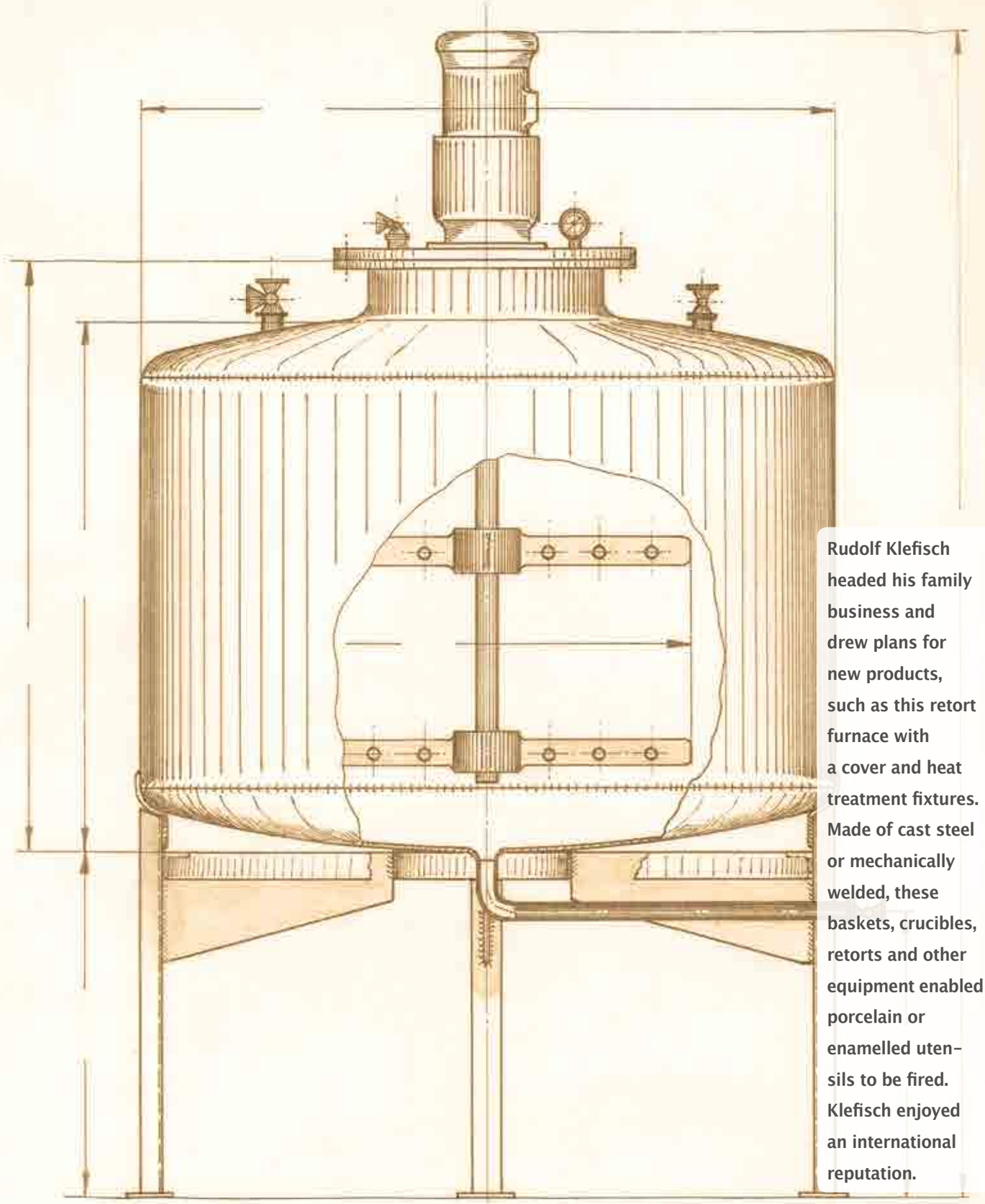
"I joined the company
as an engineer in 1973.
Klefisch was famous far and wide.
Half our production was
in welded steel and half
in cast steel, and we supplied
countries all over Europe.
Rudolf Klefisch was the CEO.
He was an unusual man,
a real inventor who was still
drawing machines and products
when he was almost 85."

Josef Nieuwenhuysen,
Cronite Klefisch

In Hürth

In 1960 Klefisch bought land in Hürth, a former rural community absorbed into the suburbs of Cologne. The company began construction of a 3,600 m^2 foundry that would soon employ 150 people. The foundry expanded constantly and reached 34,000 m^2 in 1990. Relationships in the workplace were hierarchical and harsh. As in Colombier-Fontaine and most other factories of this type, "apprenticeship" was a mild term to describe the brutality that young workers were subjected to by their elders. William Schürek recalls his early days, when he had to sweep, clean, and fetch beer for his older colleagues. Everything was on a huge scale, almost unreasonably so, and the storage sheds were a great distance from one another. The employees moved enormous pieces of equipment, including huge retort burners, by hand. They worked up to sixty hours a week, and those who didn't want to put in extra hours were frowned upon.

The company had reached its zenith in the late 1970s, when it had nearly 300 employees. Rudolf Klefisch was present on every front. He knew everyone, went from place to place and observed, remaining silent except when giving orders. It was his idea to install a centrifugation for small-dimensioned tubes. For financial reasons, however, this project was never carried out. When AFE initiated contact with Klefisch



Rudolf Klefisch headed his family business and drew plans for new products, such as this retort furnace with a cover and heat treatment fixtures. Made of cast steel or mechanically welded, these baskets, crucibles, retorts and other equipment enabled porcelain or enamelled utensils to be fired. Klefisch enjoyed an international reputation.

Nr.	Art der Aenderung	Datum	Name

Werkstoff		Datum	Name	Unterschriften	KLEFISCH o. H. G. EFFEREN b. KÖLN
	Gezeichn.				
~ kratzen	Geprüft				
▽ schruppen	Normgepr.				
▽▽ schlichten	Maßstab	Bezeichnung:			Zeichnung Nr.
▽▽▽ schleifen					Ersatz für
					Ersetzt durch

CRONITE CASTINGS

Brian Zebedee grinds the joint line of a casting after choosing the grinding tool best suited to a cleanly finished piece.

in 1989, the patriarch was still in command. He had no children to take over the business, and wanted to hand it over under favourable conditions. AFE's offer came at exactly the right time.

From Klefisch to Cronite

At the same time AFE was also targeting its English rival, Cronite Castings. This was no simple affair. Cronite's shareholders were like a little conglomerate, and the company, around which many others gravitated, was quoted on the London Stock Exchange. This typically English style of organisation, which AFE seemed to be emulating, had been in place for several decades. Cronite's main activity was heat treatment, and from 1919, when it was founded, until the late 1950s, it had mainly worked for the steam navigation industry.

In 1960 the managers decided to build a second foundry in the small town of Crewkerne, in southwestern England. The company had responded to a government initiative that offered attractive premiums to business that set up in the Somerset region, which was known for its leisure resorts. The baby boomers were reaching the age when they would begin to work, and it was easy to recruit

employees in the area. At the end of the first year of business the foundry's director, Mr. Hague, was satisfied. "We have increased flexibility, which was our goal."

Cronite Develops

Cronite Castings, one of the first English foundries to use induction furnaces, continued to increase its expertise on every level.
The Group entered a phase of intensive development. Ken Ward, its president and sole shareholder, built a lost wax foundry on one of the unused lots behind Cronite Castings. Parts manufactured according to the lost wax process allowed the company to expand its offer to clients. In 1973, the first parts – spacer rings for boilers – left the Cronite Precision Castings facility. Then, a lost wax machine replaced the former Cronite machine in 1975, and a new facility was built in Birmingham for sales and export of replacement croning parts in 1978. The Atkinson and Alkast companies were absorbed by Cronite. Atkinson produced mechanically welded tubes made of a special alloy for heat treatment, while Alkast was an aluminium foundry that worked frequently with the armament industry. The little English group held influence throughout the world of transportation: on land and sea and in the air, its top quality products were supplied to highly specialised markets. Mastery of numerous processes[17] in the Crewkerne plant meant that the company was flexible and responsive. The atmosphere was positive.

Design: An Essential Element

In the late 1970s, client demands for quality products increased. Until that time they had simply ordered baskets in which they put loose parts. When these emerged from the furnace, they were machined. Now the factory wanted to stop transmission shafts and gears from contacting each other in order to improve quality. They also wished to automate and maximise filling the furnaces in order to economise on labour and energy costs. Cronite hired two talented men, Hans Jonson and John Smith, to design products that fulfilled the new requirements as well as to sell them. Jonson, based in Scandinavia, penetrated the Saab and Volvo automobile markets. Smith filled the same role in Crewkerne. The automobile market developed rapidly, and Smith hired Darren Frost in 1988 as his right-hand man.

CRONITE CASTINGS

Andy White positions a 1,000°C mould for pouring the metal.

"Robert Kemp joined
Cronite Castings in 1985.
He had a clear idea of what
Cronite Castings should become:
a company that would conquer
the world. He said to Tony,
'Go to France, we don't have
any business there'. Tony didn't
speak much French. Robert,
who spoke Spanish, went
to Argentina to meet heat
treatment clients. He asked me
to learn German to strengthen
our position in Germany."

Norman Manley,
Cronite Castings

Cronite Conquers the Export Market

Whether because of its island mentality or through industrial intuition, Cronite had always emphasised exports. This drove the company to develop lighter alloys for foreign markets in the early 1960s. In 1964 a European export director was sent to Holland. By 1978, Cronite had a strong international presence. In Italy, Cronite agent Vincenzo De Gasperi secured orders from Fiat. Ken Ward, Cronite's chairman, established Cronite Nordic in Sweden with Hans Jonson before moving on to the American market. To this end he hired Tony Parsons in 1976. This young engineer, who had previously worked in the automobile industry, was posted to Cleveland, and North American Cronite (NAC) was founded. Clients chose Cronite for the high quality of its designs and products. In 1983, Tony Parsons was recalled to England. His assignment was to develop the European market where the company's performance was felt to be lacking. Spain was a particular target, as were other markets, including the most important of all, Germany, which was covered by several companies such as Pose Marre, Courth, Lohman and, of course, Klefisch. A Cronite agent was sent to Germany, bringing the number of Cronite agents in foreign countries to fifteen. NAC remained independent.

An AFE Takeover

The first contact between Cronite and La Mancelle took place in 1988. Discussions were informal and real negotiation had not yet begun. The workers were proud to show off their equipment and took a mutual interest in each other, perhaps envisioning what could be done and how, and imagining a possible alliance. Tony Parsons made the first move. His activities in the French market quickly led him to La Mancelle's door. There he met Wilfrid Le Naour, the thermal processing manager. Two months later a small delegation including Robert Kemp, Graham Price from Cronite Alloys,[18] and Norman Manley, went to Arnage to visit La Mancelle.

They noted that the foundry used similar processes, particularly green sand, and observed their new induction furnaces. They viewed the manufacturing of incineration bars. They also enjoyed the legendary dinners of Mme Rebache who, at nearly 80, was still cooking at her restaurant in Arnage. AFE had already planned to take over Cronite Castings, but according to the later analysis of Norman Manley, the future general manager, it was waiting for just the right moment, which was not long in coming. In 1989 the paths of the two groups met. The AFE Group was developing strongly, while Cronite was going downhill. The drop in scrap iron prices caused a downswing for Cronite Alloys, whose enormous stock of scrap had been bought at premium price. The entire group was affected, particularly as equity had been raised for development. England's morose economic climate increased the company's vulnerability.

"How do you plan to reimburse us?" worried the English bankers. The moment had come for La Mancelle to enter the game. Norman Manley recalls, "They hadn't tried to take us over earlier because they weren't interested in the Group. They wanted just one thing – Cronite Castings, the jewel in the crown." AFE put forward an allegedly friendly takeover bid. To finance this, it requested a large subsidy from the French Finance Ministry. Marc Génot looks back on the interviews with the Ministry teams: "We went to see Pierre Bérégovoy. He was the Minister of Industry and we told him, 'We want our Group to lead the international market, and you've got to subsidise us.' After many meetings, we were summoned by a commissioner who said, 'I'll give you your subsidy, but you've got to explain what you have in mind. It isn't very clear to us.'" The main thing was to have secured the subsidy. "After a few hitches we carried it off, absorbing two groups that were more

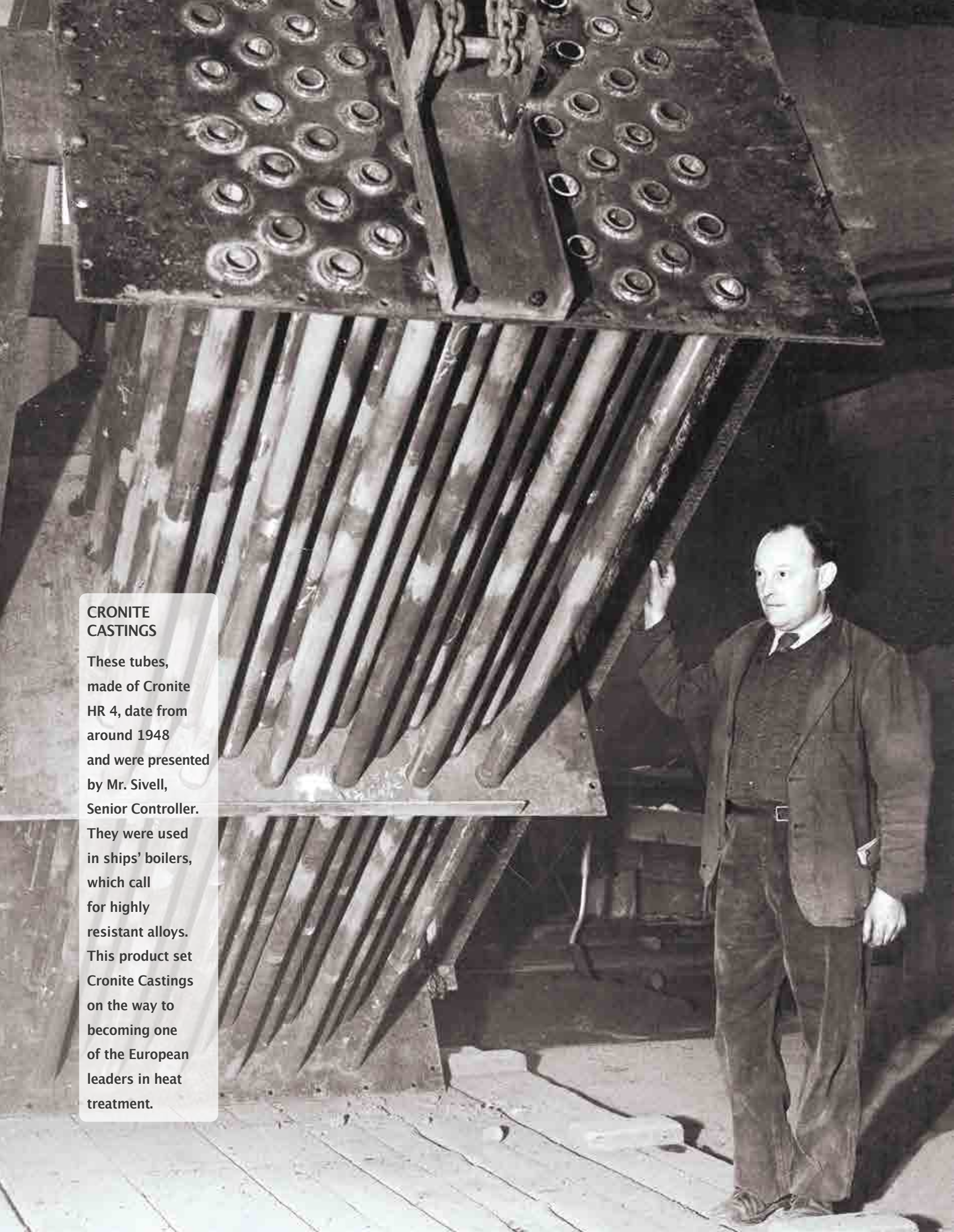
prestigious than we were," remembers Génot. The Group's conquering spirit and remarkable opportunism once again enabled it to triumph in a situation where victory had been anything but a foregone conclusion. AFE could now begin to build leadership in the area of thermal processing as it prepared to become the world leader: no one could compete with the three European leaders now united into one.

Mergers

Once more it was time to bring together people of different cultures, and this was again a complex process, especially as the decision had been made to close the large Klefisch foundry. On 31 December 1993, just before midnight, the sale of the building was signed. Only the mechanised welding factory was kept on. The Germans had a hard time accepting this decision, as they felt the French weren't as skilled as they were. Josef Nieuwenhuysen was to become the new general manager, and was the only manager from the old team to join the new structure, as no one else had wanted to. Nieuwenhuysen had learned all he knew from Rudolf Klefisch, and had become the "grillot", tending the legend of the flame in the huge deserted buildings that had been turned into artists' workshops. Soon only a café called Klefisch and a huge sheet-metal sculpture would recall the immense foundry.

Things were hardly simpler at Cronite. The naturally proud English also felt as if they had been "done". Cronite Castings might well have taken over La Mancelle, but in actuality the opposite had happened. Some of the older workers came up with interesting alternative scenarios. Going international stirred up everyone's feelings, and tough battles to conquer the market had been fought in Europe and beyond. Foundries faced off in Spain, Germany, and elsewhere. When mergers took place, there were often two people for the same job. Reorganisation occurred and sometimes caused bitterness. Design offices each had their own ways of working, their convictions, and their pride. It was time to learn to live and work together. This could never have happened without the good will of the people involved, who gradually built up reciprocal respect through semi-informal contact.

Design office staffs were finalised in 1993-94, and groups were set up that included people from both countries. These proved to be an excellent way of sharing skills and viewpoints. Sales meetings began. Managers met in the various factories. But talking together was sometimes an obstacle. It is well known that the French have trouble learning



CRONITE CASTINGS

These tubes, made of Cronite HR 4, date from around 1948 and were presented by Mr. Sivell, Senior Controller. They were used in ships' boilers, which call for highly resistant alloys. This product set Cronite Castings on the way to becoming one of the European leaders in heat treatment.

CASTMETAL FWF

Lower part of a mould ready to be closed.

English, and French is rarely a priority for the English. Dave Bond, the CPC manager at the time, recalls that communication was one of the main problems at the outset.[19]

When Peter White joined the French team, some of the communication problems were solved. This young man, who had wanted to join the navy, had travelled widely, and had lived and studied in France. His presence improved relations all around. The English managers were taking French lessons, and their French counterparts were learning English. Some amusing episodes occurred, such as the day when Roland Fraysse sent Dave Bond and Marcel Pache – a French salesman with strong experience in the lost wax process – to visit a foundry in northern France. Bond was to certify the process and Pache was to check on sales. Bond spoke only a few words of French, and Pache not a word of English. Dictionaries in hand, they attempted to communicate. The report they submitted at the end of their mission was certainly rather fanciful, but that did not seem to worry their bosses. Little by little things began to gel, and the meetings at the different sites fulfilled their objectives.

Focusing on Quality

Getting along together was just the beginning. It was also important to create common rules and to have similar procedures in the workplace. Building a common culture would help to progress together. Quality was the byword of the bridges that were built at this time. Quality is a leitmotif in industry, transcending historical periods and places. "Serving the client with the best quality products in the shortest time at the best price", recommended Sainte-Suzanne's in-house newsletter, *Le Trait d'Union*, in 1953. Back then, long product life was not a priority, but client demands for longer-lasting products increased. Feurs, which worked with the nuclear industry, set up an early quality programme in the 1970s, and passed it on to the factories of Colombier-Fontaine, Sainte-Suzanne and Redon, among others.

Demo's production of safety components naturally meant that it focused on quality. The young subsidiary, which worked hand in hand with the automobile industry, provided an excellent example of assimilating and implementing the methods that bind together leading industrial sectors. La Mancelle, which also worked in the auto industry,

Synchro sleeves before heat treatment on grids made by Cronite Mancelle.

CASTMETAL
FWF
Opening
of the arc
furnace crown.

"*Total Quality* is a very important part of the Group. It's a state of mind, an attitude of the personnel that aims at satisfying the client and doing things right the first time around."

Estelle Jeanningros, Castmetal Colombier

took its inspiration from its major clients in order to satisfy them. Quality gradually became a greater concern, and AFE began to move up and conquer very competitive markets. Quality was also a powerful force for cohesion, encouraging people to act in the same way and set common goals, as Marc Génot and his teams understood.

La Mancelle set up its Total Quality programme in 1988. A specialised consultant implemented the plan, which extended from the management down to the workers, over a three-year period. The other foundries did the same.

Quality began to make its way into the old factories, where, as one of the HR directors in the Doubs said, "We had a long way to go." "When I was a student in Besançon and took the train, I saw the Colombier-Fontaine factory. I thought it looked dirty and told myself I would never work there. But when I arrived the Group was setting up Total Quality and 5S,[20] which really improved things. In the administrative buildings, we had photos in our offices showing how they should be organised.", remembers Rodolphe Baudoin, who was hired as an accountant at Sainte-Suzanne and Colombier-Fontaine. Colombier, led by Gabriel Naert, was then known as a factory that was "awesome and considered with awe by its competitors".

Total Quality, which would subsequently be adapted, improved, redesigned and expanded when Gérard Mura became chairman and CEO, was the main cohesive factor of the Group's identity and a cultural vector allowing everyone concerned to understand each other despite their differences. Starting in 1993, Quality Distinction days were set up. These rewarded the people who had most contributed to quality, and took place at one of the companies. Demo, always a leader in quality, was one of five national finalists in the Trophée des Meilleures Usines de l'Usine Nouvelle (best factory prize) in 1977.

Configuration of the Group

In 1992 AFE was partly a major player dominating the European or even the world market in cast steel fifth wheels, and partly a small conglomerate with a constellation of different activities. Its annual sales had risen nearly 40% in two years, thanks to internal and external growth. From 1.1 billion francs in 1990 (€170 million), sales had reached 1.5 billion francs (€230 million) in 1992. More than a quarter of sales were to the automotive industry. Next came civil engineering (15%), transportation and handling machinery (12%), heavy goods vehicles (10%), and pumps and valves (8%). The group had 2,500 employees.
The largest factory, in Feurs (520 employees), was renamed Feursmétal.
In 1989 the managers decided that the old name (FAEF) was old-fashioned and too long, and decided to change it. A third of its production was exported, with half of its foreign sales going to Germany. This represented significant progress; ten years earlier exports were only half as important, between 15% and 18%.
In order to manage its different companies, the Group divided into independent branches that functioned as subsidiaries. The Group

CRONITE MANCELLE

Hand moulding cutting the furrow designed to receive of glue for assembly of a shot-blasting wheel cavity.

DEMO INJECTION

Painting change due to a serial change performed by Mohamed El Hamzaoui in Chambly.

included AFE Partenaires and AFE Automobile, created in 1990, as well as AFE Metal and AFE Technologies, created in 1991. AFE Metal, which brought together Sainte-Suzanne, Colombier-Fontaine and Feursmétal, occupied a very strong market position as the European leader in fifth wheels and public works equipment.
AFE Technologies included La Mancelle, Klefisch, Cronite Castings and AB Segments. Decentralised organisation gave more responsibility to branch presidents, who controlled their own financial resources to attain Group goals. But in 1993 the new accounting software that replaced the interminable Excel sheets had bleak news: AFE was on the verge of bankruptcy and was lacking in cash flow…

II.3 FROM QUALITY TO INNOVATION

Renaissance

In 1992 and 1993 the continental European economy weathered its worst recession since 1950. Investment rates were three points lower than in 1988-1991, and the economy was shrinking. Like Cronite the year before, AFE was struggling as it tried to remain profitable despite the crisis and heavy debts stemming from its many growth

operations. Protected by an ad hoc representative, AFE was forced to negotiate terms of payment with its creditors. How could it get out of debt, lift its head, and get out of dangerous waters?

Total Quality provided a partial response. Although it was not a complete solution, it allowed AFE to take stock of its strengths and weaknesses to determine which strategic action plans could improve performance. The ceaseless drive to modernise, embodied by Colombier-Fontaine's automatic casting system and the initial robotisation of the finishing stages at Sainte-Suzanne were elements in the twin drive toward quality and productivity.

Innovation, an instinct for taking advantage of opportunities, responsiveness, and commerce completed the picture. Since the Group had few means at its disposal, it was forced to mobilise all its resources and innovate if it wanted to move forward. The decision that Demo would now paint airbags as well as composite parts for La Mancelle was taken at this time. The "Sprockets"[21] operation was launched in 1996. These are but a few examples of the many new ideas that were implemented through the manpower, the bravery, and the tried and true methods of the AFE tradition. The Feurs story showcased the unusual capacity of generating new companies within the Group. One example is Valdi, which was founded in response to new environmental regulations.

In the meanwhile, Marc Génot decided to step down. He found the ideal successor in Gérard Mura. An industrialist from the automotive sector, Mura was able to look beyond the contradictions in the Group's mixed portfolios. He gradually established conditions that would allow for smooth functioning. From a disparate collection of businesses he created a Group united around a new vision of world leadership.

Gérard Mura Takes Charge

Marc Génot had presided over AFE's destiny for nearly thirty years, and replacement of long-standing personnel had begun. In 1993, to combat the economic crisis, he had hired Pierre Prudhon to oversee the finances. Later he began the recruitment process to find a successor for himself, and found Gérard Mura. An engineer trained in the French Arts et Métiers tradition, Mura then headed Bendix Europe, a division of Allied Signal worth $1 million. Mura was serendipitously embroiled in a clash with the American team that managed Allied Signal. A recruitment firm suggested him, and AFE's search came at

"I met Marc Génot
and the project interested me.
I'd already been around large
groups; now I was discovering
a constellation of SMEs. The huge
variety of situations was striking, in
terms of competitive position, product
quality and corporate image.
Each one had its own complex and
specific problems. The 1993 crisis
fortified the teamsand brought
them together. Team spirit and
the quality of men are the basis
for problem resolution."

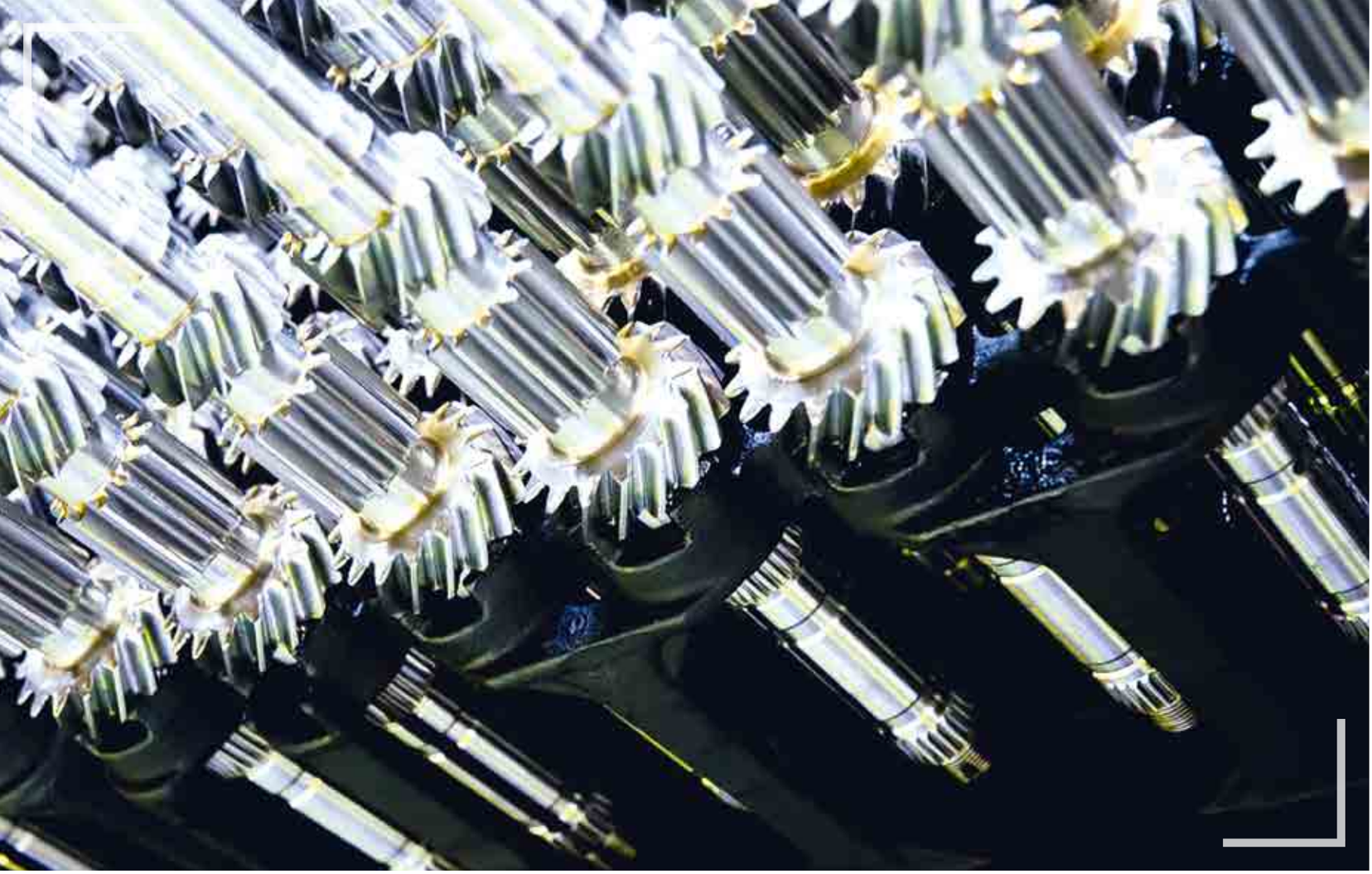
Gérard Mura

just the right time, because it allowed him to embark on a project he had been considering for some time: taking on a SME. His interview with Marc Génot in 1994 could hardly have gone better. Mura immediately sent a very strong signal by investing his entire severance pay package from Allied Signal in AFE stock. He officially became CEO two years later, following a transitional period. But the new shareholder and managing director was busy from the moment he arrived.

Looking back, Gérard Mura smiles, "I realised that the Group was in serious financial trouble because it hadn't secured its debt; the 1993 crisis pushed it into an ad hoc mandate. Pierre Prudhon, the new financial manager, was already negotiating with a pool of sixty banks. When I looked into the situation, I hadn't expected to find what I did, but I wasn't worried. I had already turned a Group around and knew how to do it."

So it was that a man from the car industry succeeded the founder. This combination created ideal conditions, although the two men shared neither common roots nor a common past. Marc Génot had grown up in the shadow of a foundry. The job was in his blood. Foundry traditions and customs were his heritage. His social skills placed him at the centre of a network of politicians and industrialists. He didn't

Gérard Mura, who became the Group's CEO in 1995, announced his plans: he would make AFE a world leader in each of its branches and on every continent.
The project was based on long-term vision, awareness of economic cycles, respect for personnel, and the type of organization he was familiar with from his experience in the automobile industry. Twenty years later, Safe is a world champion.



Carbonitriding of input shafts on Cronite Mancelle two-level assemblies at the Valenciennes PSA site.

hesitate to shake up old traditions and to break with paternalism and corporatism. He was the incarnation of change, of the transition from traditional methods to modern times, the builder of a world based on dialogue and teamwork. These qualities placed him ahead of most of his colleagues and made him a natural leader in his field.

Gérard Mura, on the other hand, grew up in modest circumstances. He experienced poverty, and scholarships enabled him to continue his studies in the USA, where he obtained a Master's degree from the prestigious Carnegie Mellon University in Pittsburgh. He spent twenty years with Valeo, where he earned a solid reputation as a troubleshooter by restoring the fortunes of companies manufacturing components for the building industry. The factory producing truck clutches, that Mura founded in Amiens, was entirely based on a Japanese model. He restored the historical brake lining business of Valeo that later would be sold to… Allied Signal.

An accomplished organiser, Mura had learned the importance of solid strategy in 1976, when he spent time with the BCG consulting firm, hired to study the Valeo Group. Mura had gathered knowledge about the international scene, and understood the advantages and disadvan-

tages of SMEs and Groups, which would come in handy later. Unlike Marc Génot, who was impetuous, impatient, and audacious, he was as composed as a chess player and knew how to create the conditions that would enable his teams to succeed. In cycles of crisis and uncertainty, he knew how to pick the winning strategies that would reduce chance to a minimum. He favoured patient building up of solid competitive advantages that would enable the Group to give the best long-term offer to its clients. He enjoyed studying, analysing and finding ways around the long economic cycles theorised by Kondratieff and other economists like Juglar and Kitchin.

The Group that Marc Génot had created resembled a huge castle to which some rather strange wings have been added. Mura only wanted to keep elements that would make the edifice impregnable, and which would not be lost when moves were made in far-off countries. His keen analysis was a strong source of mutual confidence. When he spoke, fixing the objectives for several years ahead, his troops knew what to expect. Génot and Mura shared core values in the form of deep respect for people and for their work, and a passion for the industrial world.

DEMO TECHNIC

Teresa Beltran inspects a batch of moulded parts.

III.
GOING GLOBAL

III.1 STRATEGIC DETERMINATION

N°1 in a Worldwide Niche

Gérard Mura immediately suggested certain clarifications. In 1996 Demo had split into two companies, Demo TC (which produced instrument panels) and Demo Injection. It became possible to see how these two plastics processors had made reciprocal contributions to one another. AFE Partenaires also had two activities: AFE Levage and Sefac on one hand, and AFE Carrosserie, Polyfont, and Sofaco, on the other. The latter group was soon joined by FIT and particularly Cargo Van, the European leader in aluminium kits for utility vehicles, present in France, Germany and the Czech Republic. Adding Cargo Van to the AFE Carrosserie (chassis) sector stretched the limits of diversification, showing that it was now necessary to make clear choices about orientation.

CRONITE WUHAN

Casting operation: the empty shell leaves the preheating furnace at 1,150 °C. The operators, fully protected, pour the molten metal at 1,500 °C.

> "Compared to that of most other foundry groups, Gérard Mura's vision was more industrial than financial. The management team structured the group as a collection of micro-companies, which gave individual managers a lot of responsibility."
>
> **Jérôme Tricoire, Castmetal FWM**

Being a market leader was a condition, but it wasn't enough. Confined to building body parts for trucks, which was not really a European market because of the great variety of different national regulations, the Group could not implement the strategy Gérard Mura had set out in early 2001 at a managers' convention: "Becoming number one in each of our activities, in a worldwide niche." "They didn't believe me that day," Mura recollected later. From this time on, the group would concentrate more and more on activities that corresponded to Mura's objectives. Activities that didn't match these goals were offered for sale under favourable conditions for all. On the European level, La Mancelle, Cronite Castings and Klefisch demonstrated what Mura had had in mind: all were national leaders in heat treatment assembly jigs in their respective countries. The goal was for Group companies to first become European leaders, then world leaders; FWF, for instance, was the world leader in cast steel fifth wheels.

If there were any doubts about this, they would soon disappear. Mura's strength was in convincing the managers to stick to his vision, share his goals and remain faithful to his strategy. He didn't hesitate a moment to remove AFE from the stock market in 1999. He reinvested all his shares and stock options in the Group, thereby giving a clear signal of his unwavering confidence.

III.2 THE TOOLS OF CONQUEST

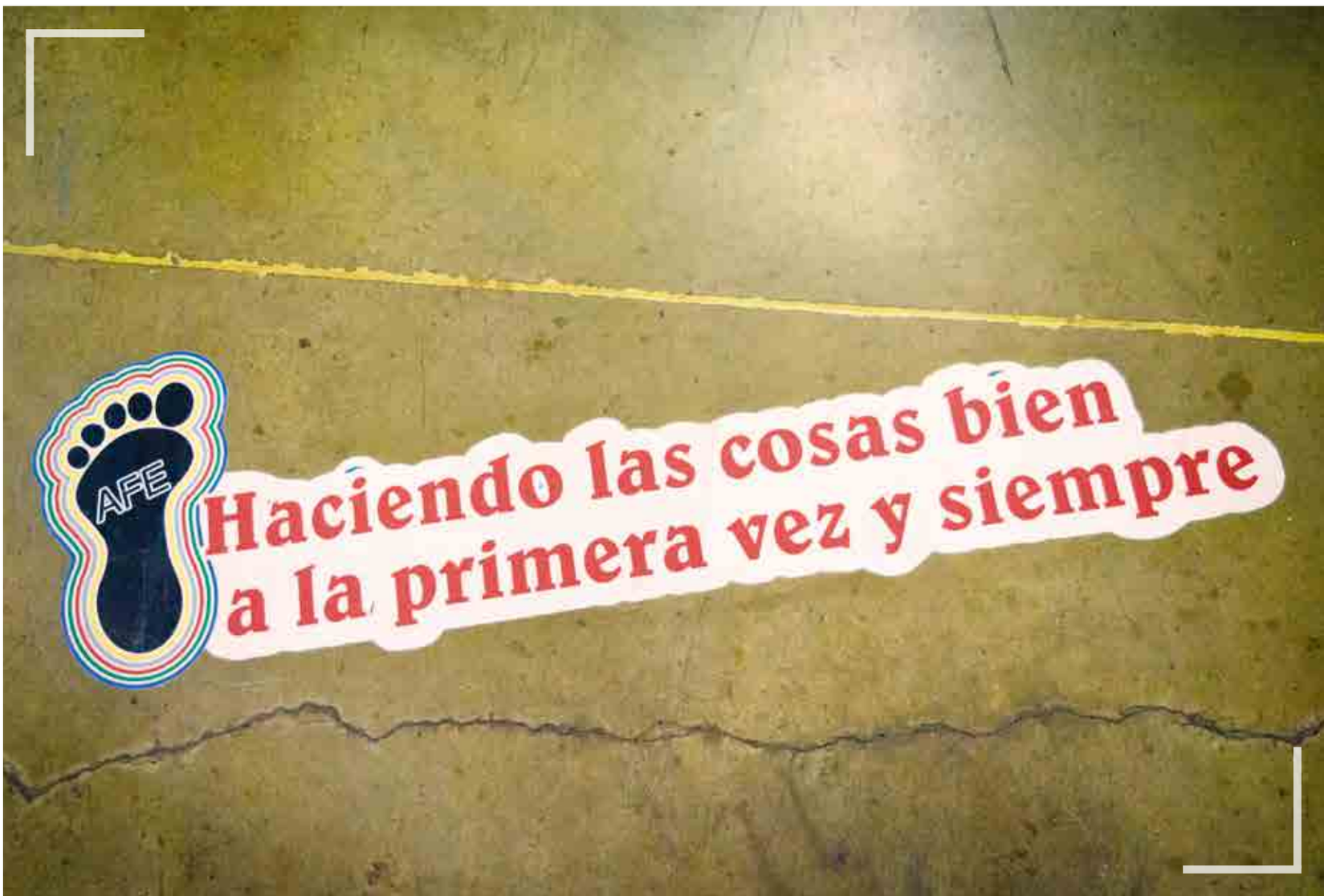
Optimising Quality

The course of action had been defined, and it was now time to work hard to achieve it. Immediately after taking over, Mura developed

several approaches, methods, and tools. Some start with what is already there, while others innovate. Mura was interested in Total Quality. It resembled schemes, such as managers' Quality Circles, that he had experienced in the car industry. Starting with the pre-existing Total Quality (TQ) plan, he enhanced it with the QT 100 panel of indicators. The plan's motto expressed its simple philosophy: "100% of personnel involved at 100% in Total Quality". Individual and group suggestions were rewarded. The best problem-solving groups (PSGs) were invited to make an exhibit about the subject they had dealt with in the Group's yearly managers convention.

A proud moment for the winners and their sites. While each foundry developed its own ways of improving performance through the tools provided,[22] the QT 100 grid was instrumental in quantifying advances and allowing teams to gauge their progress and compare it with that of others. Each site undertook a yearly self-evaluation, and their score was part of the QT 100 notation of its branches and the Group.

All the Group's factories prioritise quality, as illustrated here in Chihuahua.



LE SEGMENT AB

Visual inspection of piston rings (bracket closing type).

CRONITE MANCELLE

Hand moulders Laurent Bluteau and Jean-Louis Vermeulle turn a ring mould over to remove the pattern cavity.

The basis for in-house evaluation, or benchmarking, had been established, and from this time on, foundries could assess their results in relative and absolute terms. Emulation among sites in the same branch, sites in different countries and across branches created a permanent challenge for all.

A Rigorous Steering System

Gérard Mura also applied the "Deployement policies", system he had encountered in 1985 at Akebono in Japan.[23] When he arrived at AFE, he asked, "What are the Group's strengths and weaknesses? How

"Deployment is a coherent system that guarantees that the different companies' endeavours match the overall strategy. The teams are highly motivated because they make their own choices regarding how to achieve the ambitious but realistic goals they set themselves."

Gérard Mura

can AFE set itself apart from the competition?How can it become the best in terms of customer satisfaction? How can it anticipate and accompany customer needs?" Strategic axes were developed. One of the Group's special features was the way it included the heads of each division. Autonomy was not an empty word at AFE. It dated back to the 1970s, when Marc Génot trained his managers to seize the means for emancipation. Twenty-five years later, the scale of AFE's operations and its references had changed. Each factory and division proposed its own strategy within the Group vision. This was a clear contract, where trusting the managers functioned as a strong motivational factor.

The Group provided the tools to fulfil contracts: precise goals were validated with extreme, almost mathematical, care. There were no holes in the mesh of its budgeting plans. For a Group of AFE's size, reporting has become increasingly sophisticated over the years. It enables analysing results and precise and efficient projections, enabling its financial teams to monitor the implementation of strategic projects as well as supervision of existing activities. Quantifying goals enabled the Group to implement the PIO plan (individual premium plan) in 1999, which ensured that everyone in the company would work exclusively towards its chosen strategies. Gérard Mura jokes about it in retrospect, "Some managers thought I was trying to bribe them by paying them more than their salaries."

CASTMETAL FWF

Fifth wheel couplings in the finishing shop.

III.3 METAL LEADS THE WAY TO MEXICO

Now that the Group had adequate tools, it could organise the international expansion that spread out from France in a succession of waves. The first wave established leadership in the European market. This occurred through the acquisition of La Mancelle, Cronite and Klefisch. The second wave took AFE to America and further afield in Europe. Unlike the first wave, it included both clients and partners, including Holland Hitch, the fifth wheel manufacturer.

When its Canadian supplier Dofasco closed in 1992, Holland Hitch began to search for a supplier that could assist Sainte-Suzanne. Many adventures transpired when the vice-president, Sam Martin, suggested building a new foundry. This occurred in late 1993, when it became apparent that a perfect replacement for Dofasco could not be found. His plan was regarded with great scepticism. “No one has built a steel foundry in Europe or the US for ages,” he was told. But this plan was rapidly judged the most satisfactory solution. Jacques Vincent was sent by the FWF to locate the best site for the new plant.

He prospected in Mexico but found nothing suitable. Then he met someone on a flight and mentioned his problems. The person suggested going to the State of Chihuahua, which was booming.[24] Vincent was pleasantly surprised when he arrived there in 1994. “Ford invested $7 million here,” he read on a sign as he came into town. This gave him hope for his own project, estimated at a cost of $5 million. The project seemed to be moving forward, but then the Mexican crisis of 1994 put investments on hold. In the meanwhile, the Dofasco facility closed, with Sainte-Suzanne taking over the production of eight fifth wheel references that had previously been manufactured in Canada. 140,000 fifth wheel were produced in Sainte-Suzanne, whose top capacity was 120,000 fifth wheel. Holland Hitch had not believed it would be able to produce this amount. Pressure continued to build, and finding a solution was urgent.

When the Mexican economy recovered in 1996 and AFE renewed contacts in Chichuahua, nothing went as planned. The government put investments on hold in the capital in order to favour growth in medium-sized towns. “Take a look at Cuauhtémoc”, said Luis Guerra, the government representative. So AFE went west. They crossed the desert of red stones and arrived in the city of the Tarahumaras Indians, which owed its expansion to the tireless Mennonites. These immigrants, who arrived in 1922, had made the little town into one of the world’s greatest apple orchards! The nets that protected the apple trees against hail made the landscape look strange, as if thousands of birds were about to take flight into the vast sky over the plateau. The area had electricity and several large companies had set up there, including Delphi, a General Motors subsidiary and AFE client; Baxter (surgical instruments); and Anchor Foods, which packed peppers to be sold in Chile. A 10-hectare site was found for the new factory. The project was finalised on 1 September 1996, in the same office where, eight years earlier, the contract that saved Sainte-Suzanne had been signed.

We’re Not Relocating!

Once again the future of French foundries was on the line. What would happen if a factory were built in Mexico? How could serious consequences for Sainte-Suzanne be avoided, given that its labour costs were much higher? How would the worries of the French employees be addressed? Holland Hitch made a serious commitment to continue

"Jean-Paul Daval had prepared everything and we were ready for the moment when Mandelli went under. Caterpillar didn't have an alternate solution. When Mandelli fell apart, we immediately went to see Caterpillar. Everyone appreciated the proposal that was made."

Roland Fraysse, former managing director, AFE Metal

modernising the French factory.[25] It also made the unusual decision of engaging in dialogue with employee representatives, taking advantage of the supervisory board's frequent visits. Jean-Paul Daval recollects, "We had made progress in France, and didn't want the momentum to stop. We encouraged our employee representatives to speak up at each supervisory board meeting and to ask questions directly to Holland Hitch. This restored partially their confidence. It was a good way to garantee our success in Mexico. We needed to look at the larger picture so that Mexico would not seem like relocating." Since a third of the fifth wheels were to be produced in Mexico, AFE Métal decided to make up for the drop in production in Sainte-Suzanne by manufacturing sprockets there. The group had begun to produce sprockets following the bankruptcy of the Mandelli foundry in Italy. AFE was also considering another product, brake discs for Knorr Bremse, which specialised in braking systems.[26] Finally, FWF France produce both fifth wheels and sprockets. In 1997, a new hike in production made it necessary to ask Feursmétal for help. Its willingness to lend a hand showed the real inter-factory solidarity that had built up over the years.

The Mexican Launch

On 29 June 1997, an agreement was signed with the state of Chihuahua. The new company, FWF de Mexico (FWM) had been founded on 28 February. Two-thirds of the FWI holding company, which included FWF France and FWM, were held by the subsidiary AFE

CASTMETAL FWF

Induction-hardening of sprockets.

Métal, with the remaining one-third held by Holland Hitch. Another novelty for the Group was that the legal aspect was organised according to the "maquiladora" principle developed in the 1950s to create jobs by attracting American industrial investment in Mexico. Maquiladora was unknown in France and required lengthy study to learn how to benefit from its social and fiscal aspects. A BMD moulding site using the Impact process was ordered; it was identical to the one in Sainte-Suzanne.

This was the "deal": the Cuauhtémoc factory was to be identical to the one in Sainte-Suzanne, and future Mexican employees would come to France for training. At first they were greeted reluctantly; suspicions lingered and Saint-Suzanne employees worried that Mexicans would take their jobs. Carmen Portillo and two other Mexicans arrived in December 1997. Carmen, a metallurgy engineer, had not believed Roland Fraysse would hire her when she met him in a small office in Chihuahua. She had been the only female candidate, but here she was in France for training.

CASTEMETAL FWF DE MEXICO

A sprocket stack at the Cuauhtémoc plant.

The training schedule included “three months in France, followed by a week in the temporary offices on the construction site”. The work was challenging: at the same time she was learning French, Carmen was also asked to translate documents about procedures and quality from French into Spanish. She was also in charge of Methods. The future teams were put together with a certain amount of difficulty. A few months after Carmen’s arrival, three other Mexicans arrived in France. Two were in maintenance (one a manager, the other in support) and one was a future production manager.

“The Five Musketeers”

The early days in Mexico were heroic. Production began even before the foundry had a roof, because Holland Hitch could wait no longer. Alfredo Andazola, who was machining supervisor in 2013, helped set up the BMD from September 1998.

At the time, there were four French staff and a dozen Mexicans on-site. Supervised by the German engineers who had come to explain how the BMD worked, Alfredo set up the power cables. Dagoberto, an agricultural engineer who had come to the foundry to earn a better living, assisted him. From September to December 1998, Dagoberto struggled with the teams to produce the first parts and learn how to use the BMD, which was very sensitive to humidity and dampness in the sand. Metal sometimes leaked out, sticking to the moulding box and burning the cables. Dagoberto went to France to learn how the BMD worked so he could be independent.

After training for several months in Sainte-Suzanne, Ghislain Fournet, a BTS graduate, who was an ESF (the french school for foundry) apprentice, arrived in Mexico in November 1998. He was to undertake a challenging project: setting up a green sand preparation plant with new sand. Since there were not enough employees at the time, he was also put in charge of casting and core making. In late November, the first casting trials were made, with Alain Jean-Pierre, Claude Leleu (from maintenance in Sainte-Suzanne) and Steve Hook from Holland Hitch in attendance. Carmen went to the client to test the product. The results were approved between Christmas and the New Year, and production began. Serge Gamboa, a local man who had worked in the Saltillo textile factories, joined the team. He became the fifth Mexican "Musketeer", who would still be with the foundry fifteen years later.

What Strategies for the Future?

In just a few months the little group, far from home, had succeeded in two significant ways: it had inaugurated a cast steel foundry and started running it with new sand, with all that implied in terms of difficulties.[27] For two years, the sand plant had to be stopped every hour to remove the extra sand with a spade. But by 2000, FWF de Mexico had found its stride. The two crews performed six daily meltings. The factory had reached cruising speed and production was steady. The XD 351 model is the one that older employees will recall. The financial organisation was like those of the European production units. Production and management indicators were analysed every month. Everything seemed to be going fine.

But in November 2000 a thunderclap shook the company. One morning the director called Ghislain Fournet, saying, "Finish the last casting and then we're stopping everything." The downhill trend of

In 2002, when Jean-Paul Daval and Jean-Luc Weber visited the Michigan Neway factory – it built suspensions and had been acquired by Holland Hitch – they saw a new part. It contained a total of 20 elements, including metal sheeting, welding and forged parts. It was clear that cast steel would be a better solution! In the spring of 2003, the new CB400 suspension was validated. The first generation Van Beams made of cast steel were 11 kilos lighter. And this was only the beginning.

Holland Hitch's sales forecasts violently impacted the factory. For three months, sixty employees worked only every other day. Salaries fell. The outcome of this period was that the factory, like its French counterpart Sainte-Suzanne, decided to diversify. Finding the equilibrium that would help Holland Hitch avoid shortages and ensure that AFE would not suffer from production amount variations was no simple task. Mastering cyclicality was the goal in setting up an intelligent partnership between Holland Hitch and AFE.

A New Product: The Suspension Arm

It was a good thing that Holland Hitch had radically changed since the beginning of its partnership with AFE. When it took over the American company Neway Anchorlock in 1999, it entered the trailer frame market.

For AFE, this was the beginning of a new adventure: manufacturing suspension arms.[28] AFE suggested that Holland Hitch replace the machine-welded suspension arms that connected each end of the axles to Neway trailer bodies with a single arm made of much stronger cast steel. After some ups and downs this solution, which reassured clients, was adopted. The suspension arm, which was repeatable and could be mass-produced, could also be improved over time as expertise in metallurgy improved. It corresponded perfectly to the

type of niche position Gérard Mura was looking for. It was a product that would lead to very competitive factories being built and developed by drawing on experience gained, along the same lines as the fifth wheels! It also solved Cuauhtémoc's diversification problems; the Mexican plant, like its French counterpart in Sainte-Suzanne, had been too highly dependent on a single product.

Between 2005 and 2008, Cuauhtémoc began to produce sprockets to American standards for Caterpillar. It was clear that the factory was taking off. But in terms of its ability to withstand setbacks, this was not enough. The decision was taken to bring machining back to Mexico, which meant erecting a new building. This way the company could guarantee the parts' quality and produce them as needed. Robotising the finishing process was another improvement they considered. All these improvements were implemented with an eye to customer satisfaction. Cuauhtémoc was soon rewarded for its efforts: SAF Holland ordered a new type of fifth wheel from FWF Mexico, which now had the capacity to produce the part from start to finish. This success highlighted the Group's know-how, demonstrated by suspension arm improvements. The first iteration of the

CASTMETAL FWF DE MEXICO

These Cast beams, made in Cuauhtémoc, show Safe Metal's ability to provide highly specialised products.

CASTMETAL FWF DE MEXICO

Jésus Lucero Olivas rebuilds an arc furnace crown.

part weighed 28 kg. The third weighed only 20 kg and had a better yield rate.[29] The suspension arm was 100% developed in Mexico.

But Dick Muzzy, Holland Hitch's majority shareholder, decided in 2006 to sell the company to the German Otto Sauer Achsenfabrik SAF, which ranked second worldwide in the production of axles for lorries and trailers. SAF's goal was to penetrate the American axle market as part of its globalisation plan.

Thus began a new adventure for the two groups, which did not know each other and had not shared the extraordinary FWF project. But SAF Holland was impressed by the new generation of suspension arms developed for the American market, and used the same concept for its European axle market. Sainte-Suzanne was given the opportunity to position itself in a new niche whose cyclicality was different from that of the American market! Things had come full circle: SAF Holland, which brought AFE to Mexico, was now selling Mexican-made products in Europe.

In Gérard Mura's plan for world leadership, the next step for every sector was Asia, which was both the promised land and the land of uncertainty. Transferring technologies and know how was a concern.

It had become impossible for AFE Métal to combat the arrival in Europe of parts made using the lost wax technique in China. This highly competitive technology was luckily limited to pieces weighing less than 40 kg. Keeping these parts in the catalogue meant that a Chinese factory was now required. AFE Metal representatives already in China set up a trading company in Beijing in 2000. Its goal was to buy and validate Chinese products. It purchased small parts made with the lost wax technique – GET (ground engaging tools) and trailer hitches – from local subcontractors, and sold them to its traditional clients in Europe through its commercial network. The operation was a success in terms of small clients, but large international clients had their own buying organisations in China.

A Partnership with Nantong?

Developments at Holland Hitch had an effect on AFE. Simplex fifth wheel systems provide a good example. The Simplex product was in competition with Holland Hitch's on the American market. When the Naco group, which owned Simplex, decided to sell, their CEO contacted Roland Fraysse, who naturally called for a strategic merger with Holland Hitch. It was after the merger that Jean-Paul Daval flew to China, where Simplex produced its fifth wheels via the Chinese company Nantong. This was not a problem for AFE because Nantong, which sold its products through a Dutch broker, was expensive. But things were different once Simplex belonged to Holland Hitch.

The Nantong manager saw an opportunity arise: he decided to stop working with the broker and hurried to the USA to sell directly. As Jean-Paul emphasises, this changed everything, "Prices fell and Nantong became very competitive." AFE was theoretically protected against the competition by an exclusive contract with Holland Hitch, on condition that it remain the most competitive. Holland Hitch saw an opportunity to obtain products at a lower price and asked AFE to go to China to find out whether quality could be improved. AFE accepted, because in 2004 and 2005 there had been a strong demand for fifth wheels. Expanding production sources had become a relatively urgent concern. Why not strike a deal with Nantong? AFE set out its conditions: it would be in charge of operations and of the commercial relationship with Holland Hitch. Things went back to where they had been before. Simplex continued to be produced by Nantong, and AFE continued to look for a third source of fifth wheel production.

SAF-Holland wondered,
"Who are these French guys?"
They watched us develop
a new generation of fifth wheels –
but thought they weren't worth
the bother. Then they challenged
us by taking over a site that was
already producing fifth wheels for Jost.
They hadn't reckoned
on the technical difficulties
they came up against, though.
They had to bite the bullet
and call us for help."

Jean-Paul Daval,
former managing director FWF

Building New Relationships

But SAF's acquisition of Holland Hitch troubled the waters. As a new player entering the game, SAF naturally wanted to impose its own rules. SAF demanded that AFE's annual cost prices go down, without realising the implications of the strongly cyclical American lorry market. The 2009 crisis heightened tensions, and the Sainte-Suzanne site was closed for four months. Its employees knew it would open again, but the situation was far from positive. Sylvie Choley of the sales department remembers, "I had only missed three weeks of work in thirty-eight years, when I had lumbago. Suddenly there I was at a loose end at home, being paid to do nothing. It really shook us up." Gérard Mura felt that the only solution was to create a safety margin by taking on new clients. This implied increasing production, especially of sprockets for Caterpillar. SAF Holland disagreed, as it feared that AFE could not fill its orders if SAF Holland's activities took off again. As Jean-Paul Daval recounts, "Gérard said, 'We had to find solutions, and everyone agreed that the third source we hadn't managed to set up with Nantong must be found.'"

A Third Source in China?

The American economy took off again in 2010 and 2011. Production of fifth wheels and suspensions arms made by SAF Holland increased.

FWM had been producing suspension arms for SAF-Holland trailer frames since 2004, and synergy between the two companies played a crucial role. So AFE managers were surprised to learn by chance that SAF Holland had established a relationship with a Colombian foundry without telling them! When tensions subsided, common sense carried the day on both sides.

Gérard Mura propose to send Jean-Paul Daval to Colombia to solve quality issues. Apart from the legal aspects involved, the break in the long-standing trust between the two groups complicated matters. FWI had become highly competitive through twenty years of defining and producing fifth wheels, and was also the only factory able to handle the market's cyclicality. As Daval said, "We were constantly improving things. Our teams would discuss things, and the CEOs would come to agreements. SAF-Holland needed to restore its confidence so it wouldn't feel like a prisoner. We reminded them that we were still looking for a third source and that we probably had a solution." Since the Colombian foundry was not what they were looking for, AFE suggested a third source in China, and a small foundry was located in Xuzhou.
Mr. Ding, its owner, headed a varied conglomerate. He traded in nails and screws, and owned a brick factory and a lorry handling facility. The foundry was too much for him and he was happy to get rid of it. It was a rarity in that it used chemical sand rather than lost wax, which was unusual in China. AFE planned to progressively set up a cast steel factory – which were uncommon in China – before investing in the construction of a new factory like the one in Sainte-Suzanne. But the US economic crisis that began in 2008 caused European and American orders to fall. Was it still a good idea to take over the Chinese foundry? Despite his doubts and the economic crisis that had now reached Europe, Gérard Mura honoured his promises to Mr. Ding and SAF Holland. He felt that the metal division should get its foot in the Chinese door as soon as possible in order to gain valuable experience. The foundry was purchased in January 2009 and continued working with its long-standing clients. Processes were put into place to guarantee product quality, including the transfer of tooling from Nantong. But these things were easier said than done. The company's personnel were unhappy about the takeover. Mr. Ding decided to leave Xuzhou and many factory workers went with him. This is how things are done in China, with workers following their protectors from place to place.

Those who stayed on were happy to be working for a foreign company. Surpringly, however, the factory did not produce fifth wheels. The rapid breakdown of its relationship with Nantong, which had decided to work for a fifth wheel manufacturer that was SAF-Holland's rival on the American market, forced the Group to transfer Simplex production to Mexico, wich had immediate available capacity. At the end of this long search for a third source for fith wheels, it was finally determined that the Chinese factory would be used in another capacity.

After two years of research, during which the Xuzhou factory had a hard time surviving with its initial portfolio of clients (mainly consisting of traders), Caterpillar decided the facility would now manufacture a range of large teeth. An industrial investment plan that would make the factory competitive for this range of parts was devised. Xuzhou had a moulding line with a carousel and a coremaking line. Moulding was performed in a casting area that included four induction furnaces, two with capacities of 2.5 tonnes, and two with capacities of 2 tonnes.

Much remained to be done to instil the AFE standard of quality in the Chinese personnel. The organisation of the factory was revised and improved in order to be better adapted to the parts. The development of bucket teeth, which entailed a dozen quality control tests, was an important step forward. AFE installed new equipment such as a 3D and a magnetoscopy machine. Production equipment was improved and supplemented with a new heat treatment adapted to bucket teeth. Caterpillar was satisfied and confirmed the work programme. AFE Metal was now officially established in China.

When AFE staff visited rival factories in China it was not unusual to see their own parts there. It would take time for AFE to understand all the dimensions of a culture that differed so much from its own. In the meantime, AFE transposed its own methods to China, with Total Quality and safety leading the way. There was much to be done to improve the latter. The Chinese staff only considered that a work accident had occurred if the person was on sick leave for three months! Technical teams from Lyon went regularly to China to ensure that AFE standards were being applied. In Xuzhou, the operators were paid according to tonnage. Once they had fulfilled their objectives, overtime began. Certain operators made the largest pieces, which enabled them to earn more and work less. It was time to redefine pay scales and find ways of motivating the operators in keeping with Chinese culture. This represented a real challenge!

III.4 DEMO FOLLOWS ITS CLIENTS

CASTMETAL XUZHOU

Zhang Liang and Wang Xianqiang examine samples of new products.

Demo in Turkey

More than any other branch, Demo was induced to follow Autoliv and TRW, its two largest clients, around the world. This was a chain reaction initiated by automotive suppliers that encouraged tier 2 car manufacturers to become globalised. Turkey attracted important car manufacturers in the 1990s. It was projected in 1999 that 450,000 cars would be built in Turkey in 2001, up from 350,000 in 1998. The time had come for AFE to accompany the development of Autoliv, its oldest client, in Turkey. Hervé Longatte, who joined AFE headquarters to speed up international development and identify industrial targets, began to scout out a future Demo factory. He visited 35 companies and finally settled on Plamat, the first one he had called

DEMO PLASTIK

Tansu Yiğit inspects gearbox safety parts for PSA vehicles at the injection workshop.

on. The factory was located in Bursa, the centre of the Turkish automotive industry, south of the Sea of Marmara.
Demo Plastik was founded in April 2001. A few years later the site was managed by Erkan Korhan, a young engineer with a great affection for France. His bosses set up a challenge for him upon his arrival: he was to quadruple sales revenues and reach "€15 million in 2015". This self-made man, the son of a Turkish bricklayer who had grown up in the suburbs of St Etienne in the 1970s, didn't bat an eye.
But the work done for Autoliv was not sufficient. Demo Plastik needed to come up with a strategy that would allow it to be competitive across a large range of products for a variety of clients.

In the Czech Republic

Autoliv's American counterpart was TRW, the top worldwide airbag manufacturer. Unlike Autoliv, TRW generally prioritised production in its own factories. But in the early 2000s, TRW Europe's American boss decided to reduce its European sites and employees. Two sites

were concerned: Aschaffenburg near Frankfurt in Germany, and Celakovice near Prague in the Czech Republic. While talking with TRW Europe's purchase manager, Albert Lopes suggested taking over the company. The two companies came to an agreement. Aschaffenburg would ultimately be closed, leaving Demo alone in the sector. Hervé Longatte closed the deal.

In May 2002 Celakovice and its seventy-five employees became part of AFE. The new company was named Demo Autoplast. Business was booming and production made significant strides in 2003. The first airbags made by Demo Autoplast were for VW Golf driver's seats. They were first produced on platform PQ35, and were one of the first products to be painted in the Czech Republic. Better still: Demo Autoplast's fluorination unit was the first of its kind to be installed in the country!

The four key processes of Demo's production were put in place in just a few months.[30] Of course, as in every developmental phase, problems had to be solved. One of these was a graininess that appeared on the covers during the painting phase. This did not discourage the teams; they brainstormed and found a solution through ionisation.

Following on the heels of the VW Golf airbag cover, another series of airbags followed.[31] Four, three hundred tonne presses, were added to the existing equipment late in 2003, and new presses were acquired in 2005. Demo appeared to be making remarkable strides but another "grain of sand" appeared in the gears to upset its position: TRW Europe's CEO changed. The new leader was opposed to closing the plastic injection facility at the Aschaffenburg site, despite the agreement his predecessor had signed. The power balance between Demo Autoplast and TRW did not favour Demo.

An agreement was finally reached nonetheless. It guaranteed production for Demo Autoplast for several years to come. Instead of closing Aschaffenburg, TRW decided to invest in an integrated painting line! This sort of direct competition with its own clients was one of Demo's specialities. It motivated the branch to continually innovate and to stay one or two steps ahead of its clients, who were also its rivals. The next round would be played in Mexico!

In Mexico

The Czech Republic and Turkey lent a new dimension to Demo in the eyes of Autoliv and TRW. As the Group expanded, it gained in legi-

"It was not enough
to be a world leader.
I wanted to be the world leader
on every continent."

Gérard Mura

timacy and credibility. The management undertook negotiations about the possibility of providing Autoliv and TRW with products worldwide, starting in North America.

Here, the two largest automotive equipment manufacturers could not find suppliers as competitive and specialised as Demo. AFE began to look for a site. After having unsuccessfully prospected in Canada and the US, it went south to Mexico, where it had been since 1999. Capitalising on previous experience appealed to the executives. The implementation of the Alena free-exchange treaty signed in 1992 was another positive point. And where would Demo set up in Mexico? In Chihuahua, of course!

This was almost like going back to the company's roots, a nod in the direction of FWF in Mexico. Packed with fifth wheels made in Cuauhtémoc, huge lorries would drive up the highway towards the Ciudad Juarez border and beyond to the US. Built around the main street, the town of Chihuahua had once featured a church and a little kiosk where a brave shoe shiner sat in the burning sun. Today it has stretched out, and nestles in the folds of the red desert. Nature is harsh there. Small vultures wheel in the sky, and roadrunners race about on the ground. Demo settled in one of the industrial areas that were developed in Mexico through the special tax regime that FWF had also used.[32] The employees came from Chihuahua and from farmers' pueblos in the mountains.

AFE took over a plastic injection factory that had previously belonged to the American company Technimark, which had deserted the site to follow its main client, John Deere, to China. Globalisation was like a giant game of dominos. The arrival of Demo in 2005 was excellent news for the one hundred employees still on the site. By chance, the factory was just a few metres away from TRW's beautiful facility. It was time to bring the former Technimark site back to life, and the new company, Demo Technic, began production in 2006. Naoufël Menadi was its first general manager. The decision to install an on-site painting line was rapidly announced. The entire workflow and organisation of

DEMO PLASTIK

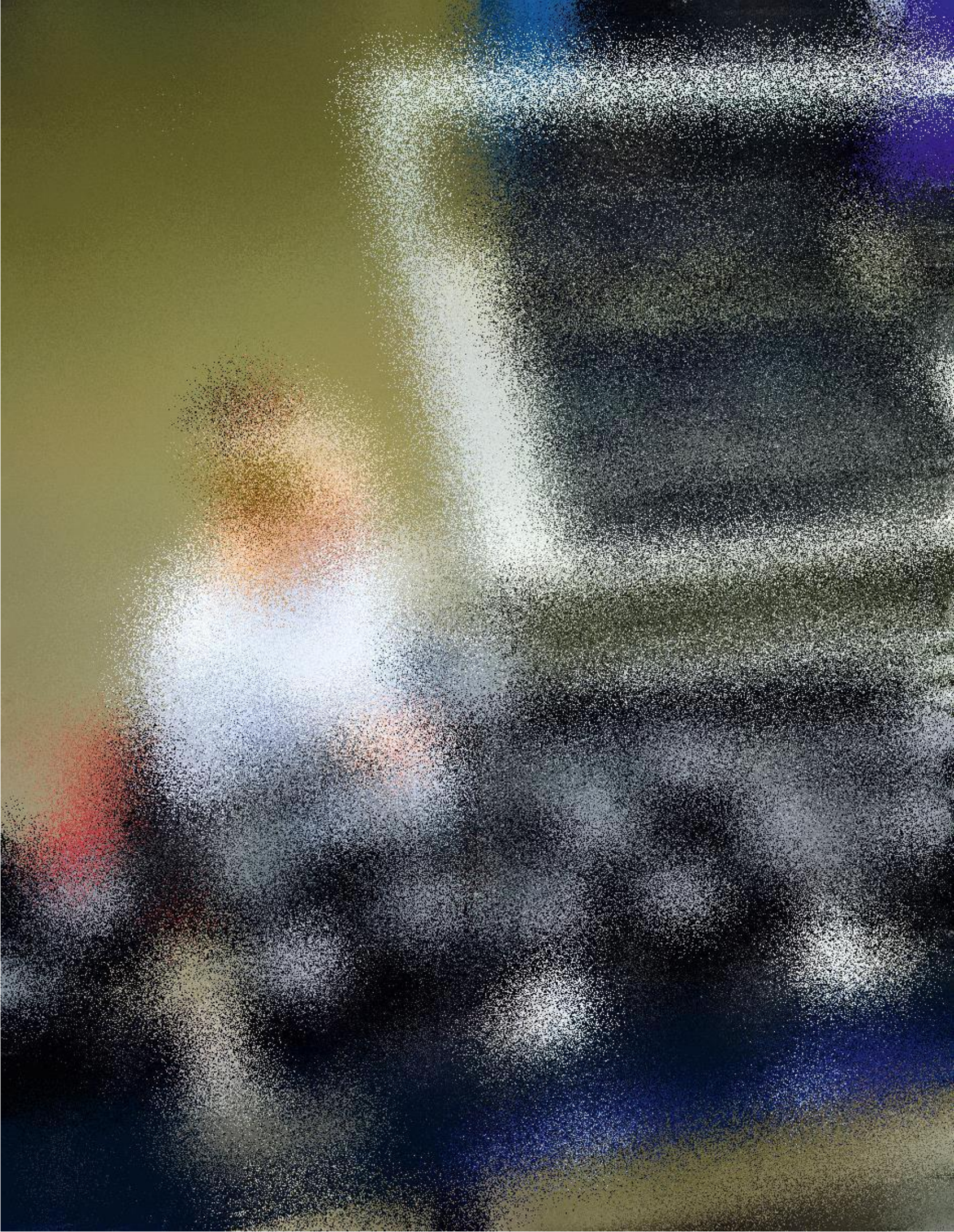
Volvo handbrake parts being inspected at the assembly workshop.

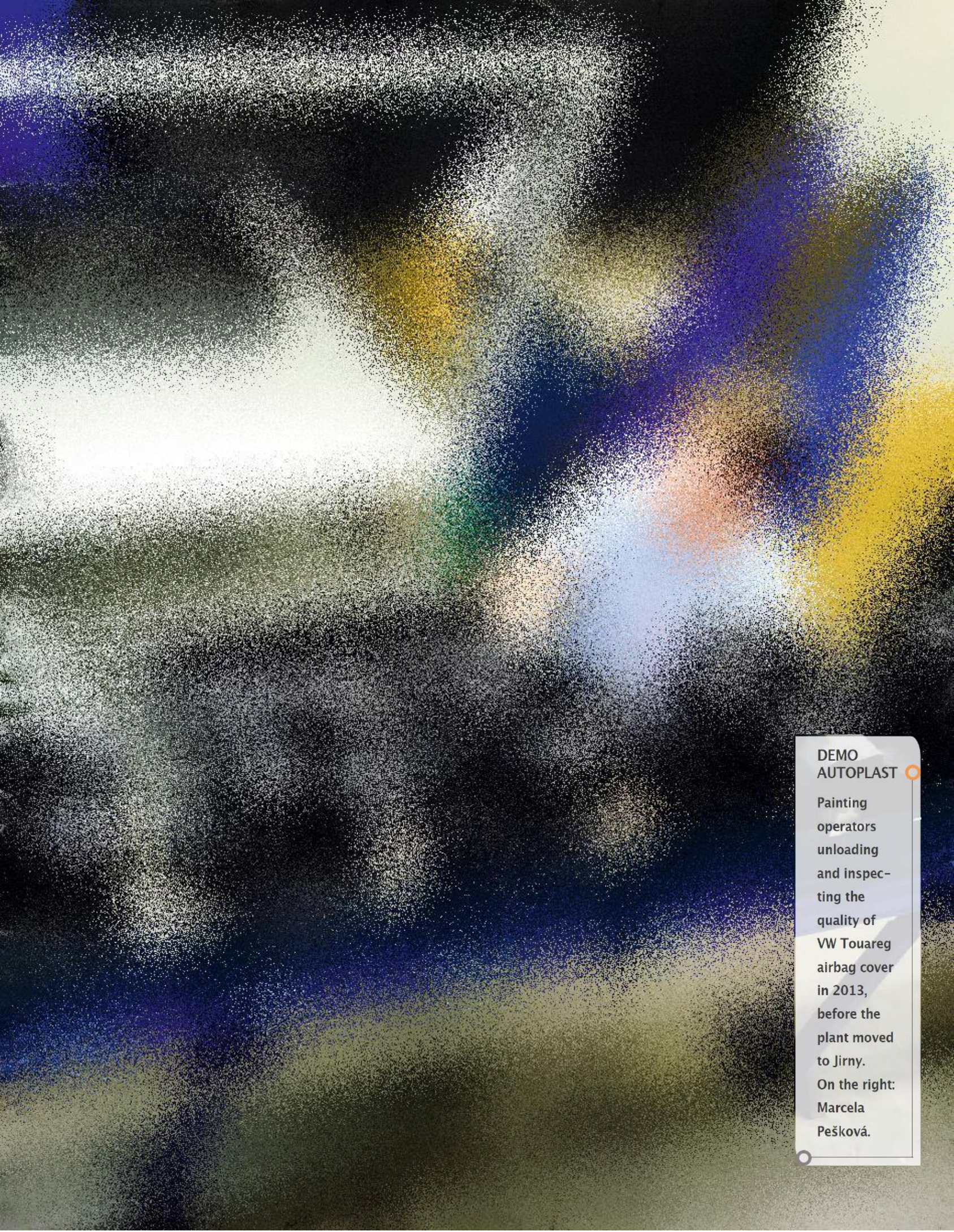
the factory were rethought. AFE hired new employees and took advantage of the numerous plasturgists in the area to recruit executives.
Demo Technic celebrated its third birthday in 2008. It had taken approximately three years to convert the site, which had previously made plastic tool parts for the gardening sector, into a company that produced decorative elements and security parts in keeping with Demo standards. The company soon went one step further by taking up the self-imposed challenge of metallic paint. This development gave it a new skill that complemented the advances in airbag manufacture it had made in Chambly.

III. 5 CRONITE CONQUERS THE WORLD

The story of Belog Guss

We have deliberately left out one part of the story until now: Cronite's 2005 takeover of a company in the Czech Republic. This purchase stemmed from an unforeseen circumstance: the excellent performance of a local foundry, which operated in the great Czech industrial tradition. SVUM was located in Brno, Moravia, the foundry capital,





DEMO AUTOPLAST

Painting operators unloading and inspecting the quality of VW Touareg airbag cover in 2013, before the plant moved to Jirny. On the right: Marcela Pešková.

DEMO TECHNIC

Alfredo Caraveo and Mayra Perez loading and unloading driver-side airbarg covers at the painting line.

and had been instructed by the government to undertake metallurgy research after World War II. Before the war, Czechoslovakia had been the seventh most powerful country in the world, and Brno, the cradle of the foundries, was its industrial capital. The region had five hundred years of experience in foundries, and over the past two centuries, all the blast furnaces of Moravia had become concentrated in a thirty-kilometre area around Brno.

In 1993, four years after the Velvet Revolution, Arnost Svoboda, a metallurgy engineer from the university institute, took over the SVUM foundry. It was highly specialised and lacked capital, which Arnost got from Germany. Its main clients were Bode Panzer, a safe manufacturer, and Gherlich, which made telephone boxes. Then the foundry got a large order from Skoda for heat treatment grids. This was a first

step into the market. In 1998 a new shareholder, Paul Funk, hired a young sales rep, Radek Houdek, to speed up development. In just two years the company, named Belog GUSS, became the leader in the Czech market and took control of a significant share in the German market. But the Belog Guss foundry did not have the means to create expensive new models.

Late in 2004, Paul Funk announced that it was time to either open a new foundry or find a partner that could provide support. AFE answered to that description. Belog Guss incursions into AFE's territory had attracted the attention of the European leader, and the two companies had already faced off several times. Unusually, buying Belog Guss was first and foremost a defensive move for AFE; the project was undertaken to contain a potentially dangerous rival. By the same token, the takeover corresponded precisely to the branch's steady internationalisation. The new Czech foundry would enable AFE to target Russia and accompany German companies as they moved to Eastern Europe. Belog Guss warmly welcomed the arrival of the new shareholder. Handwork and jackhammers were replaced by a moulding line. The transition went smoothly and the Czechs felt confident. As Radek Houdek puts it, they were "under the protection of a large group active in many countries". What better words to express the importance that AFE had now acquired?

The Chinese Experience: the Wuhan Foundry

AFE did not originally imagine that it would manufacture anything in China. The effect of transportation on product prices was low for heat treatment fixtures. It was therefore simple to export products for clients such as Jatco, the Japanese transmission giant. One onsite representative was enough to ensure follow-up and sales representation. But the situation was developing quickly. Jatco made no secret of the fact that shorter delivery deadlines would be appreciated. And growth opportunities were very promising.

In 2002 Cronite set up a structure identical to AFE Metal in Beijing, building on an already-existing foundation. Negotiations began with DFIC (Dong Feng Investment Casting)[33] to create a joint venture.[34] New Chinese laws on the economy[35] went into effect in 2004, freeing foreign direct investment. AFE changed its position and decided to create its own subsidiary that would belong 100% to the group. Negotiations with DFIC were difficult, because the initial project had

Pierre Wittmann

Recruited in 2000, Pierre Wittmann quickly took stock of the weight of the Group's history and the strong attachment of the personnel to their foundries. He has been instrumental in making Safe Cronite a world leader in innovation, and has developed a promising new market: metallurgy.

been to share leadership with the Chinese. Discussions stalled until a consultant appointed by AFE reformulated the project, presenting it as a reflection of the company's "wish to do good" through a "mission" that would benefit China. The Chinese executive and the delegation, Communist party members, were convinced. AFE took over DFIC's cast steel production, and in August 2006 a small operational team was put together.

Located in Wuhan, a crossroads of the automobile industry on the route leading from Canton to Beijing and Shanghai to Tianjin a new lost wax factory was built in six months and inaugurated in June 2007 amidst great celebrations and fireworks, with all the local officials in attendance. The first casting took place the following month. Like Cromex, Wuhan began to suffer from the financial crisis in 2006. But Cronite's prospecting for growth on the Chinese market was not in vain, and in a short time Cronite's market potential in China progressed exponentially.

The factory, whose original clients were Chinese groups, began to expand its territory by teaming up with European and American suppliers, many of whom worked for the major car manufacturers. Volkswagen had an investment plan worth nearly €10 billion for the construction of seven factories before 2015. All these groups were AFE clients. In the end, even the most optimistic predictions were exceeded. To counter the two main local rivals and anticipate

"When we had to choose
a name for our branch,
Cronite was the obvious choice.
It had a resonance – chrome
and nickel – and an international
reputation, because the English
had gone to Japan and the USA
long before anyone else did. First
we were called AFE Technology
Cronite, then AFE Cronite,
then Safe Cronite."

Pierre Wittmann,
Safe Cronite

the demand for wind turbines, a chemically-bonded sand line was opened in 2012 in an area that had been earmarked for this activity. The new line reduced production costs for the heaviest tools by 15 to 20%. Wuhan became the third most important foundry in China in its market. The go-forward principle continued to thrive. This implied, like in the US, the maintenance of a virtuous cycle and a ceaseless struggle fight on both technical and commercial fronts, since Chinese rivals were extremely aggressive and benefitted from a much simpler and less costly organisation.

Cronite Goes to Mexico!

Métal and Demo were now established in Mexico, and it would soon be Cronite's turn. In 2000 Gérard Mura charted the "road map" for Pierre Wittman, the head of the branch, saying, "Turn it into a world leader for me!" This strategy meant conquering the world bit by bit. Taking on the American stronghold was no mean task. The maquiladoras system still reigned: foreign companies agreed to employ local labour, import their raw materials, and export their entire output outside Mexico in exchange for tax breaks.

On the one hand the market was very mature, and on the other hand the competition had long been established. But Cronite had a valuable asset: an on-site bulwark, North American Cronite (NAC), founded by Tony Parsons during Cronite Castings' heyday. It had

CROMEX
Carlos Alberto Castillo positions cores in a green sand mould.

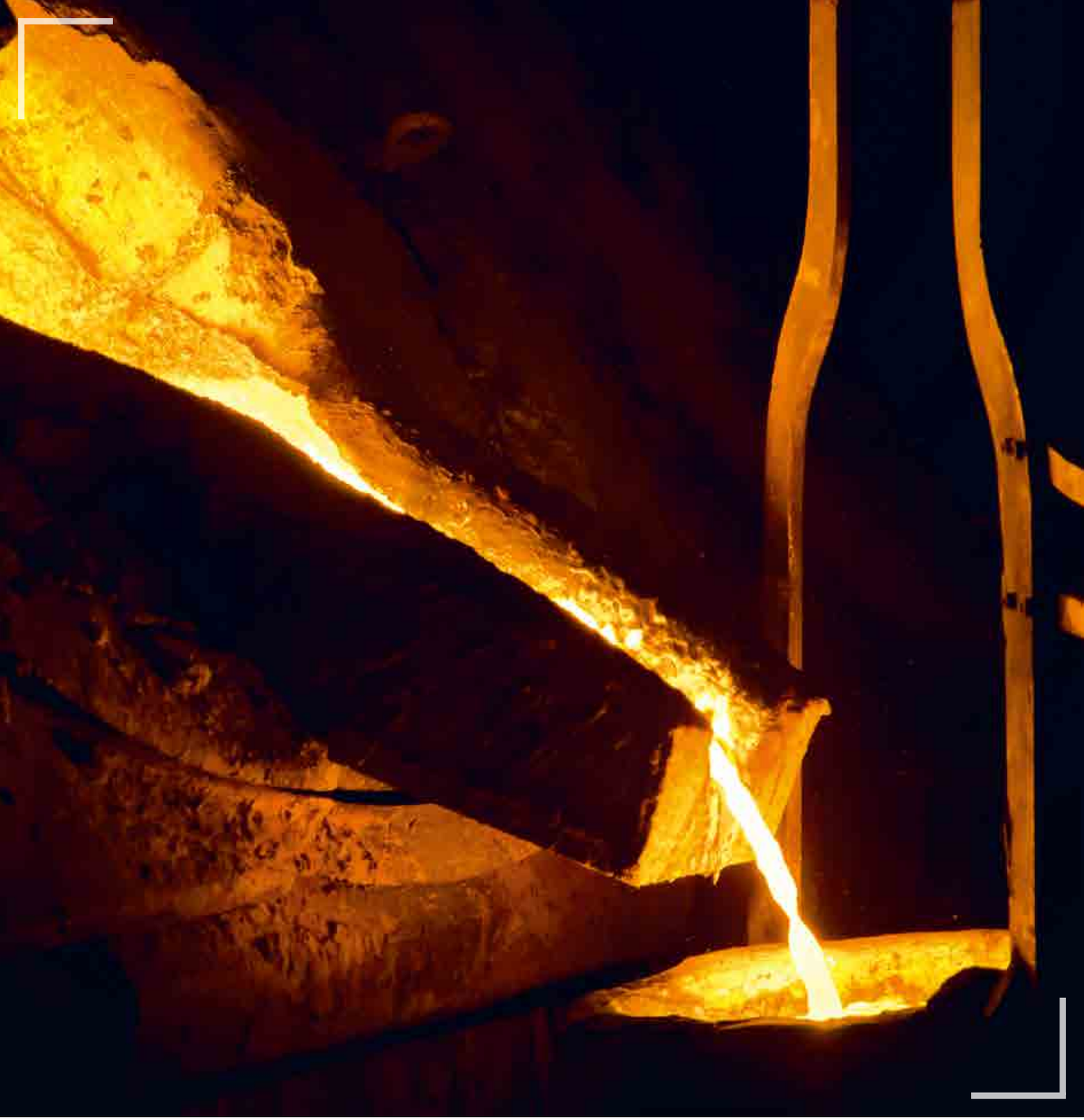
fought hard with the suppliers from North America. AFE stimulated NAC by sending in an international specialist, Marco Möser.
Möser hailed from Flanders and had previously been an agent for Klefisch. His mission for Cronite was to attract clients. His trump card was Mancellium, which SMF had developed a few years earlier. This alloy was unusually resistant to carburising, especially as concerned a very new heat treatment method: low pressure carburising. This clean process, which greatly reduced treatment time, quickly esta-

blished a standard in the automobile industry. Mancellium has been a star product since the time it was embraced by French car manufacturers in 2004. Although it is expensive, it is a superior product and competitive. It is ironic that the grade that was used to develop Mancellium was brought back from the US by a French salesman who had attended an aeronautics trade fair. "Strangely enough, the Americans, who were more or less responsible for creating Mancellium, didn't know how to produce it," smiled Marco Möser. SMF snatched it up. Chemistry, metallurgy, intuition and analysis went into developing the alloy. And now it was time for Cronite to sell it…to the Americans! This was not an easy task. Things are done differently there. Americans attach less importance to design and product lifetime. Cronite was able to rise to the challenge and turn it into an opportunity because it held two clinchers: both the design and the alloys.

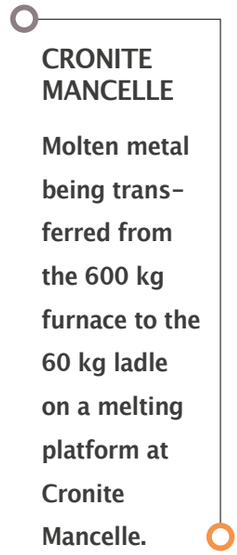
The Founding of Cromex

It was a piece of luck for AFE that the American transmission factories had relocated to Mexico. It would be easier for AFE to ward off American suppliers in an area they now knew well. Cronite de Mexico (Cromex) was founded in February 2008 in Monterrey, in the state of Nuevo Leone. The company was again set up to take advantage of the maquiladoras system. Production began before there was clean water. The employees brought water from home for a long time. Outside temperatures could rise to as high as 45°C, and the early days were very difficult. And not long after production began, the 2008 crisis threatened the American economic sector.

The sharp downturn in Chrysler, Ford and General Motors' sales weakened NAC, the distributor, and Cromex, the producer. Alcon, Wirco and Alloy Engineering, their local rivals, didn't intend to give up the market they controlled, and became very aggressive commercially. Marie-Carmen Garcia, Cromex's sales manager, who had previously worked at the Spanish Aranzabal foundry recalls, "The crisis began in February 2008. We overcame it by transferring production from France and England to Mexico. In July, though, things got worse, and between February 2009 and August 2010 we had to downsize. But Cronite did more than simply weather the storm. It added new clients in the aeronautics and wind turbine sectors to the portfolio it had been building since the 1990s. AFE also sold to multinationals that



were increasingly globalised, which gave it the means to get through the terrible year of 2009. In the previous five years, AFE had multiplied its market shares in North America by four.



CRONITE MANCELLE

Molten metal being transferred from the 600 kg furnace to the 60 kg ladle on a melting platform at Cronite Mancelle.

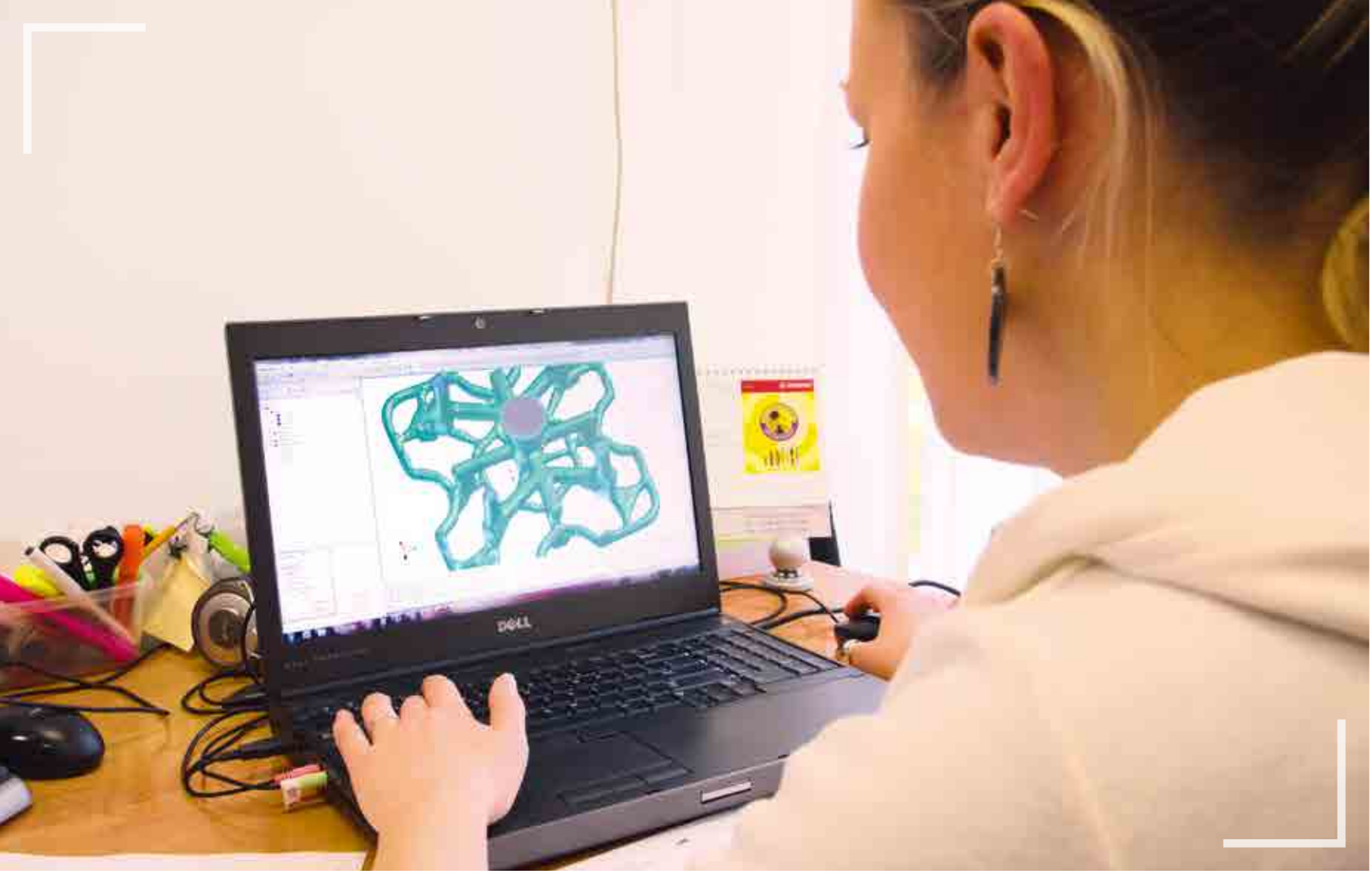
Where market are

Once the crisis had passed, AFE's choice proved to have been an excellent one. The Mexican market was expanding remarkably. In just a short time the country had become the sixth largest car manufacturer worldwide, and a major centre for those involved in vehicle manufacturing. Audi and Honda invested billions of dollars in transmission factories. Cromex, acting in keeping with the AFE philosophy, blow a fresh breeze of youthfulness ans enthusiasm. As the director Pierre Prade, said: "Since we had relatively little experience and were interested in innovation, we shook up old habits, upsetting the foundry men who said, 'but we've always done it this way.' By suggesting a new approach to the processes and methods of production." This voluntarism attested to the maturity of the internationalisation process. In five years, as an employee put it, "the factory has made huge strides in terms of quality. You can tell just by looking at the parts." Exchanges between people and understanding others are part of the rich fabric that enabled AFE to regenerate its energy and enrich its culture.

A single person in a company with a human face.

"We've always been in partnership with AFE in both technical and human terms. Technically, we're constantly contacting the Safe group about specific issues. In 1998, for example, we decided that Renault's Cléon plant would have low pressure carburising. This required two years of trials with a specific assembly for each type of part, and one solution was using Mancellium. But beyond technical achievements, it's very important to emphasise the human element in our relationship. I've been with Renault's heat treatment department for more than 20 years. After Joël Bardet, Didier Clisson was the person I dealt with at La Mancelle's design office. It's always been a single person in a company with a human face. This means so much. In fact, it's the basis for everything else. It turns the relationship between the client and the supplier into a partnership that continues in the commercial relationship, where people are always available and there's even greater responsiveness than before.

Hervé Douere, Engineering Department Renault



CRONITE CZ
Léa Ondrusova simulates casting and solidification using the foundry process simulation software Procast.

A New R&D Centre in Brno

The factory however, was surrounded by large apartment buildings and it was not possible to work in two shifts. So AFE Cronite CZ rented a large storage hall where it planned to transfer the existing factory and begin production. This would allow it to solidify its new development and modernise its equipment. But just as AFE was about to purchase the building, it came up against several local organisations that were against the project because of an earlier unpleasant experience with a highly polluting Russian foundry on the same site. Although the local authorities were in favour of the project, it had to be abandoned. Production was shared out between France and England. “We’re going from east to west, against the flow!” explained Radek Houdek to the clients. This worried them, because they feared that prices would rise from 20 to 40%. Radek set their minds at ease, saying, “You’ll see, productivity gains will make up for it.” And indeed in 2008, Cronite had a great year. Radek agreed that the company had been lucky. “In 2009 it would have been much more difficult.” The Brno story might have stopped there. But it did not.

Cronite had discovered a remarkable team of metallurgists in Belog Guss. They had trained at the University of Brno, which provides excellent instruction in Metallurgy, and houses a body of research dating in some cases back to the time of Russian domination. AFE therefore decided to bring together, in a new building not far from the former SVUM, the Eastern European sales department and the design and R&D departments. The research tradition would continue in Brno and provide support for the entire Cronite branch. In 2009, the French and Czech ministries provided scientific approval for the site, which had become an official research centre. In a new laboratory equipped for AFE's needs, engineers continually take on challenges that will expand the company's technological capacities. At the crossroads of Europe, Brno is a place where AFE's many cultures meet, allowing knowledge to circulate amongst countries and people of different generations.

CRONITE MANCELLE

Ludovic Dewez, Stevie Renou and Andy Guimont inspect double deck tray after knock-out in the high-temperature workshop.

IV.
Safe,
THE SPIRIT OF INDUSTRY

IV.1 REFOCUSING

Changes Afoot

Spurred on by Gérard Mura and supported by the financial shareholder partners of the successive LBOs,[36] the Group's development on the international level entailed a process of transformation. In order to fulfil its mission statement, "Activity in technological niches where we can be world leaders", AFE was forced to dispose of some of the companies and activities it had taken on over the years.

The changes began with Sefac Equipment. Maintaining and consolidating the position of this leader in mobile lifting columns would have meant taking over the top companies in all rival countries, "an enormous task with an extremely uncertain outcome", as Hervé Longatte explained.

DEMO INJECTION

Christian Caux disassembles an injection mould.

Hervé Longatte

He joined the Group in 1991 as the head of Polyfont. He has been involved in developing new units and buying new companies. He constantly travels the world on the lookout for new opportunities.

In keeping with their principles, the executives did their best to guarantee the futures of the companies they let go. AFE sold Sefac in 2001 to its English rival, whose goal was to consolidate European production of mobile lifting columns. Unfortunately, the new owners failed in their management of the company before going under themselves.

The next to go was Demo Tableaux de Commande. This French company, located in Cerans-Foulletourte in a former chick hatchery, had not lived up to shareholder expectations. Demo Tableaux de Commande, in structural deficit, suffered from competition from its own clients, and had to acknowldege that the market was moving towards electronic control panels. After turning the company around through Bernard Taschiris's dynamism, AFE sold it in 2003 to the English group TT Electronics, which was thereby able to complete its product range.

The truck body component division (Sofaco, Polyfont and FIT) was disposed of next, according to the desires of new financial shareholders, the Sagard investment fund, which joined AFE in 2004. The investment fund no longer wanted a truck body division; it felt the fractured European market was too risky. Gérard Mura came up with solutions to buy the division and then sell its components one by one to rival companies. He did not sell Polyfont, however, and the company is now the European leader in composite panels for trucks and trailers.

New Organisation and Concentration on Three Branches

In early 2006, following the economic crisis of 2003, the financial community was again thriving. This was the context in which another LBO was organised, to enable the Sagard investment fund to cash out its participation in AFE's assets, even though it had only joined two years earlier. To replace it, Gérard Mura and Pierre Prudhon called on a French investor, Euromezzanine, which had been recommended by Luc Farriaux. Euromezzanine's executives shared AFE's managerial and industrial values and were ready to accompany its plan of growth

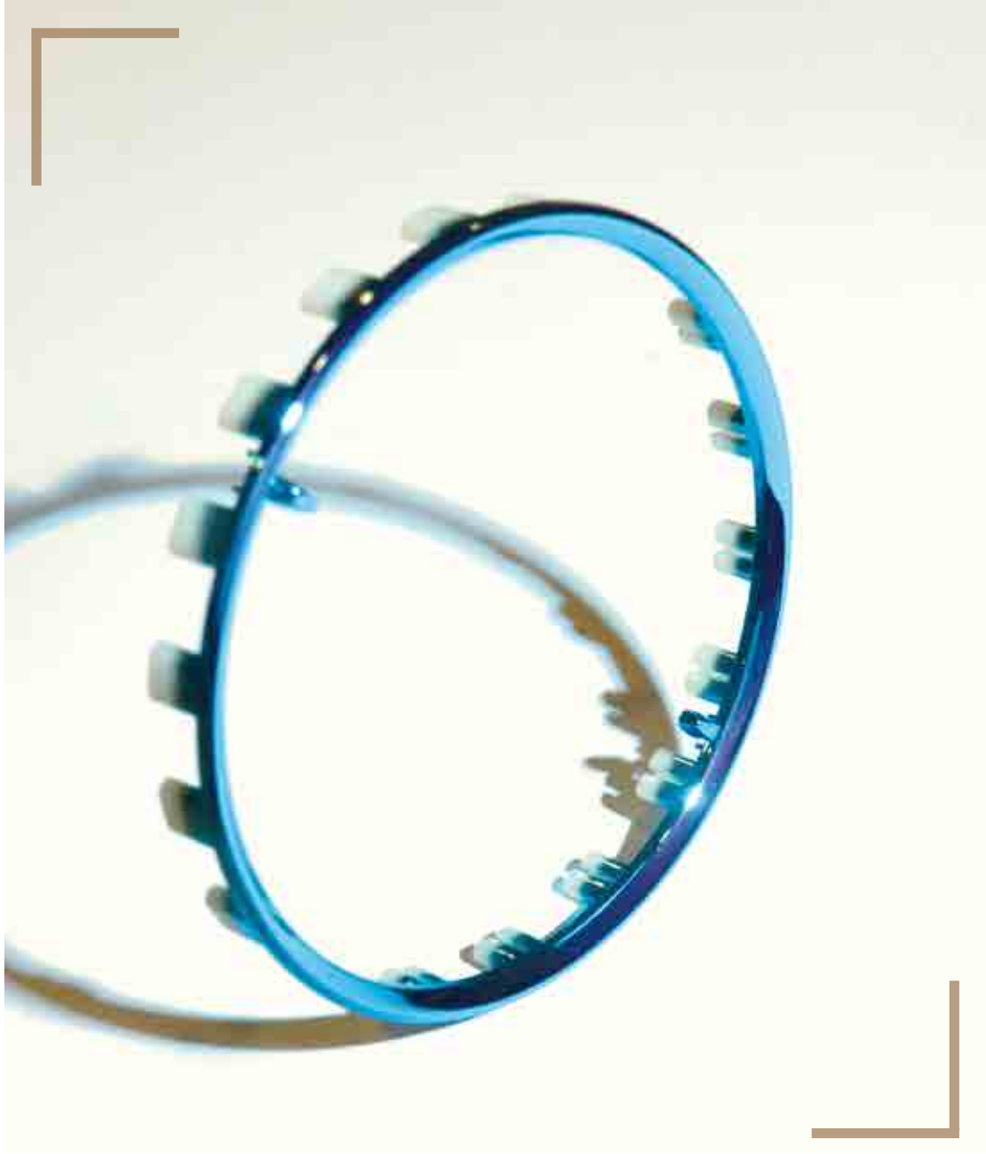
DEMO INJECTION

Part of a Lambor-ghini Gallardo airbag cover.

towards world leadership. The new capital and bank funding arrangements were completed on 2 May 2006, and a new organization chart was drawn up: a financial holding company (Financière SAFE) serving as an umbrella for all shareholders and financing would oversee an operational holding company (AFE) based in Montrouge. It would provide expertise for the Group, particularly as concerned the highly structured financial function, a mandatory counterbalance for the autonomy of the different divisions, and for the Group's decentralisation. The operational holding included subsidiaries AFE Metal, AFE Cronite, AFE Plasturgie (Demo) and AFE Valdi.

Diversification came to an end at this time, although the boundaries of each branch would continue to evolve with the divestiture of the Redon factory in 2006 to the French group LFA, the third largest ductile cast iron foundry in Europe. LFA would continue AFE's initiatives to modernise the melting process, replacing the cupola furnace with two induction furnaces with a capacity of 12 tonnes, by investing in a second Disamatic production line. These changes allowed the foundry to function extremely well and to be capable of exporting to countries as far away as Brazil! Génot and Maître, the founding families that had invested in 1993 to provide support to the group, ceased being shareholders in 2004.

Gérard Mura, on the other hand, who had been an investor since 1995, reinvested as much as possible during each capital reorganisation. AFE's strength was now concentrated in three branches: the original trunk, AFE Metal; AFE Cronite, created through the acquisition of the three national leaders; and AFE Plasturgie (Demo), a result of diversification. Valdi (AFE Environnement) was the consequence of an initiative on the part of AFE Metal to recycle household batteries and catalytic converters. The three branches, created through a mixture of opportunities and visionary spirit, now shared a common history and a single destiny. Internationalisation had been an instrumental factor. None of them alone would have had the critical mass to serve its widely scattered clients. Together, though, they legitimised AFE, whose powers of negotiation and representation were significantly increased. AFE provided security through its financial soundness and stable management, its clients, vendors, and financial partners and, of course, through its personnel. The varying cycles of its activities in differing parts of the world allowed it to absorb the shockwaves of diverse crises. As Gérard Mura likes to say, " In 2009, Metal lost 60%



DEMO INJECTION

Audi TT2

Ring.

of its sales revenues, Cronite lost 40%, but Demo lost only 15%. These differences, combined with the staggered effects of the crisis on the continents where the Group's companies are located, were a great help in weathering the storm."

What is more, the methods and management sysems created synergy, even between plastics processing and cast steel. Plasturgy brought know how from the automobile industry, which trickled down to the two other branches. Demo was also enhanced by the strength of the Group and its image. For all of these reasons, when Gérard Mura is asked to sum up the Group, he describes it as "an extraordinary collective performance, and real teamwork."

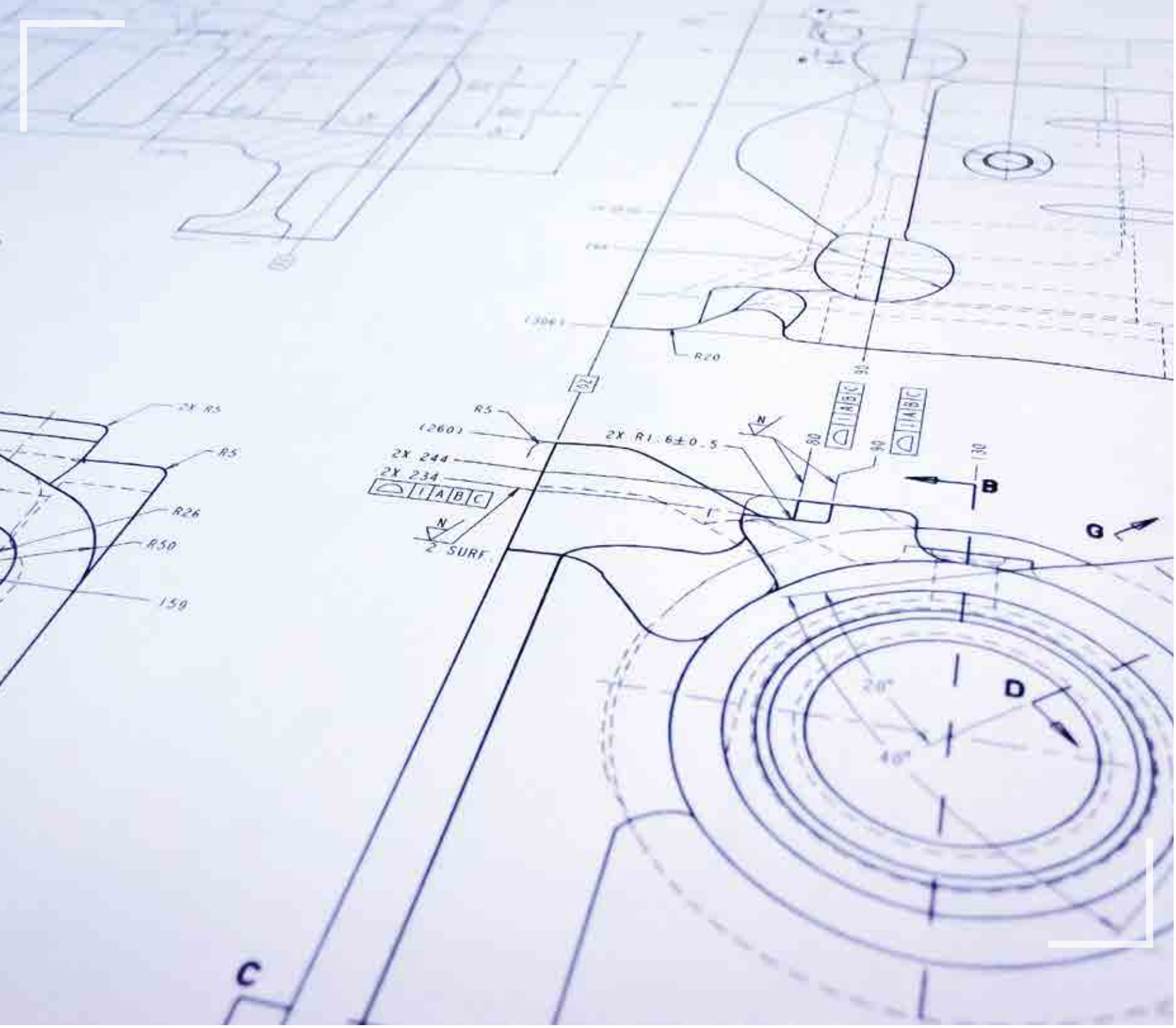
IV 2 THE PROCESS OF INNOVATION

The Digital Revolution

Mastery of quality entails providing the "good part" that best corresponds to the client's demands. When this is achieved, the client

DEMO INJECTION

Press setting conducted by Ridha Bous-setta (left), Fabien Martins (centre) and Franck Yeboah (right).



CASTMETAL FEURS

Long before digital copies, 2D plans were reproduced using ammonia: the famous "blueprint".

becomes a veritable partner. Concentrating its energy and its capacity for anticipation and innovation on this crucial point, the Group won the confidence of important clients and created partnerships that would allow it to advance. From fifth wheels to airbags to suspension arms, from forming composites tools to heat treatment fixtures, AFE has always suggested innovative solutions to its clients. Close collaboration between design teams and clients has led to the development of product lines that responded to and even anticipate client requirements, with CAD (computer assisted design) playing a crucial role.

"When we went digital, people
were really suspicious.
They thought simulations were
a bit like magical thinking.
They said, 'Why are these engineers
bringing in incapable idiots?'
We had to explain to the foundry men
that they were still needed,
that the solutions were in their minds
and that simulations would let them
check parts without having
to actually make them."

Marc Mandard, Safe Metal

CAD enabled the definition and exactitude of product forms to be enhanced by providing rapid simulations of resistance and production methods. What better way to test ideas, optimise casting, make adjustments and so on? The use of CAD is not a new development: it has been employed at Cronite since the late 1980s and was introduced at almost the same time in all the foundries, where it helped to strengthen expertise on forms and alloys. AFE Metal took its time deciding to use CAD, but was still one of the first in its sector in France to use it for cast steel. Its "Gyro Gearloose" was Serge Gabriel, of Colombier-Fontaine, who created the first "Charly Robot". Another development, rapid machining of foundry moulds, caused a small revolution. Shaped in resin by computer-controlled robots, these parts boast a precision and a service life that were impossible to attain with the old wood patterns. Tooling production, which had previously been sub-contracted, was thereby able to return to the factories. From the design of a part to its final check, an entire digital chain was up and running.

Expanding the Computer Networks

Alongside the Group's international development, it became essential to facilitate communication and information sharing between personnel and partners on each site, among sites and with the operational headquarters of the different branches has become. Due to the

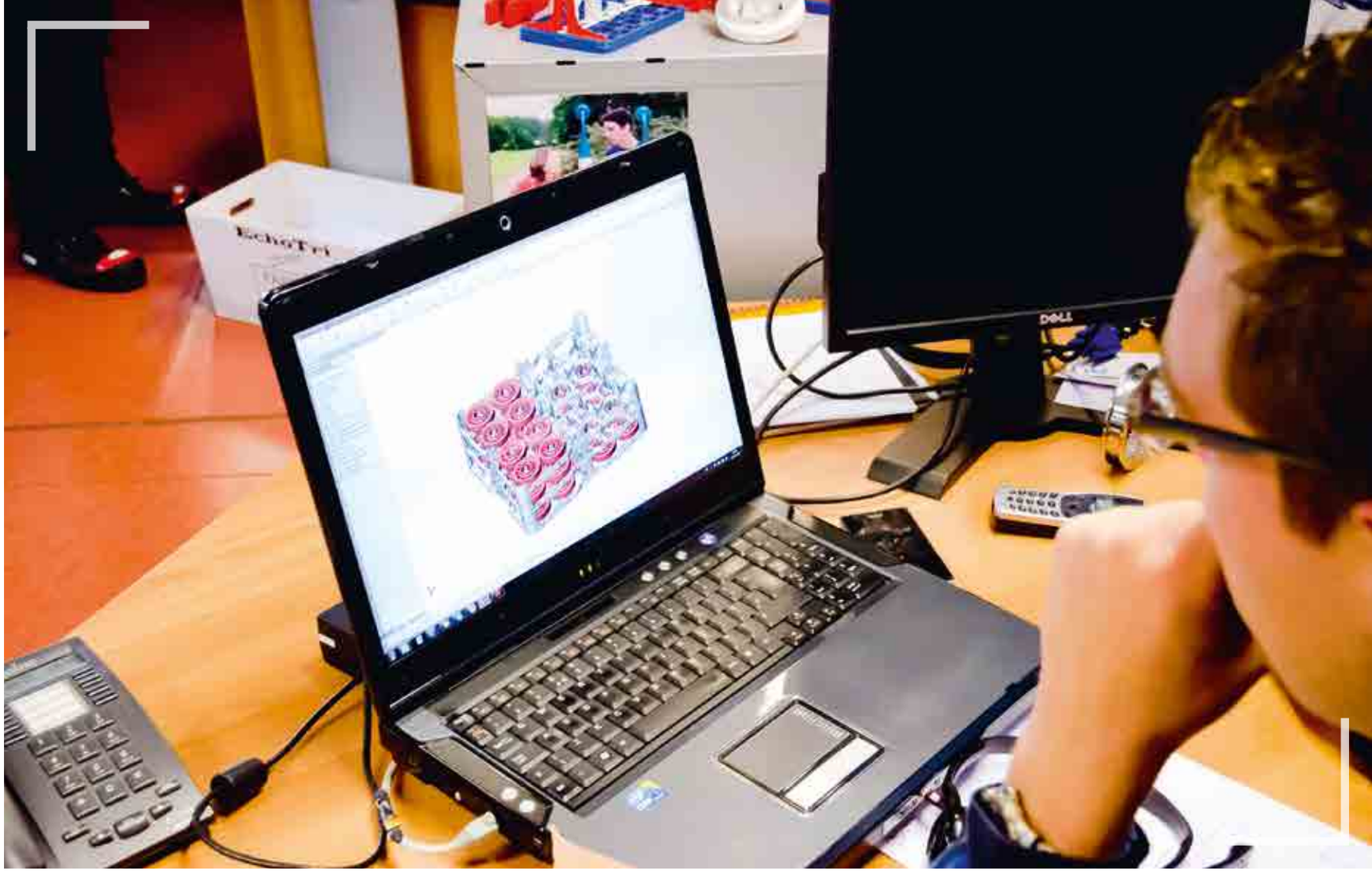
"One day I saw an interesting welded aerospace tool on a client's floor. I asked him about it. He said it was made of invar. Invar? I'd never heard of it. When I got back to the office, I told my colleagues about the conversation. 'We can make that as a casting', said the engineer-designers. It took us a while to manage it, including a lot of trial runs to figure out the process and the metallurgy of the alloy, which has remarkable qualities."

Ian Denman, Cronite Castings

rapid changes in technology, communication posed a strategic challenge in terms of both productivity and security. In 2005 the Group created a team whose mission was to build a network, create a central infrastructure of IT servers, and define the operating systems for the entire Group (messaging, active directories, etc.). This growing organisation, AfeOnline, outsourced a first Data Center in Lyon and a second one in the Paris region. These were supported by Equant, which has since been taken over by Orange Business Services, and has expanded to become the Group's own secured worldwide network, which is large enough to withstand the mail server's dataflow, centralised reporting, and each branch's applications for business management. AfeOnline's small team, established on three continents, provides service around the clock to the thousands of information systems users.

Under its new name, SafeOnline, this organisation has increased its expertise and range. Server virtualisation, instigated in 2008, has enabled the transmission of a greatly increased volume of data. Using smartphones and tablets in commercial and industrial environments has improved access to information and enriched documentation on quality processes. New large screens for videoconferences on most of Group sites have brought together operational teams and cut down on travel costs.

SafeOnline, with assistance from innovative partners such as Tagetik, the Italian reporting software publisher that toppled Hypérion; Zimbra,



CRONITE MANCELLE

Christopher Elisé checks the functionality of a new stackable grid fixture.

the new open source courier service that replaced Lotus Notes; and particularly Inter-Route, which houses two new data centers, one in the Paris area and the other in Geneva (each of which is an exact replica of the other) has been a pioneer in many areas.

Innovating Through Customer Service

Through innovation, the Group seeks to protect the competitiveness of its French factories while also making them the ground from which new shoots can grow throughout the world. AFE is constantly challenged on every front by its rivals, its clients, economic cycles, and so on. It exists in a constantly shifting and uncertain environment where its achievements are continually put into question. How to think outside the box and push the limits? Following the old tradition of Charles Pasqualini and Lyonel Picard, Feursmétal (now known as Castmetal Feurs) has developed partnerships with laboratories and universities, and has even looked to others spheres such as glassblowing. And why not think about the transposition of certain procedures?

Innovation has been a constant at Cronite, whether in the area of tooling, production procedures that have enabled the company to

DEMO TECHNIC

Isabel Zubia inspects a Fiat driver airbarg on the painting line.

make very fine parts, in metallurgy, or in management systems that make it possible to produce tooling whose components come from several factories, etc. Demo has been "forced" to be a champion in innovation. Encouraged by its clients TRW and Autoliv to be part of all their developments, Demo has always succeeded in coming up with competitive and innovative solutions.[37] But sometimes things get difficult for the company, because its two largest clients do not hesitate to compete head-on with their supplier. Demo Plastik, riding on the coattails of Autoliv in Turkey, was immediately put in competition with local businesses, and had to fight to prove the superiority and quality of its products.

And what can we say about TRW's creation of a rival painting line in the Aschaffenburg factory, after Demo took over the factory in the Czech Republic? This episode was very upsetting to the Group's directors. Challenged by strategic reversals and the vicissitudes of an unfavourable balance of forces, they reacted with a single goal: innovating more quickly than their clients. This gave rise to the Decotech project (PVD), which aimed at finding markets that could stand in for the airbag, should

it decline. Basing its new project on the skills and knowledge acquired from its initial activity – decorative parts – Demo decided to provide a new offer of decorated plastic parts based on a new technology. The creation of Decotech was a reminder of Demo's great qualities: its strength, its cohesiveness and its collective creativity.

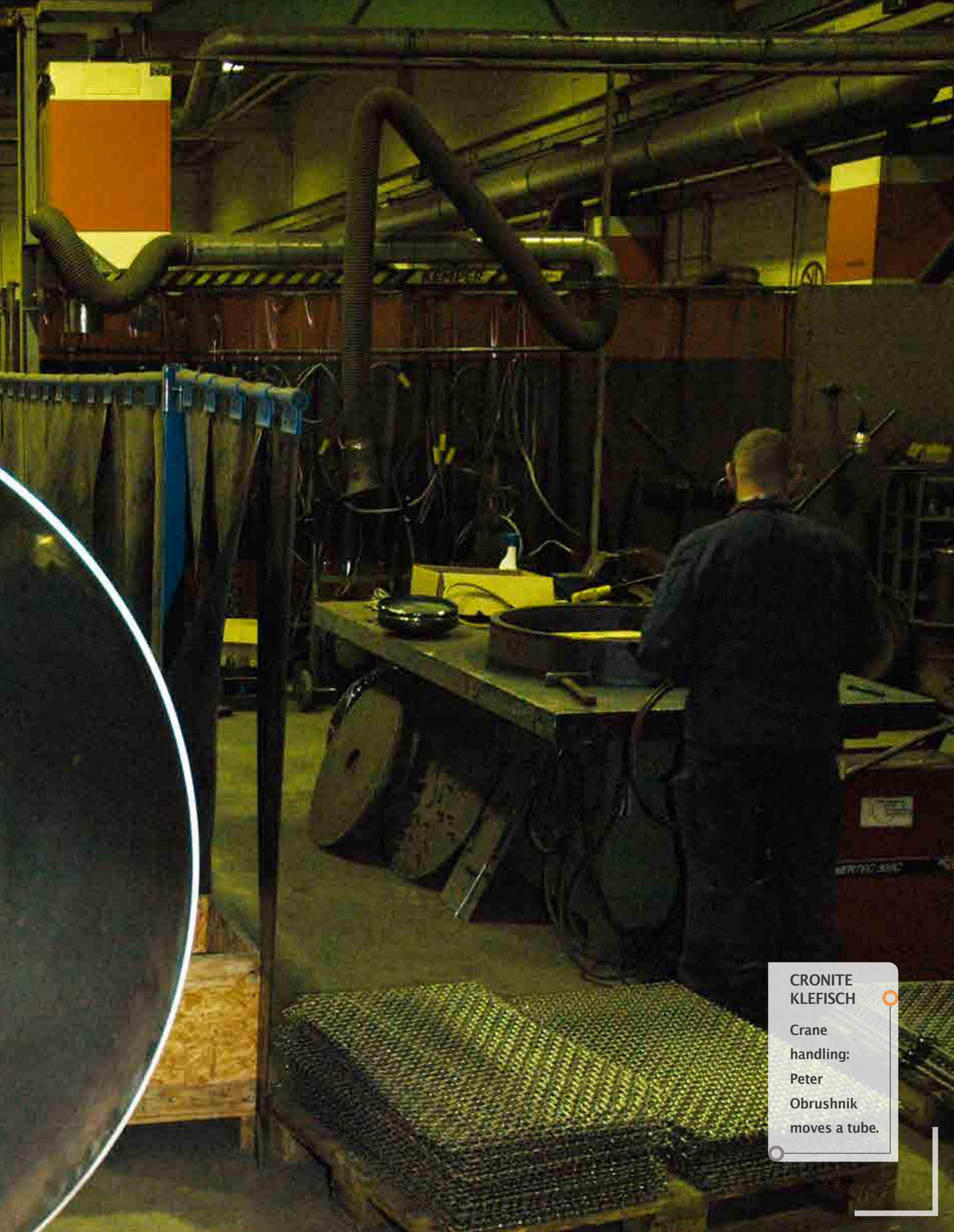
Interaction with the Group was central, and Gérard Mura's experience and sensitivity also played a major role. When it was time to identify an adequate technology, he recalled the Physical Vapor Deposition (PVD) of metal method used by Valeo for the insides of headlights. But above all, in the depths of the 2009 crisis, the Group was able to come up with the considerable financial means that enabled Demo to catch up with and get ahead of its German rival, which was already using PVD technology but was having trouble with varnish.

Industrialisation began in 2011. In its wake, the German automobile industry choose to work with Demo, the only factory able to meet the VW Group's precise requirements. This was a sure sign of success. In exploring unknown pathways, Demo revealed greater possibilities that reached beyond the conventional market. The new technology was less expensive, cleaner, allowed for new types of colour gradation and combinations, and opened up many new avenues. The decorative layer is so fine that light can even pass through a part. A backlit lamp stands on the desk of Miroslav Opa in Celakovice. When it is turned out, it becomes pink from the nano coating. Opa, the Celakovice general manager, bought it at Ikea and brought it to Chambly as a symbol of all the new applications that are now possible.

Quality and Innovation: The Demo School

Innovation and quality go together, and at Demo Technic in Chihuahua the appropriation of the Group's culture by its managers led to the founding of a "School of Quality". Technical training sessions were organised so that each operator and technician could practice his or her techniques for all the parts they produced, with special emphasis on their critical points and specificities. In the same spirit of participative management, Demo Technic also inaugurated the "Technical Trophy" in 2012. The "Affenger" group won it that year, by figuring out how to decrease faulty "U shapes" (a new Demo product) by 40%.

In 2012 Demo Plastik moved out of its old location in Plamat, which the factory had occupied since its foundation in Bursa. This project had been planned for some time, but it could not be implemented imme-



CRONITE KLEFISCH

Crane handling: Peter Obrushnik moves a tube.

"At the end of a meeting
Mr Mura and Mr Lopes asked me
about state of the art chroming.
This evolved into the idea of PVD
(Physical Vapour Deposition).
Our boss got us a little test booth
and a PVD machine, and that was our starting
point to research varnishes,
find innovative technical solutions,
and finally end up with
a whole new industrial process."

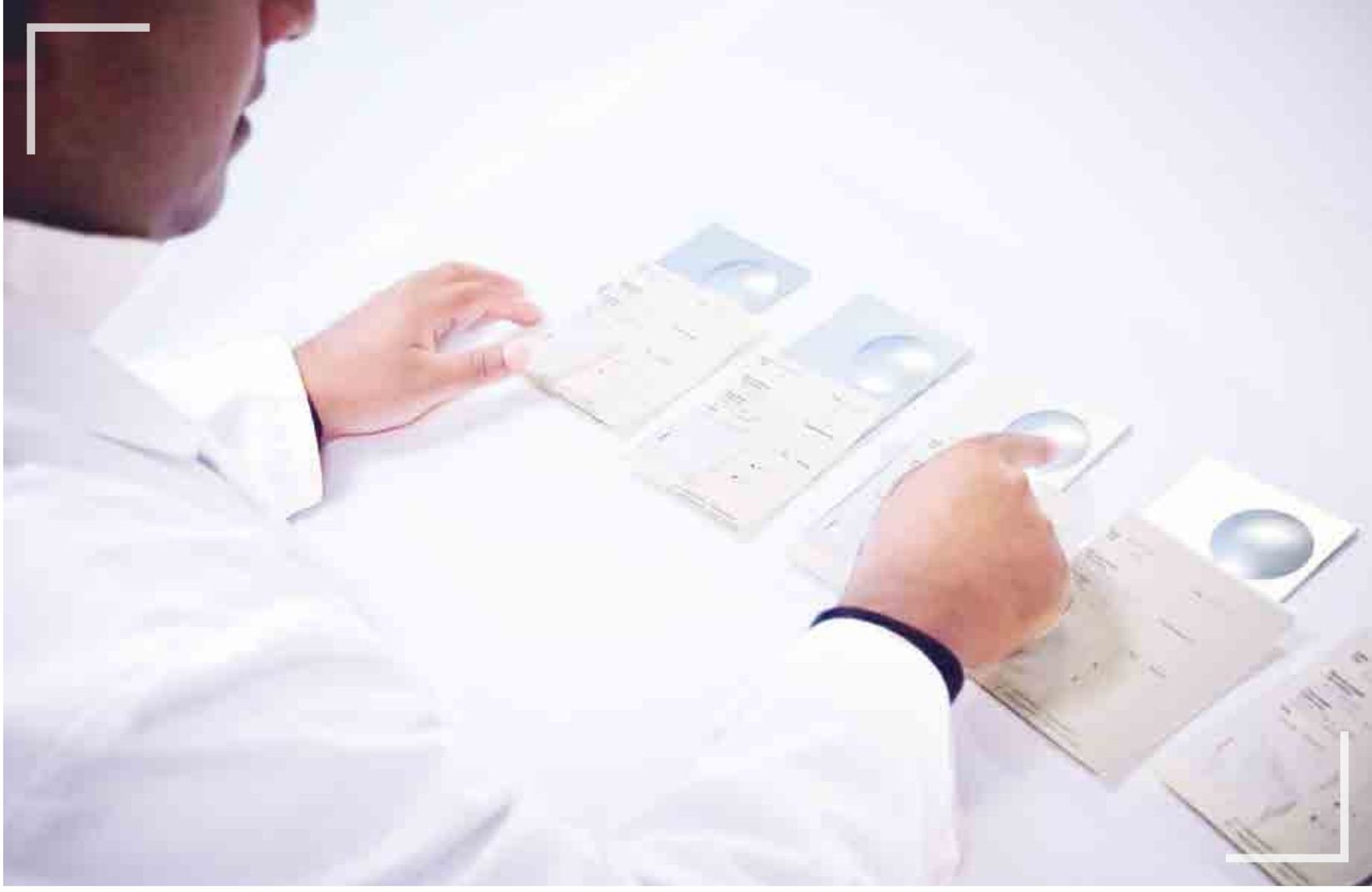
Fabien Piot, Demo Injection

diately because of the 2008-09 crisis. Challenged on its own turf by Autoliv – which had been responsible for bringing it to Turkey in the first place – Demo Plastik reacted impeccably by seeking volume elsewhere, going beyond safety parts to produce a whole variety of parts.[38] The number of employees had risen sharply. Demo Plastik moved to the Nilüfer industrial estate, close to the Oyak-Renault factories of Bursa, which account for around half of Turkish automobile production. The company built its factory on a one-hectare piece of ground that it first rented at 80%, and in 2014 at 100%.

Beyond the factory were fields leading towards the city, and the agricultural land was like a barrier against galloping urbanisation. New neighbourhoods sprang up in abandoned and peripheral areas. What a contrast this made with the city centre, where the heart of the first capital of the Ottoman Empire still beat! In Nilüfer, Demo Plastik's new location, three ultra-modern production halls followed one another. Each one housed presses of differing capacities; the largest was 300 tonnes. Quality is in evidence on a special Quality Wall: the parts rejected by quality control operators are put near the Quality Wall where they await a second, more expert opinion.

This factory, inaugurated in a ceremony that brought together local authorities, the French ambassador to Turkey, and particularly potential clients, has proven to be an excellent commercial asset.

After ten years in Bursa, the company had demonstrated its mastery of quality and was now considered as a potential partner for the entire



Visual inspection of PVD parts in a light booth at the Chambly laboratory.

local automobile industry. The installation of a painting line of the latest generation also opened up vast developmental possibilities in the market for painted parts. The company was the only one that had mastered injection and painting techniques under a single roof, and which benefited from Demo's technological edge in painting.

IV.3 SURVIVING THE GREAT FINANCIAL CRISIS OF 2009

Frédéric Schwartz's Arrival. Gérard Mura Announces His Departure….and Decides to Stay On.

Once the 2006 LBO had been satisfactorily accomplished, the Group's future was slated to include organic growth in every sector as world expansion continued. The omens were good. Pierre Prudhon, who had taken part in the Group's recovery measures in 1993, creating a strong financial and legal team, let it be know that he would be retiring and leaving the responsibilities he had shouldered for fourteen years. His departure was scheduled for 2008.

Gérard Mura was not pleased about the decision, as the pair had built a strong relationship, but it also gave him new ideas. After spending

CONQUERING

Some stand-out dates in the Group's constant expansion

1967: Foundation of the Group in France
1990: Safe Cronite in Germany
1992: Safe Cronite in England and the USA
1997: Safe Cronite In Mexico
2001: Safe Demo In Turkey
2002: Safe Demo in the Czech Republic
2005: Safe Demo in Mexico
2007: Safe Cronite in China and in Mexico
2009: Safe Metal en China
2012: Safe Demo in Brazil
2013: Safe Metal in Spain
2015: Safe Demo in China

THE WORLD

Safe Metal
Safe Cronite
Safe Demo

DEMO PLASTIK

Housing for the seats of a Renault Fluence.

twelve years in charge of the Group, on which he had left his distinctive mark, Mura was ready to prepare his own succession in order to spend more time on Group strategy and become more involved in the community. The decision was made: a new pair would substitute for the team he had made up with Pierre Prudhon. It would be recruited on the outside, which was a gamble for a Group. But Gérard Mura stuck to his plan, and recruiting took place in late 2007. Mura presented the future managing board at the 2008 Manager's Convention.

His successor was a Polytechnique graduate who had worked in the French metallurgy industry and was experienced in process and flow analysis. He brought to the company a new methodology to improve security, "Near Miss Analysis", which proved to be very effective. But his highly analytical approach perplexed the managers, who were accustomed more to action than to reflection. What was more, he called the principle of decentralisation into question. The gap widened further with the 2009, crisis, which called for rapid and energetic action. In April 2009 the newcomer left the Group.

Pierre Prudhon's successor was to be Frédéric Schwartz. He came from an economic and financial background, knew the large American industrial groups, and had just spent twelve hears at the helm of Eastern European operations for a mid-size German company that had much in common with the AFE Group, including family origins, long-term vision and high standards. What was more, Schwartz was also a sailor, and this hobby would stand him in good stead for the storm that was coming: sailors are used to confronting squalls and know how to stay humble when faced with the uncontrollable elements. Schwartz's period of adaptation to the Group's way of functioning and the foundry trade would last for some time.

The new duo had only been in place for a few months when the crisis abruptly arrived in September 2008. It would radically change the situation. It became apparent that the person slated to succeed Gérard Mura was not able to manoeuvre quickly enough. Although he was theoretically on his way out, Mura was still present. The Group began to falter. The teams were worried and wondered how to negotiate this tricky transitional phase. The "future former CEO" decided in February 2009 to return to the helm alone. The time had come.

Production plunged between September 2008 and May 2009, and no one knew how low it would go. Sales revenues plummeted, especially for Métal and Cronite, whose sales fell by almost 60% and 40%, respectively, in six months! The drop was less pronounced for AFE Plasturgie,

Safe is embedded in our DNA

"Two companies are implicated in a Joint Venture, and over time this can create rough patches; it's inevitable in a long-term relationship. Some SAF managers didn't view the JV in a favourable light, but Steffen Schewerda was able to stabilise the situation and get things moving again. We began working together and got to know each other. The joint venture worked and I can tell you that it is a real asset for our company. The excellence and quality of our products are known throughout the world and we're renowned for our competitiveness. This is the main point: Safe has always been at the top in terms of quality and delivery. We've always placed a strong emphasis on our suppliers. We think of them as partners, and I can tell you that they hold a special place. Safe is not only our highest rated supplier, it's an integral part of our company that is embedded in our DNA."

Jack Gisinger,
CEO of SAF-Holland, Inc.

"We're small SMEs
and we all know each other.
I realise that the metal
workers or Cronite probably
have more in common professionally
speaking; but when I hear people talk
about La Mancelle or other companies
in the Group, I know they have
the same kind of management,
the same confidence
in the work that's done."

Vincent Delerue,
Demo Injection

but it still lost 15%. Companies like Cromex suffered heavy losses just as they were getting started. Sixty-five people lost their jobs at FWF Mexico and the remaining employees agreed to temporarily "adjust" their salaries according to how the company was doing. A similar plan was put in place at Cronite Castings in England. Most of the foundries were on partial unemployment for several months, and Sainte-Suzanne was completely closed for four months.

In this context of severe economic crisis, Gérard Mura and Frédéric Schwartz had a heart to heart discussion in February 2009. It sealed the beginning of a true collaboration. The two men would ride out the storm together. And it was urgent that they do so.

It was necessary to adapt quickly without compromising the Group's future dynamic. Every possible measure was put into place to be ready when the markets took off again. To do so, however, the Group needed the means to get back on its feet. This was no simple task in an environment contaminated by irrationality and terrible anxiety about the financial crash. Financial actors had lost confidence. Frédéric Schwartz recalls the words with which he was received at Coface (an insurance and credit company): "You're from the metallurgy industry, and what's more, you're in a LBO, so you'll be 99% dead in six months." Group suppliers, insured by Coface, threatened to stop deliveries. The system was paralysed.

DEMO INJECTION

Christian Lesueur adjusts a robot hand.

An Upswing in Confidence

Catastrophe could not be avoided without help from the banks. And just then, HSBC, which had become a new banker in 2006 due to its presence in Asia, decided to jump ship. This was a terrible blow. One needn't be a financial expert to understand that in this context everyone is a "follower". It was imperative to act quickly in order to limit the damage and avoid similar moves from other banks. Withdrawing AFE's credit line would have been the equivalent of a death sentence.

But AFE came through this ordeal with its head held high. Better still, the Group acquired a larger loan capacity than the one it had enjoyed before the crisis, as well as the acceptance of a debt deferral of two to three calendar years for its LBO debt, which allowed it to meet its current financial obligations even if recovery was slow.

To ensure the success of their plan, in late March 2009 the administrators cleverly placed AFE under ad hoc discretionary management[39] set up by a lawyer, Maître Laurence Lessertois. Convinced of Gérard Mura's industrial project and his personal commitment, she immediately understood what was at stake, as well as the scope of the rescue plan that was required.

CASTMETAL FEURS

Casting area at moulding plant IV – Medium – sized Parts.

The teams of the Montrouge holding rallied strongly around Frédéric Schwartz in order to make new forecast, define cash requirements, and win back the confidence of the banks, taking part in the countless long meetings that occurred during the second trimester, even on weekends. In June 2009, the drastic economic measures, put into effect in October 2008 and gradually increased, began to have an effect. Despite the enormous decline in activity, losses had been held

to a minimum. Gérard Mura could now meet with his financial partners and bankers and say, “Give us two or three years, and grant us some short term credit.”

Mura’s personality was decisive here. At the crucial moment, he was able to personify renewed confidence in the Group, and even subsidised it from his own pocket. His confidence had a positive effect on the various protagonists. Laurence Lessertois, who valued his integrity and entrepreneurial capacities, stood by him and defended the Group. Two young Natixis bankers put forward ingenious solutions forward, and brought together the nine other banks, all of which accepted the plan. Euromezzanine went one step further. It agreed to convert its convertible bonds into shares; in other words, to rebuild stockholders’ equity, which had been harmed by the enormous losses of 2009. This could only help to restore the confidence of its clients, the suppliers, and especially, bankers. Euromezzanine behaved like a true partner rather than a mere financial investor, because it believed in the strategy and the Group’s executives. The Group breathed a huge sigh of relief at the end of this operation, which became a reality when a draft treaty was signed in late July 2009.

Crisis Management

Managing the crisis had had some beneficial repercussions. Difficult decisions had had to be made, of course, sometimes by “wielding the axe”, but many important things had happened in a short time. Internally speaking, the crisis had catalysed confidence on every level: the management team got to know each other in adverse circumstances and were united by hardship; the various branches, which realised that they could not have pulled through on their own and that they would have been torn asunder; and the teams, who were reassured by their CEO’s commitment and his ability to extricate them from the difficult situation.

AFE’s image was enhanced on the outside as well, for both its bankers and its clients. The Group recovered its turnover in just two years. This achievement, as Frédéric Schwartz remarked, was welcomed by admiring Key Accounts. Furthermore, the recovery owed nothing to chance. At the height of its difficulties, the Group chose to reduce overhead while preserving, as much as this was possible; the skills and know how of the trades, maintain its factories’ survival, and safeguard its strategic investment programmes.

FWF MEXICO
CAT D6
tractor ring
finishing.

The decision to invest in Demo's PVD[40] was confirmed in 2009. It was also in 2009, as it was dealing with the crisis, that the Group confirmed the decision to invest in a new site in China for the Metal Branch. This represented truly innovative and long-term diversification that was validated by its financial partners. The crisis had indirectly confimed the Group's choices, and spurred it to go farther and more quickly still. In order to avoid experiencing the full force of the slump in the European economy, AFE decided to accelerate its international development and its investments in automation as well as in increasing the competitivity of its European factories. In 2012 the launch of Safe Demo's site in Brazil took place. At the same time, a veritable stragety of innovation was put into effect with an annual review of project progress, and particularly an increase in the financial resources of R&D in its various branches.

To ensure funding for its developmental and investment plans, which might have seemed overly confident to the banks, who expected debt reduction to take priority, the Group equipped itself with a forecasting tool that enabled it to look six months into the future. The tool and the process were integrated into the branches by the financial

"Early in 2009,
to the great surprise of the bankers
who couldn't understand
why were doing it so soon,
we renegotiated our short-
term debt. Everything
was completed in July, and even
though the crisis was raging,
the conditions we got were better
than those the others did.
Our ability to look ahead helped us
get through the worst time."

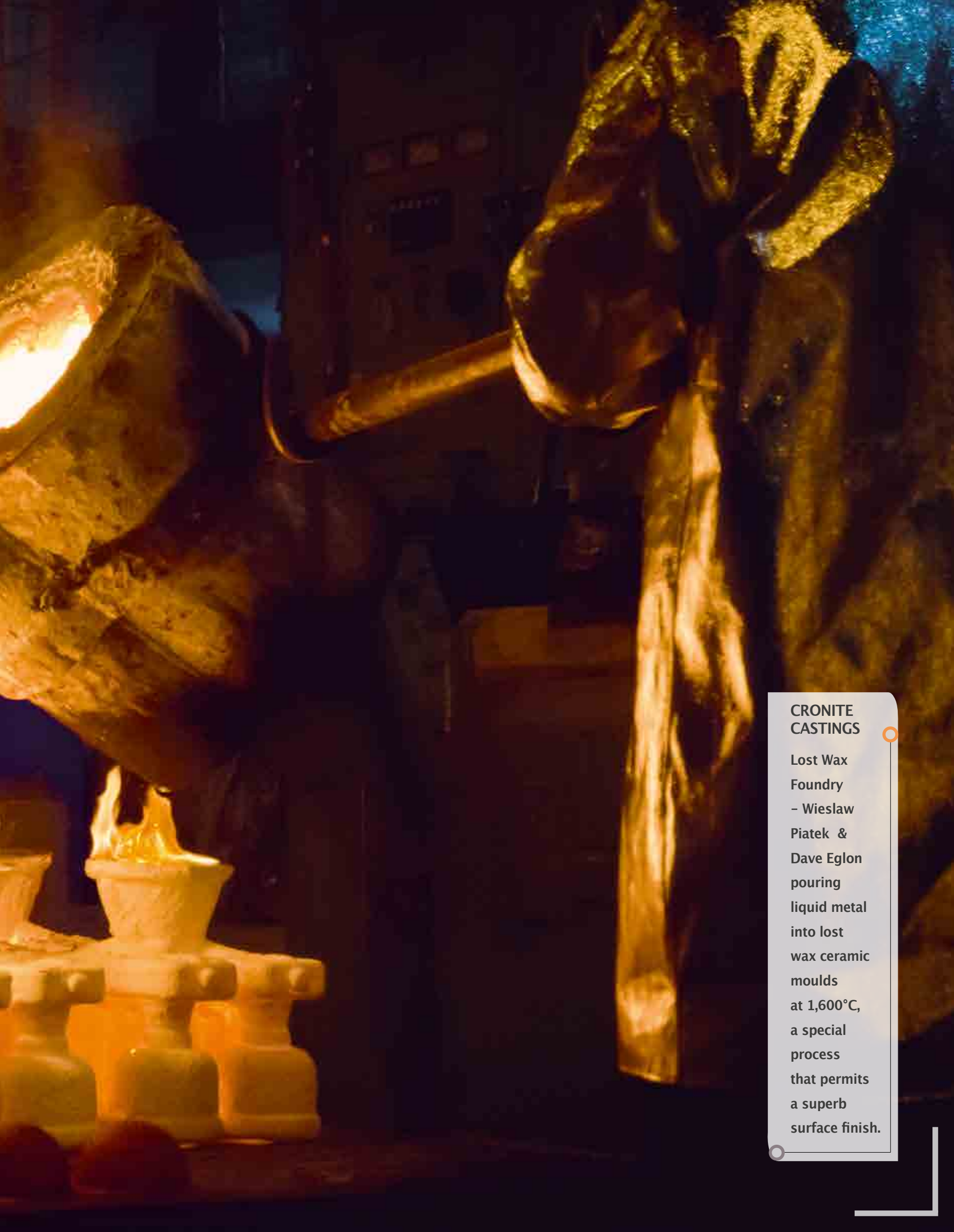
Guy Gueugnon,
Group CFO

function and progressed rapidly. The semestrial results matched the forecasts. The banks were surprised, but were now able to better understand the Group's behaviour. With each passing semester their confidence was improved.

IV.4 SAFE'S IDENTITY

Moving Forward, Together...

Being a team implies a shared understanding of rules and values. Those chosen by the AFE executives revolve around respect, improvements in safety and quality, and the commitment of everyone involved. Meanwhile the Group continues modernizing itself to improve productivity, automating its finishing processes and moulding lines, it also continues the tools of cohesion to build its identity. This identity is constructed in particular through the establishment of a common language among the factories of a single branch, via the introduction of ERP (Enterprise Resource Planning) and all that it implies in terms of commitment and adaptation on the part of the personnel. Detailed management of flows means increased efficiency and fluidity, thanks to the great precision and immediate availability of information. This is very important when price pressure is exerted and delivery times are shortened. How to answer to the drastic requi-



CRONITE CASTINGS

Lost Wax Foundry – Wieslaw Piatek & Dave Eglon pouring liquid metal into lost wax ceramic moulds at 1,600°C, a special process that permits a superb surface finish.

rements of the clients and fight against the bargain prices of “low cost countries”? These subjects were adressed internally between 2000 and 2010, years that were characterised by the indispensible transition and consolidation that enabled the Group to meet the challenges of globalisation.

Starting in 2001, as part of a permanent progress initiative, AFE kicked off a programme that would reinforce safety for the entire Group. In the heat of the moment it is sometimes simpler to neglect a safety measure, but this lack of care could result in life-long consequences! Safety facilitators became a regular part of the factories. In 2008 a new step was taken with the “Total Safety” programme. During this decade traditional rifts and rivalries that had not yet been eliminated would also disappear. The establishment of a sales management position created an interface between the Cronite and Klefisch factories, for example, forging a link between the foundries, their histories and the reality of the marketplace. In England and France, on-time deliveries rose from 60% to more than 90%, and in some cases to as high as 95%! Of course, cultural traits and characteristics remained, but they were no longer in opposition as they had sometimes been in the past. As Sue Staddon, Sales Manager for Cronite Castings remarked, “The Group has become a bit like a family”. This “family” brings together several generations of different cultures that work side by side together every day.

A Strong Identity and A Strong Sense of Unity

Imparting values and culture is fundamental to preserving unity in the Group, which is developing quickly throughout the world and regularly welcoming young people to all its factories. In the first instance, the decision was made to favour bicultural executives who had gained the Group’s trust in new countries. When Naoufël Menadi of Demo Injection went to Mexico to launch the Demo Technic project and manage its early days, for example, he acted as a messenger for the Group’s culture. Afterwards this was passed on by those who remained. Basing their actions on the traditions they had inherited, these people helped it to evolve still further, and were part of a team that lent them the means to give their very best.

The interdepartmental groups that were initiated in the 1990s to bring technicians, sales staff and others closer together no longer exist, but other bridges and points of contact have been developed. This is the role of the numerous training courses and especially of the CEDEP,

Group congresses, and annual conventions. These initiatives do not allow everyone to meet, of course; the foundry men in particular are anochored to a place, a territory, and for the oldest among them, to a history. But the perspective has gradually changed. Many signs and testimonials show that the men and women of the Group are now able to share a common destiny. As Thomas Dendievel, Financial Director of Safe Demo put it, “Today when one of us suffers, we all suffer. This was not the case before.” This observation does not eliminate the differences between or within each branch, however. Gérard Mura wishes to preserve and consolidate the model of a federated group of SME like the one he got to know in 1995, “the ideal compromise between a large group and a SME”. Autonomy and the decentralisation of decision-making circuits are valuable assets when it comes time to confront rapid economic fluctuations and to respond quickly to client

CRONITE CASTINGS

Jack Fussek, Lost Wax-Shelling trainee operator, coating a final layer of refractory onto a lost wax ceramic mould.

Frédéric Schwartz

He joined the Group in late 2007 as Pierre Prudhon's successor, overseeing finances.
He and Gérard Mura form a complementary team that has enabled the Group to successfully adapt its structure to new challenges.

demands while continuing to benefit from Group support. This fragile balance must be preserved in order to maintain the power of operational decision-making and to encourage strong motivation on the parts of managers and personnel.

From AFE to Safe!

AFE brought together under one roof entities that shared common methods and contributed to a common cause while remaining quite distinct. This is what Frédéric Schwartz noticed when he asked, "What is AFE?" The answer touched on the meaning of the Group, the convergence among its branches, its future, and the legacy that was passed from one generation to the next. The managing director acts as a conductor who stands before three music desks, sometimes feeling as if he is hearing three different scores being sung together.
This feeling gave rise to a cross-disciplinary project whose objective was to create a harmony that would accompany the Group's cultural evolution. It was necessary to reinforce Group identity, make its values more easily accessible, and usher in a new phase characterised by a new unifying name and a new modernised logo. Gérard Mura also had to reaffirm his vision and lend increased vigor and weight to a holding company that sometimes seemed far away or even disembodied to Group managers. It was this analysis that gave rise to the three Values and to the Group's new name.

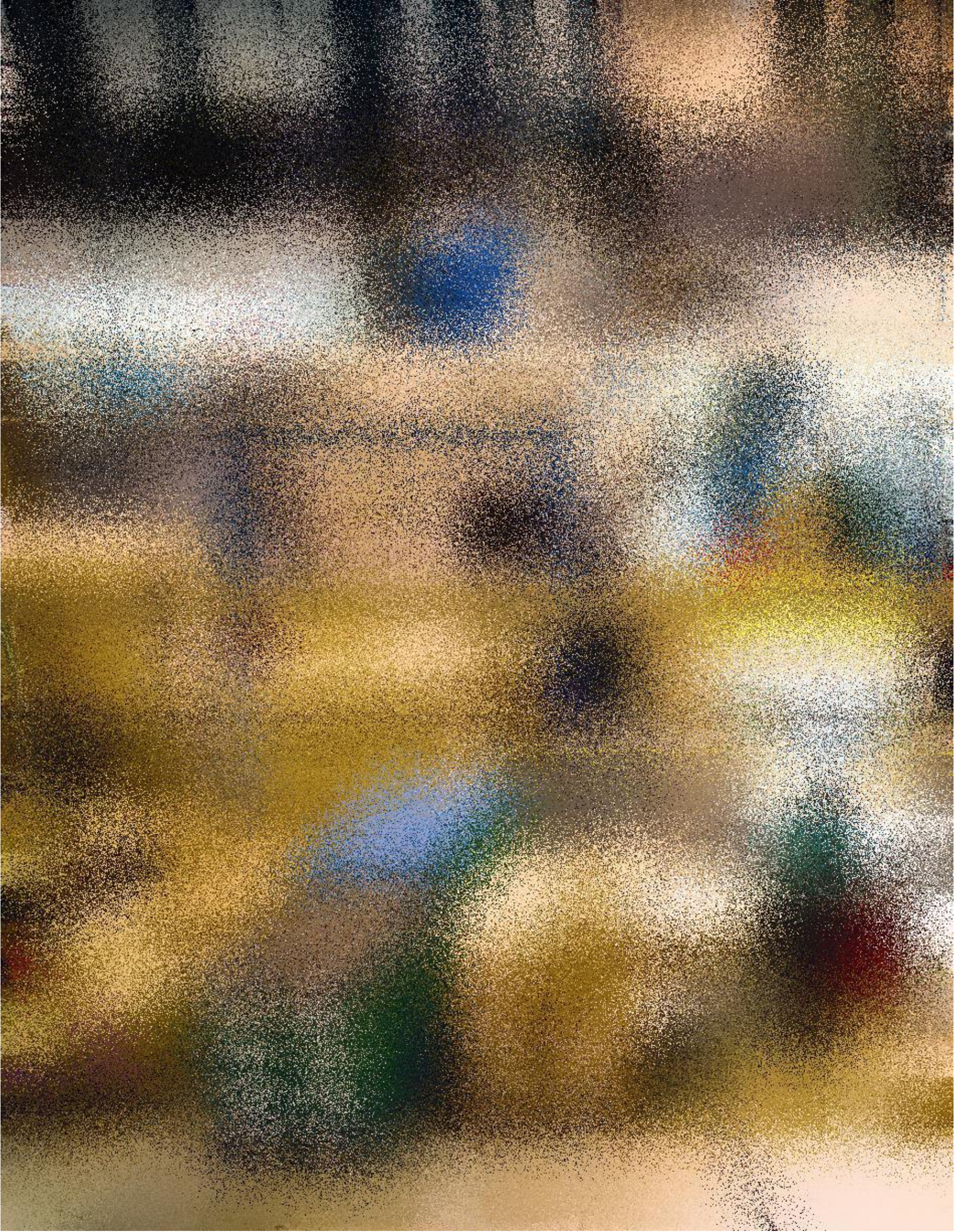
"This very intense
phase had many positive
repercussions. It brought
together the management team,
and also demonstrated the value
of the Group to the different
branches, which would
not have been able to survive
individually."

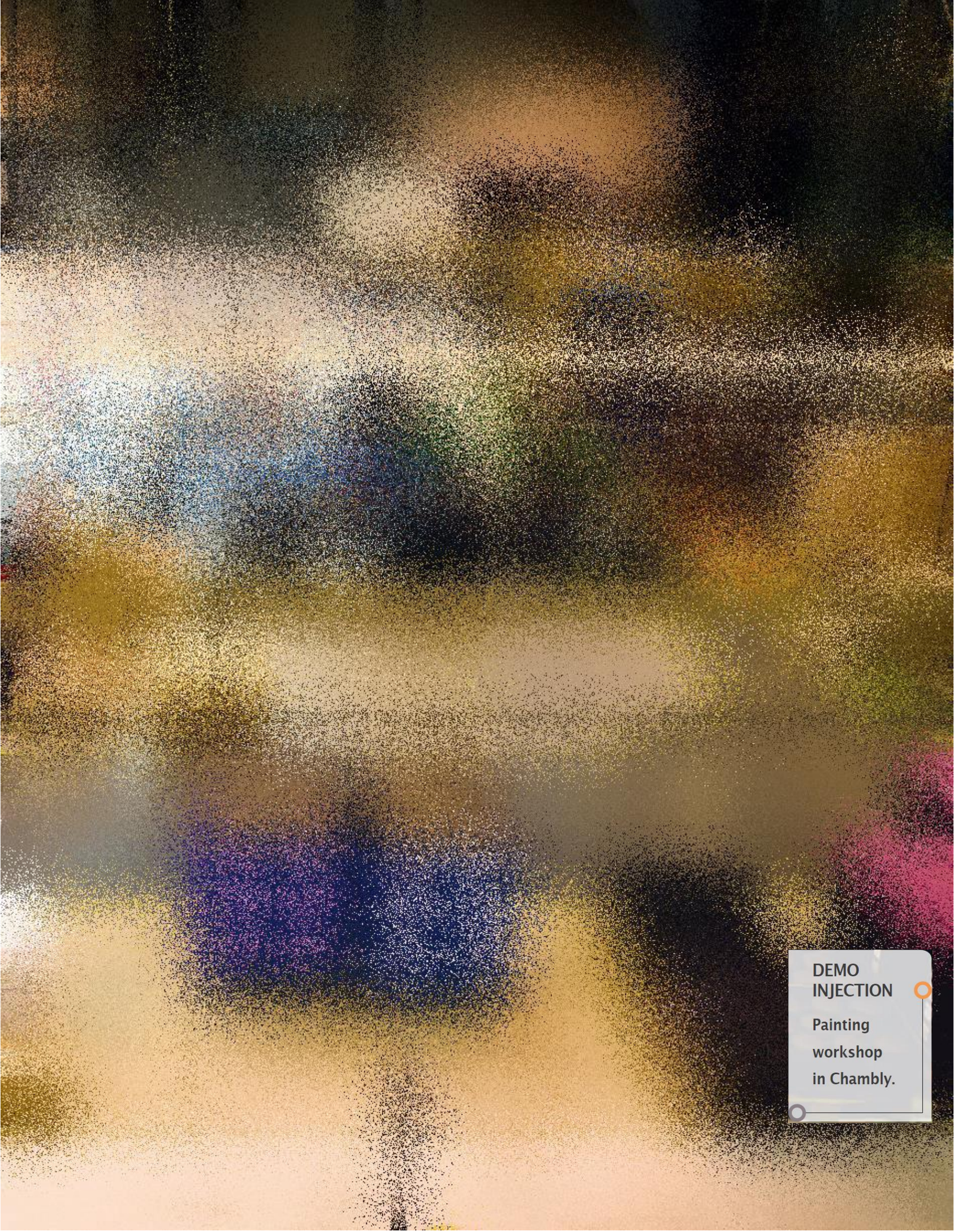
Frédéric Schwartz

The secret was extremely well guarded and was only revealed at the Managers' Convention in January 2013, which was attended by 220 Group managers. They had come from all parts of the world: from Japan for Taka, from the US for Todd Radell, from Mexico with a problem-solving group (PSG) of Cromex workers, as well as others – as Pierre Prade had promised himself when he arrived in 2012 – from China, Turkey, Germany, England, the Czech Republic, France, India and South Korea, where Cromex had recently opened an office.

It was in front of all, that the new name was disclosed: it will be Safe, whose motto, in French, was *l'esprit industriel* ("the spirit of industry"), within which the international aspect and the Group's origins were indissociably linked.

The Group's Values were redefined. There had been five of them since 1996. Only three were maintained: Dynamism, Innovation and Commitment. Apart from the Values, the feeling that predominated that day was one of proximity: among the people who had gathered from every continent; of the CEO, whom the personnel often saw touring the factories during his annual "President visits",[41] during which he speaks freely with the workers; and that of the participants in attending the annual Managers' Convention in late January. Gérard Mura revealed a bit more of his private side, retraced his career path, spoke about his life, and set out his vision. He recalled the one he had expressed more than ten years earlier, and which all the branches had achieved. He also spoke of the German mid-cap companies, mentioning family mid-caps in particular. Safe, an unusual Group, resembles these mid-caps. The majority of its capital is held by one family, and only two men have headed the Group in the last fifty years. Marc Génot was a founder




DEMO
INJECTION
Painting
workshop
in Chambly.

but did not think the Group should remain within his family. On the contrary, he was wary of dynastic transmission. In Gérard Mura, the Group had secured the founder of a new family, who had committed himself to ensuring the continuity of the Group's shareholdings. The transition from AFE to Safe was also part of this transfer.
During the Convention, Gérard Mura also reiterated his faith in the strength of collective entrepreneurship, and of the men and women who are the Group's main asset. "I am proud of the Group's success, and this success is a collective one," he emphasised. One of the principal challenges of the coming years will undoubtedly be to perpetuate this foundational, bottom-up strength, by preserving proximity, dialogue and transparency among personnel, managers, and executives.

IV.5 ENSURING LONG-TERM STABILITY

During the Managers' Convention in January, 2013 Gérard Mura promised to ensure the managerial and shareholder stability of the Group. This declaration echoed an open question, "What will happen when he retires? Who will be able to take over from him? Who can ensure the next phase?" The many entrepreneurs who do not prepare for their successors involuntarily endanger their businesses' future. The consequences can be fatal. Gérard Mura was aware of this. It took two years to put together an answer that rose to the challenge of his stated aim: "ensuring Safe's continuity in every circumstance".

Ensuring Operational Continuity

Gérard Mura announced in 2013 that his successor would be chosen from the internal Management team. This choice was based on experience: the previous attempt to hire an executive from the outside had been a failure. The crisis had been a factor, but it was not the only one. "It is hard for the graft to take with an executive from another culture, especially with a highly visible CEO and majority shareholder," observed Gérard Mura. In 2014, the members of the Managing Board, in conjunction to the six members of the Group's Executive Board (Comex), were asked to give their opinion of who seemed the best suited to the job.
A consensus formed around Franck Lacroix, the head of Safe Metal. Everything pointed to him: he was an industrialist, he had gained experience in foundries, and in particular he had reorganised and improved Safe Metal's profits after the difficult period between 2007 and 2010.

What was more, like Gérard Mura, he had had previous experience in large groups and in automobile equipment. He embodied the characteristics that would stimulate and lead the strategic project. For the time being he would continue running Safe Metal, while also learning about the other two Branches, and would progressively become more widely involved as he prepared for his future responsibilities.

Ensuring Shareholder Continuity

The future CEO's mission was to lead a group whose shareholdings were now stabilised, and belonged to Gérard Mura's family. Let us look back for a moment at the career paths of the two men had reigned over AFE's and then Safe's destiny for half a century: Marc Génot, heir and entrepreneur, did not wish for his children to take over from him; Gérard Mura, on the other hand, who had started out with a government scholarship, believed in family shareholding. In

CRONITE WUHAN

First stage in the manufacture of a lost-wax casting. Thang-Zhi Yan assembles the wax elements. The final piece will be in a nickel-chromium alloy.

CASTMETAL XUZHOU

Wu Taihong and Li Qing cleaning the ladle after casting.

his view, it was the best way to preserve the Group from the appetite of financiers, who might be tempted to break up the Group by giving up its Branches, while at the same time creating conditions for solid industrial development founded on recognized and shared values. Gérard Mura gradually interested his two children in the life of the Group, and prepared them for the difficult role of becoming majority shareholders of an industrial conglomerate.

Consolidating shareholding and putting an adapted solution into place occurred in a new environment. Euromezzanine, which had held an equity stake since 2006, had been an exceptional "travelling companion", and its actions at the height of the crisis had been crucial. It now announced that it wanted to pull out by the end of 2016. It was essential to bring in new participants and increase the family's capital share. Once again – the fourth time since he had taken over – Gérard Mura reinvested the entire capital gains from the latest LBO.

Taking the family's equity dilution in 2009 into account, this was not enough to make him a majority shareholder. It was necessary to

"Our livelihood depends
on the quality of what we produce.
Sometimes it's as delicate
as lace."

Jean-Luc Levacher,
Cronite Mancelle

mobilise other resources. These were obtained through another LBO accomplished by Polyfont, a company that had formerly belonged to the Group and was still controlled by Gérard Mura family. Gérard Mura's brother Patrice headed the company, which became under his leadership, the European leader in composite panels for lorries. Finally, in 2015, the Mura family found itself with two-thirds of the capital, alongside former managers who had heavily reinvested and new managers who had recently joined the Group, as well as with a new group of financial investors.

The 2009 crisis had severely tightened procedures and financial regulations for this type of operation, making it more difficult and complex to achieve. But once again Gérard Mura's commitment, the perseverance of the headquarters team, the Comex credibility and the Group's excellent history attracted banks and investors. The financial structure came out strengthened, with a favourable debt to equity ratio, giving the Group the means to devise new ambitions for expansion and development.

New Operational Headquarters

The Group's need to renew its image and accommodate modifications in its governance led to the decision to create a new world headquarters in Geneva, a French-speaking city within easy access in a dynamic and international country that is open to the world. Nevertheless, this project raised questions, especially for a group that had always vaunted its French roots and affirmed its industrial patriotism. One must look to the very unusual climate of the early 2010s to understand.

France, a country undergoing an identity crisis and hesitating among several models (like other countries, but perhaps more markedly), has a complex attitude toward globalisation. These many uncertainties created

Franck Lacroix

His confidence in Gérard Mura and the Group's values motivated him to join Safe in 2008. He currently leads Safe Metal and will step into Gérard Mura's shoes when the time comes.

tensions and even suspicions in the Group's powerful partners. Safe is an international company, and deals with major accounts. These encouraged Safe to create a stable climate for their exchanges, saying they could not find it in France. Their request echoed Safe's search for an optimal solution that would consolidate the family shareholding and allow branch presidents and senior managers to be closer together.

After studying several options, the choice was made in late November 2013 to set up the new headquarters in Geneva. Frédéric Schwartz inaugurated the offices opposite the airport on 1 May 2014. Marie-Sophie Dupouy, the Group's general counsel, soon joined him there. In September, Pierre Wittmann set up the management of the Safe Cronite Branche. Staff numbers are increasing steadily, to everyone's great satisfaction.

This new stage can be interpreted in several ways: it responded to the requests made by important clients; it reinforced the Group's international identity and changed the balance among the nationalities of Group members; it guaranteed a more stable financial, regulatory and fiscal framework that was better adapted to an international Group without changing factory locations. This would protect the Group's share ownership, which could continue massively reinvesting for the Group's long-term development.

A New Governance

One consequence of these changes was an end to the system of governance that had existed since 1967. The nascent AFE Group was one of the first French companies to adopt the new company status of a *société anonyme* governed by an executive board and a supervisory board in order to divide the power between the two families that had presided over the company since its foundation, the Maîtres and the Génots. Today, given the different holdings that make up the Group's legal structure, it was necessary to return to the more classic scheme of an Executive Board, chosen by the shareholders, which oversees management and ratifies important decisions.

A new three-tiered governance was set up. Powers and responsibilities were clearly distributed, with the desire to allow future generations to

CASTMETAL COLOMBIER

Heat treatment at the Colombier plant

CRONITE WUHAN

Bo Luo checks the assembly of the various parts before shipping to the customer.

find their place within the structure. The six-member executive board is in charge of operational direction, the evolution of organisation, coordination among the branches and the development of the Group's strategic projects. On the middle level, former members of the supervisory board, representatives of new investors and representatives of Gérard Mura's children make up the executive board of the financial holding company, which monitors progress, and endorses industrial choices or strategic decisions related to organisation and development.

On the top level, the family-owned Mura holding, the principle stockholder, is concerned with ensuring the Group's continuity and independence, making major policy decisions, and maintaining the values, cohesiveness and harmonious functioning of all. To ensure the continuity of governance, succession choices have been prepared and are ready to be implemented when the time comes. This is the case in the family-owned holding that includes Gérard Mura and his children, each with his or her counsel.

An "independent administrator" accompanies them. This is a wise solution, for if disagreements arise between the children, this administrator could aid in making key decisions through the few shares that she holds. For if governing is first and foremost anticipating, it is also a matter of knowing how to make quick decisions.

CASTMETAL COLOMBIER

Mould assembly and closure.

V.
Safe TAKES FLIGHT INTERNATIONALLY

V.1 SAFE DEMO TAKES OFF WITH DECORATIVE PARTS

Crisis in Brazil

Safe Demo inaugurated its new Brazilian factory in early 2013, at almost the same time as the Managers' Convention. A new Brazilian law voted in 2009 stipulated that in 2014 all vehicles sold in this huge country would be equipped with frontal airbags. In 2010 Autoliv set up a plant in Taubaté, 130 km to the east of Sao Paolo. In February 2012 TRW began production at the same distance from the capital, in the city of Limeira to the north. It was only logical that Safe Demo would soon turn up as well. Manufacturing locally was highly important because customs charges were prohibitive and legislation on imports was complex. Demo do Brazil decided to set up a plant in the Curitiba region, completing the triangle of factories whose three points had been determined by the car equipment manufacturers, its clients!

DEMO TECHNIC

Rotating paint rack.

"Our company really emphasises
the value of people. The administration
pays attention to what other
departments say. The departments
are mutually transparent
and this creates good conditions
for listening and openness.
When one of us speaks,
he or she knows that someone
will listen. This knowledge,
this awareness and this confidence
all help to create a dynamic of togetherness,
openness, and receptiveness."

Levent Guroney,
Demo Plastik

But a severe crisis swept the country following the World Cup Football match. Brazil became much less competitive and the large drop in oil and raw materials prices reduced its export potential. The automobile industry collapsed and the Demo factory remained virtually empty for almost two years!
The local team had to completely reorganise and find markets outside the automobile industry for painted parts. Luckily it found a market for painting electronic digital TV decoders quite nearby. The volumes were similar to those that would have been producing with automobile platforms: because of the frequent power cuts in Brazil, these decoders often broke down.
Finally, in 2015 it found its first local market for airbag covers and began to regain momentum!

The first universal platform

VW, a pioneer in the development of platforms that mastered the art of a standardised, interchangeable set of parts for its different brands, achieved a new level in 2012, when it unveiled the MQB platform. MQB is a modular platform used in most of VW's transverse engine models

DEMO INJECTION

VW driver-side airbag cover.

from the Polo to the Passat. It can be employed with a wide variety of motors, transmissions and equipment. For the first time the steering column, steering wheel and pedals were designed to be identical in all cars that used the platform. MQB enabled VW to make substantial economies in terms of time and scale. Suppliers went into overdrive, as standardisation of many parts seemed to herald a veritable boom in orders.

TRW, Autoliv and KSS presented their offers to VW for airbag modules and steering wheels, and Safe was one of the three offers. Volkswagen's verdict arrived: it would share out its airbag orders among suppliers, but confirmed that its worldwide supplier for covers would be Safe Demo! This was a triumph and a magnificent moment of recognition for Safe Demo, which was in constant competition with its three most important clients. How had this great success been achieved? It was the reward for a strategy that had been decided on in 2007 and patiently cultivated in the intervening years. Let us recall that during the worst moment of the economic crisis, when the Group's very future was uncertain, a decision was made to invest in the Decotech project. This decision, made with an eye to finding new

DEMO PLASTIK

The Bursa assembly team in the assembly shop.

growth areas and to reducing dependency on its two largest client/rivals, meant that Demo Injection was the only company capable in 2011 of producing the decorative parts that answered to VW's highly precise specifications. The logical outcome materialised as:

- Penetration of new markets such as German automobile manufacturers acting as influencer to tier-1 clients or constructor of lorries.
- Penetration of a new player on the airbag market, the American company KSS.
- Penetration of Takata for logos.
- Acquisition of the VW MQB universal platform.

It was through presenting a double offer – airbag covers and decorative parts– that Safe was able to move beyond its rivals. Safe Demo's prices were so advantageous that no one could beat them. "Nobody else could have prices like ours", explained Gérard Mura. VW had naturally examined all offers in great detail, and had quickly realised that working with Safe would help it save millions of euros. This confirmed the competitive advantage Safe had attained through the investments and the teamwork that had come up with very innovative solutions.

The moral of the story was that, by investing at the height of the crisis, Safe had taken the lead. This was so true that the Decotech adventure had only just begun. At a time when the market was disinvesting in motor vehicles, decoration became a strategic element of differentiation for car manufacturers. The strength of PVD (Physical Vapour Deposition) technology in comparison to chrome plating is the infinite variety of colours and textures PVD offers. Safe Demo began to attract new attention from car manufacture designers. When one recalls that Demo, the only company to have mastered bi-material moulding, had formerly worked for Lancôme, Yves Saint-Laurent, and other great names in the perfume business, this return to designer and luxury markets was the equivalent of going back to its roots.

And China Makes Three

VW's order equated to commissioning of six million covers a year for the fifteen years of the estimated service life of the platforms, compared to previous production levels that had peaked at one million units per year. The organisational effect of this order was substantial, and impacted all the companies of the Safe Demo branch:

In the Czech Republic, the original factory was moved and a second painting line was set up. This allowed production capacity to increase in a more modern and functional environment located near the original site.

Safe Demo, which was a neighbour of Autoliv in Chihuahua, Mexico, considered also setting up in Querétaro, to be near TRW and help handle the increase in volumes.

And finally, to supply KSS in China, it was necessary to be onsite; any other solution would have been too costly. For Safe, this was probably the most difficult consequence to handle. Every company whose performances and competitiveness are innovation-led knows that setting up in China requires great caution. On the positive side, Safe had already begun to gain experience in China. This was vital in helping the company decide to change its slant: the Group opted to prioritise local management with a Chinese manager for Safe Metal and a Chinese Deputy General Manager for Safe Cronite. Safe Demo would also have a Chinese manager. It took a long time for the two very different cultures to get to know each other. The cautious Safe executives continued to view the Middle Kingdom with some reluctance. But everything was in place to build an automobile market that would soon be as large as the European and US markets combined!

DEMO TECHNIC

José Santillan et Luis Morales opening a mould for maintenance.

CASTMETAL XUZHOU

Discussion on the quality of cores amongst Li Yueha, Ali Bojmehrani and Julien Léger.

Safe Demo built a new green-field site. Like all the other factories, Demo Jiangsu would have a painting line. The sector that Albert Lopes had enthusiastically developed had become a true world champion in plastic injection and painting “under the same roof”.

V.2 SAFE METAL TAKES ON (VERY) LARGE PARTS

Safe Metal in Spain!

A few months after Brazil, the Group acquired a new plant by taking over a foundry from its rival Novacero located in Vitoria in Spanish Basque Country. This was in the territory of Safe Metal and its Castmetal affiliates. When the group changed its name, the various Safe Metal foundries had decided to call themselves Castmetal followed by the name of the city where they were located, thereby contributing to reinforcing the global image of their sector. The associated factories were now called Castmetal Feurs, Castmetal Colombier, Castmetal FWF, Castmetal FWM, Castmetal Xuzhou and now…Castmetal Vitoria! The commercial court assigned the assets of the Novacero company to Safe Metal on 1 August 2013. Franck Lacroix was very happy with

"Separately, the branches would result in losses for shareholders. Over the last 12 years we've reached the goal we set at the beginning of 2001: we're the world leader in airbag covers in plastics processing, in tools for heat treatment furnaces with Cronite, and in steel components made with green sand technology for Metal. This adds up to an extraordinary collective performance."

Gérard Mura

Off-shore wind turbine hub weighing over 40 tonnes: the future challenge of Cast-metal Leon !

the success he had achieved after 18 months of negotiations led by Hervé Longatte: “The Group had not expanded within Europe for a long time, and the occasion was too good to pass up. Novacero was a head-on competitor whose dumping had been damaging Castmetal Feurs for a long time.”

It was also a beautiful 8,900 m^2 foundry with a machining building of the same size, in which 50,000 parts were treated each year. Annual production capacity was around 8,000 tonnes of low alloy carbon steel. Novacero had an enormous core moulding machine with a 200-litre capacity. The automated moulding machine equipped with a very large moulding box (2,500 x 1,300 x 900 mm) for production of a range of products that perfectly complemented those made by Safe Metal. The Spanish foundry worked with a limited number of clients and its portfolio concentrated on just a few key products. “It was a bit like a new Sainte-Suzanne, with a moulding line larger than Feurs’s moulding line IV.”

Many of the factory’s employees were kept on with new contracts; around 135 of them got to know the Safe universe and its industrial methods. They were happy to see their old company evolve quickly and change from a business with a “social” purpose into a truly “industrial” one. They showed enthusiasm and were committed to achieving the stated goals. Combined with the Mexican employees, they formed a Hispanic community of more than 600 individuals, representing more than a quarter of the Group’s worldwide staff.

Complementary Lines and New Products

Taking over Novacero increased the Group’s production for important clients like Volvo, and particularly for Caterpillar. More than two thirds of the foundry’s production goes to the latter. Its star product is the axle housing. Novacero is the only plant to produce axle housing for Caterpillar using the green sand technology on a totally unique large capacity moulding line. Next are cross-members and articulated dumper axles. Safe has also acquired new clients. The company produces suspension cross-members for the Spanish railway company C.A.F (Construcciones y Auxiliar de Ferrocarriles), a manufacturer for the railway industry in Basque Country. New local opportunities are also planned with the promising company Grado Cero (GO).[42]

Though it had only just arrived in Spain, Safe Metal is already considering developmental opportunities. The prospects are promising,

DEMO TECHNIC

José Castillo, paint technician, receiving an award for best GRP.

because the tool is competitive for large parts up to 450 kg. The factory again illustrates the course of action that Safe Metal follows: “building a factory around a product”. Christian Gaillard at Feurs tells it this way, “FWF showed us what to do with the example their fifth wheels. It was not easy, but the effort was worth it. This is the only way for older factories to stay ahead of worldwide competition.”

A Double Success in Spain

As it was taking over Novacero, Safe Metal was also involved in implementing a substantial project in which Caterpillar was again implicated. The two companies planned to build a factory on American soil. It would be dedicated to making steel parts for the highly cyclical mining equipment market. Making extremely large parts requires very expensive manufacturing equipment. Safe Metal began to search for suppliers and second-hand equipment. A foundry was located

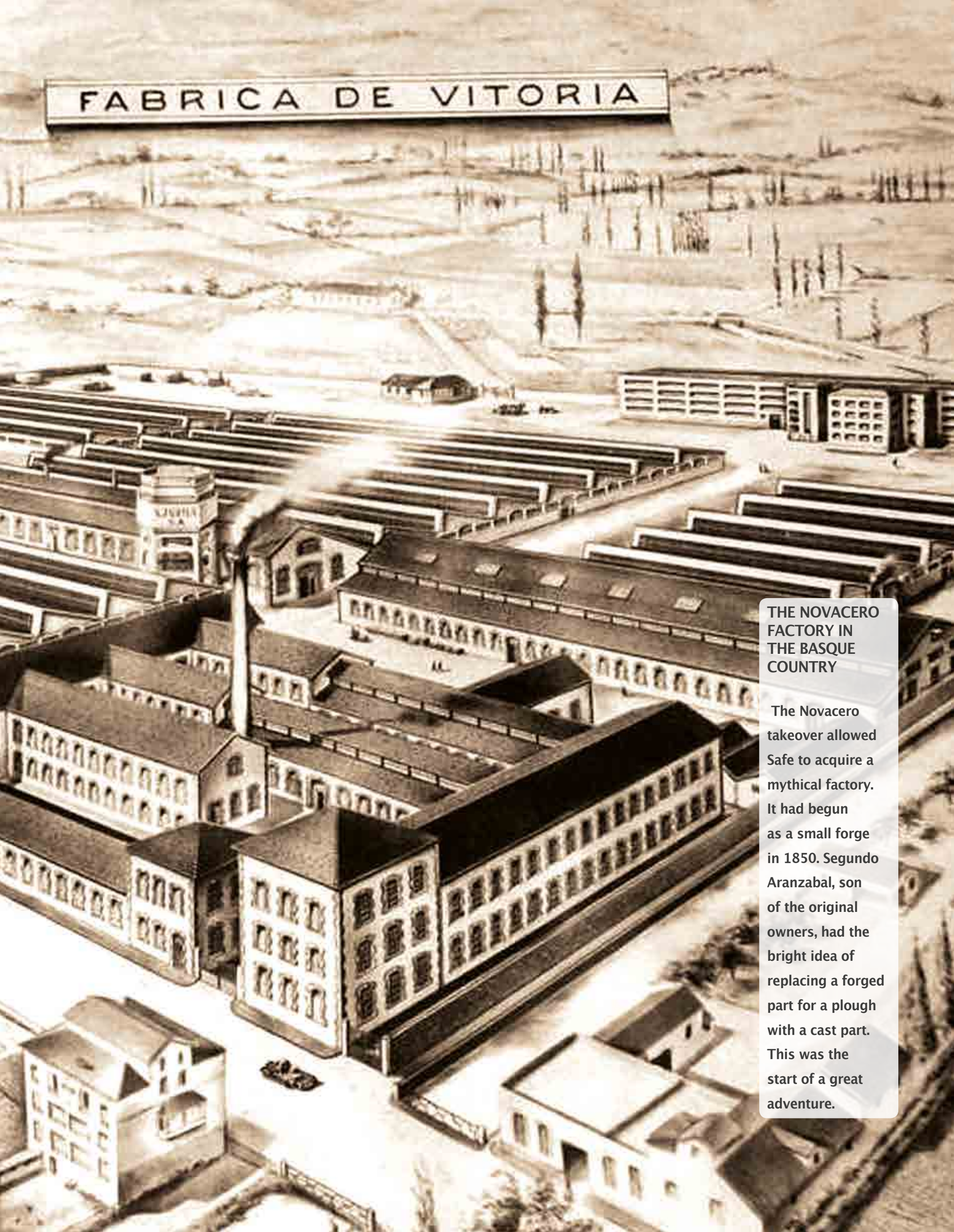
"Today we just push
a button to fill the moulds/models.
When a new mould/model arrives,
the design office gives us data
sheets that cover everything: the cores,
the coolers, the buckets, etc.
But human intervention
still plays an important part;
the data sheets don't stop us
from having an input.
There's always a way to improve things,
little adjustments to be made
in the thicknesses... We make sample parts.
If the first part we made was perfect
it would be too good to be true!"

Gilles Mallayvien, Castmetal Feurs

in Spain, in Léon. It had been built by a very talented machining specialist who wanted to add casting to his main activity, upstream vertical integration. He was targeting the wind turbine market and his portfolio included renowned corporations such as Gamesa and Vestas. But the Chinese had figured out the technology to build wind turbines, and the machining specialist lost much of his potential market and was forced to bankruptcy.

A visit to the foundry confirmed that the practically new equipment was a good match for producing parts of very large dimensions. The decision to take over the Spanish site was not long in coming, because transferring it to America would have been prohibitively expensive. These events occurred in 2013. But in the meanwhile, perspectives in the mining market had collapsed, and the Caterpillar project came to a stop.

But Gérard Mura detected an opportunity. Couldn't the machines allow the Group to conquer new markets by further enlarging Safe Metal's offers? The Group didn't yet have a precise idea of how this could be done, but the design and organisation of the factory were excellent and the idea of producing very high capacity parts was of interest to the Safe Metal teams. Perhaps one day the mining sector



THE NOVACERO FACTORY IN THE BASQUE COUNTRY

The Novacero takeover allowed Safe to acquire a mythical factory. It had begun as a small forge in 1850. Segundo Aranzabal, son of the original owners, had the bright idea of replacing a forged part for a plough with a cast part. This was the start of a great adventure.

RENAULT LOGO

would need equipment in Europe. The liquidator put out an invitation for bids. The first round was inconclusive. Safe began to bid on the second round and competed with a Spaniard, a German and a Chinese individual who arrived at the last minute and initially won, having made the highest bid. But the Chinese bid was disqualified, because the bidder was not able to provide the necessary financial guarantees in the allotted time. Safe, whose bid was second in line, acquired the factory. The company's excellent image in the Basque Country due to its installation in Vitoria certainly played in its favour.

The Offshore Wind Turbine Market

Wind turbine manufacturers were enthusiastic about the idea: "You've made a great deal, because the off-shore wind turbine market is about to take off," they explained. The figures agreed: the sector was just getting organised in France, but investments in off-shore wind turbines had never been larger in Europe, and the number of wind farms was increasing quickly. Siemens and other major producers were making great technological strides. Safe had started out with a single idea – offering Caterpillar an alternative for very large parts

> “My colleagues from the other businesses can see how proud I am at annual conventions organised by the group. The fact that we’re doing business on every continent is also, for us, a sign of success and something to be proud of.”
>
> **Asi Gokan, Demo Plastik**

for its mining equipment – but now found itself the proud owner of a factory capable of producing giant parts weighing up to 50 tonnes: the blades of an offshore turbines measure up to 80 meters, as long as an Airbus A380!

Gérard Mura was relieved, although it remained to be seen whether this investment had been a good one. “I had to make a decision on faith. But it was a superb foundry next to a superb machining shop. And the Metal teams supported the project”, he said. Safe had just invested in a ductile cast iron factory! And this after they had left the sector – the sale of Redon comes to mind – because it was impossible to be a leader in it. But the new factory could produce parts in both ductile cast iron and steel, which had very different cyclicality, and the competitive environment was much more favourable now, because there were very few companies in the world that could manufacture such large parts.

V.3 SAFE CRONITE TARGETS THE STEEL INDUSTRY

An Unusual Partnership

With 25% of the world market for heat treatment furnace tooling, Safe Cronite was the absolute market leader, and had been thinking for several years about opportunities for growth. The first foray into a new sector occurred in 2009, with the acquisition of the English company Scomark, which produced heat-resistant steel tubes for the petrochemical industry. Scomark answered to the specific criteria of the Group: extending Safe Cronite into related branches, either by utilising the sector’s technology or through its clientele base. In this case, Safe Cronite’s know how would enable it to manufacture higher quality and longer lasting tubes. Scomark held 3% of the world market and was challenging the three global giants who were blocking

CASTMETAL FWM

The furnace is opened for reloading after transferring the molten metal in the ladle.

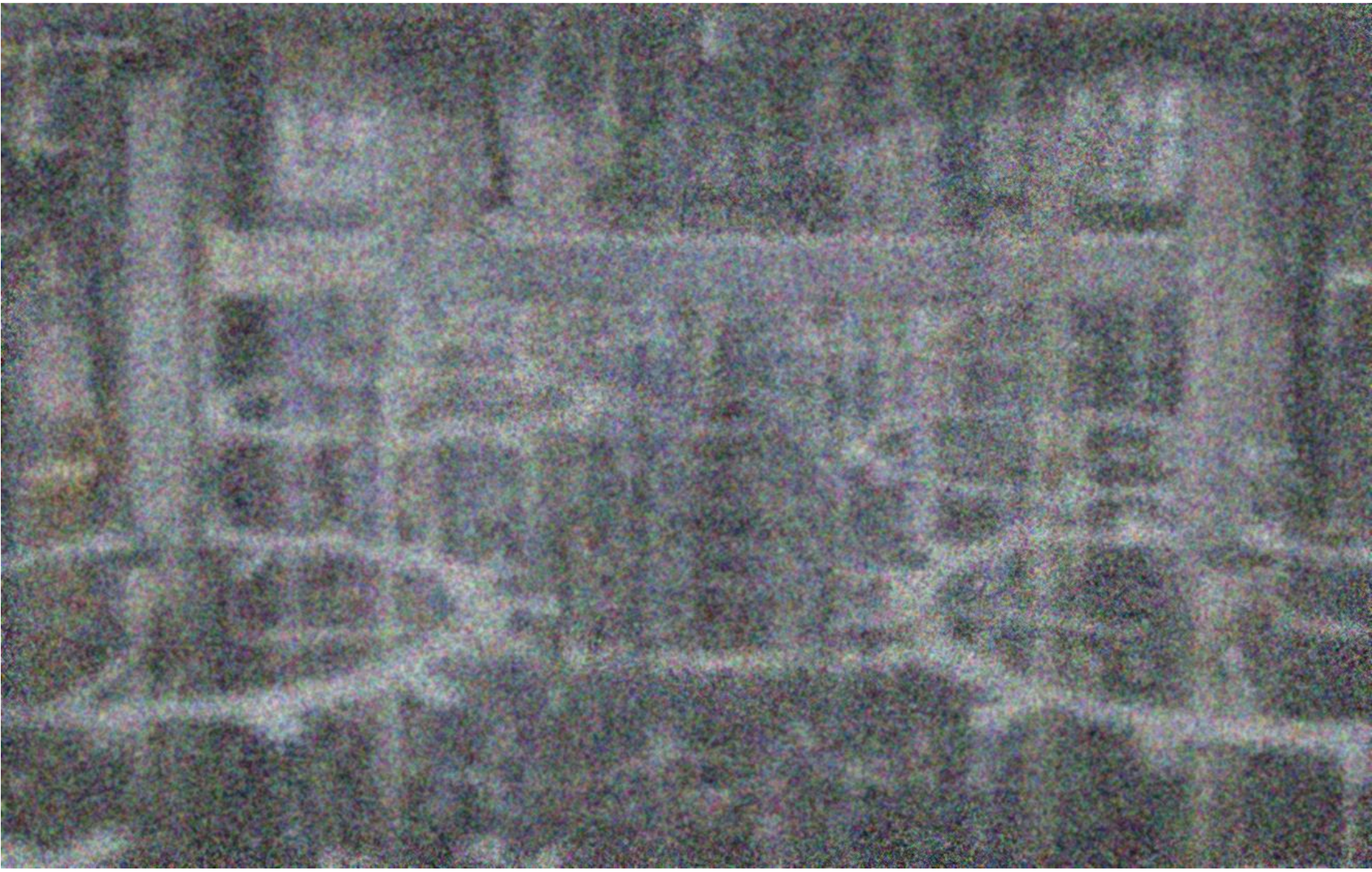
"I had to make
a snap decision with my eyes
closed because we didn't
know anything about the market.
But it was a wonderful foundry
next to a wonderful machining
shop. Here's what I thought:
if worst comes to
worst, I can recover
what I spent
by selling the equipment.
The wind turbine
manufacturers came
to see us and said, 'You made
the deal of the century.'"

Gérard Mura

Safe's way to important international accreditation. Safe backed out and gave up Scomark without losing money – it had purchased the company through the English Commercial Court – and was able to keep its foot in the supports for tubes for the petrochemical industry.

Since then, the Group has been on stand-by, but proactive since sales of electric cars, which work without transmissions and therefore without corresponding heat treatments, have been on the rise. In 2014 a Brazilian heat treatment tooling company knocked on Safe Cronite's door; this was the second time in ten years that it had wanted to form an alliance. The Group was not against the idea of expanding on the Brazilian market, which is highly protected by customs barriers, and looked carefully at the new request. But taking over the company would be too dangerous. The requirement for any buyer to take on the full liability amount, regardless of the legal framework, was a huge risk. The debt was very large and the exchange rate was unfavourable. But Safe discovered that the business had another activity, the manufacture of steel mill rollers.

These rollers, which transferred extremely hot ingots produced in casting furnaces to hot rolling mills, were perfectly in keeping with



the diversification Safe Cronite sought. Highly technical parts, they were subjected to strong constraints and a wear level that increased with their proximity to the furnaces. The branch's know how and technology would be of value here. Safe Cronite negotiated a takeover of this activity and of key materials with the Brazilian company, and planned to set it up in their Mexican factory, which was much more competitive than the one in Brazil. But everything suddenly changed. Just as the investments and the transfer were beginning, the Brazilian company was forced into bankruptcy. A race against time began so as not to lose clients: it was necessary to set up, not one, but two new lines in Monterey: a centrifugal casting line and an "Alphaset" process. The teams' hard work can only be imagined...but a new adventure had begun for Safe Cronite.

DEMO TECHNIC

Storage of paint racks.

CONCLUSION

Success like that of Safe, which became the world leader within just twelve years in each of its three sectors, is above all a collective achievement. One of the Group's greatest forces is to have reflected on and put into place tools conceived for optimising everyone's motivation in order to reach goals that have been clearly defined within the framework of a shared vision. Long term differences with

its rivals are only possible if the people involved are able, collectively and individually, to gain true satisfaction from the results of their efforts, and to clearly perceive their personal contribution to the collective endeavour. The attention allotted to individuals is one of the fundamental contributions to the system that Gérard Mura put in place when he took over the Group in 1995.

Deployment policies allows strategic projects to take shape in the field before going up the decision-making chain and being enhanced at every step along the way. It is this bond of trust that guarantees project feasibility and maximises the likelihood of success. It took some time for this approach to bear fruit, but this is not surprising, because it brings substantial change to the executive's role. The Group was also enriched by its diversity and by the quality of its communications around a shared culture. It was in this way that old-world foundries were catapulted into an era of technological excellence, constant innovation and international conquest; the rigorous, proven methods of the automobile industry had successfully been grafted by continuous contact.

In 2014, Gérard Mura observed how strategic thinking had progressed in Demo's units: "They appropriated their environment, their rivals, their clients, and their developmental potential. It was in the Mexican factory that the idea of developing a second factory germinated and was remarkably well prepared", he applauds. The other heads of the branches were to follow this model, which ensured that each individual could be a potential player in his or her branch's future.

The decentralisation principle was another of Safe's main characteristics. It allowed for flexible functioning guaranteed by solid, reliable structural support systems. This amazed Marc Génot himself: "I have rarely seen a group of this size with such rigorous management control", he observed a few years before giving up the Chairmanship. The support of the central branch services and the Group allowed each company to function like a successful SME and to concentrate on its clients' needs with all that entailed in terms of responsiveness, flexibility, motivation and empowerment. In recent times, the multiplication of entities and internationalisation have broadened and enhanced the Group's image: this was the perfect moment to gain in visibility and outreach. The work done on Group identity led, among other things, to its name change in January 2013. The new name lent each entity renewed legitimacy

In January 2013, Gérard Mura announced that the Group would now be known as "Safe, l'esprit industriel".

and a connection with a group that was now easier to identify in the international environment. This was a guarantee of future success. These different traits were analysed by the executives of large companies, who Gérard Mura, after having introduced them to the Safe Group, asked to identify its strengths and weaknesses. There are always a few weak points, of course. But let us concentrate on the strength, on the “nice surprises”, as the thirty high-level participants who were just finishing their training at the CEDEP called them:

- A strong entrepreneurial spirit,
- A clear vision supported by an intelligible discourse,
- A high level of decentralisation within a simple and well-balanced structure,
- Worldwide niches with high added value,
- High quality monitoring tools,
- Client-oriented organisation,
- A high level of internationalisation for a group of its size.

The author has been particularly sensitive to the Group’s clear vision, supported by forthrightness and a strong entrepreneurial spirit. Expressing plans and then carrying them out seems quite simple, but it is actually very rare, especially over such a long period and without once departing from the chosen path. When I wrote the history of Saint-Suzanne fifteen years ago, I talked with a certain naiveté about the paths bordered by wild blueberries that went up and down the slopes of the nearby Vosges mountains. I could not have imagined at the time that the somewhat motley assortment of companies put together by Marc Génot, which seemed to be taking off in all directions, would become unified, streamlined like a Formula 1 car and morph into a successful global group. But determination and all-around motivation were solid foundations that enabled development to take place during unstable times. This path, this determination, belong to SAFE, a group that can be proud of the strength and motivation of all the men and women who accompany it, live through it and work for it on a daily basis. The road map has been drawn up for the future. It will lead to new encounters and new challenges, which the enthusiasm and passion of its team will surely turn into fresh successes.

THE COLOMBIER-FONTAINE FOUNDRY

It all began here, along the Rhine-Rhone canal in Eastern France. Two foundries combined forces in 1967 to create the Aciéries et Fonderies du Doubs. Then came La Mancelle and heat treatment. Cronite and Klefisch marked the beginning of international expansion. Demo was a surprising acquisition. Then came America, Asia… a wonderful journey that continues, like a dream.

NOTES

1. Green sand is a mixture of silica (sand) and clay (bentonite).

2. An extremely pure type of sand imported from Belgium.

3. 51% was held by AFE and 49% by Sereg (the Schlumberger group), one of the largest consumers of French cast steel and Decazeville's main client.

4. A merger between Mecaest, the Feurs foundry, and the Noralpe holding company, which held 2 million francs worth of Richier stock. The name FAFE (Fonderies et aciéries électriques de Feurs) was chosen for the factory at this time.

5. AFE created the FACIFER holding company in order to merge with Feurs. AFE owned 51% and the other 49% belonged to FAEF and its main shareholder. Roland Fraysse was the CEO.

6. According to Francis Gaspar, who became CEO in 1983.

7. Most of the 11.5 million francs provided for investments through the contract signed four years before with Holland Hitch were dedicated to automatising the foundry. Part (about 1 million) were used for computerising.

8. And other flat parts as well.

9. This was a contract to produce fifth wheels for the main American manufacturer of this part.

10. Jacques, a former Decazeville manager, was recruited by AFE.

11. These activities took place at the industrial sites of Monthermé and Chambon-Geugerolles, respectively.

12. Since the middle of the 1970s the world of finance had encouraged risk spreading through diversification of industrial activities. In the early 2000s, on the other hand, refocusing was promoted.

13. Like Harrison, which would become Delphi-Automotive.

14. Other factors were also involved. Esco had recently signed new licensees to commercialise its products.

15. Feurs produced 130 tonnes per month for Esco in 1990 and 1991, compared to its normal rate of 300 tonnes per month.

16. That was why it had a vertical joint. In comparison to a horizontal casting, a vertical casting makes the tooth hold better when in use.

17. Including green sand and lost wax technologies, chemically bonded sand, and centrifugation.

18. Cronite Alloys traded in scrap for the European steel industry.

19. Another difficulty was the time it took the German and French sales teams to understand the specificities of the lost wax process – its design, thickness tolerance, and surface quality as well as the large variety of alloys used.

20. A Japanese management technique aimed at constantly improving the tasks carried out in a business.

21. A sprocket for crawlers.

22. These included 5S, overall effectiveness, versatility, preventive maintenance, etc.

23. During a fact-finding mission that established the principle of a future division of Valeo that would produce clutch systems for lorries.

24. A huge territory in the high plateaus of northern Mexico. It takes eight hours to drive across it from north to south or east to west. Chihuahua, its capital, is closer to Texas than to Mexico City.

25. This involved switching to a robotised fettling process identical to the one used by Holland Hitch in the USA.

26. In 1997 Knorr-Bremse solicited bids for a new automatic coupling system for freight wagons in Europe. Due to political reasons, including fears about the impact on employment in Germany, production never began.

27. Particularly in terms of keeping under control defects caused by the expansion of silica during the first casting.

28. Suspension supports or beams for heavy goods vehicle trailer axles.

29. The difference between the amount of steel used in the melting and the weight of the finished product.

30. Moulding, fluorination, painting and ultrasound assembly of the logo.

31. The VW New Beetle in 2003, and in 2004 BMW X3 and X5, Skoda Octavia, and Ford Focus.

32. The maquiladoras system still reigned: foreign companies agreed to employ local labour, import their raw materials, and export their entire output outside Mexico in exchange for tax breaks.

33. As part of a joint venture with Renault, DFIC already had a unit that produced heat treatment fixtures.

34. Until 2004, Chinese law required foreign businesses that wanted to set up in China to establish a joint venture with a local partner.

35. Known as "The Measures".

36. To exit the stock market and consolidate its financial structure, the Group undertook three LBOs in 1999, 2004 and 2006, after which the Mura family, which had systematically reinvested, became the controlling interest in the Group.

37. This began with the first airbags made using the technology of bi-injection. Then Demo succeeded in producing single material covers that respected the same requirements. Demo developed multi-cavity moulds that allowed several covers to be moulded at the same time, which demanded high precision work on the part of mould makers, slack adjusters and injectors. The Mucell process, which enabled lighter parts with more complex shapes to be produced, continued this trend. In 2007-08 Demo, with its four Mucell presses, had the largest pool of equipment of this type in Europe.

38. Customers include Plastic Omnium, for which the company produces fog grids and bumper grids; Faurecia (interior parts for instrument panels); Tredin (hubcaps); Johnson Controls (sunshields for class C Mercedes), etc. 2012 was an outstanding year, particularly because of the Clio, which allowed Renault (the end client) to quadruple its sales of cars made in Turkey.

39. This discreet procedure, which involved an agent from outside, the Department of Justice in the negotiation, enabled them to leave the conflictual framework and give themselves time to come up with an exit plan that would be acceptable to all parties.

40. PVC (Physical Vapor Deposition) was a new process used to decorate automobile parts based on a vacuum deposition of metal particles on a plastic part, followed by deposition of a highly resistant transparent varnish (see above for information about Decotec's activities).

41. Gérard Mura makes 8 to 10 visits per year to each factory. During these visits he meets with managers and associates as well as with randomly selected workers without any feeling of hierarchy, in order to get a better feeling for the social atmosphere, staff expectations, factory operations and recent developments. This helps him to establish in a single day an overall diagnosis of the business and suggest ways to improve things.

42. G0 invented the jackhammer eccentric cutter head, which rivalled the traditional jackhammers used for public works. After conquering Spain, this product is now beginning to be used worldwide.

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