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CLEXTRAL : BEING SMALL AND CONQUERING THE WORLD

by

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Overview

In 1956, the company which was later to become Clextral acquired an operating licence for twin-screw extrusion technology. Using this technology and sharing its growth with its clients, Clextral was able to conquer markets as varied as industrial equipment for making cornflakes, and banknote paper pulp production (a sector in which Clextral is now world leader). Despite several changes of majority shareholder (including Compagnie des Ateliers et Forges de la Loire (CAFL) ; Creusot-Loire ; Framatome ; an LBO with investment funds ; and finally Legris Industries since 2007), Clextral has managed to forge a very strong identity which it has been able to share with its shareholders and is based on respect for the product, and the company's clients and employees. Growth has taken place as a result of innovation and internationalisation. Today, Clextral employs two hundred and seventy-five people including eighty engineers at its site in Firminy near Saint-Étienne. It sells its machines in eighty-eight countries and has subsidiaries and offices on every continent.

INTRODUCTION : Michel Berry

I am happy to launch this new session at the École de Paris du management entitled 'Industrial Adventures'. The idea for this session came from the observation that we are beginning to understand a great deal more about the macroeconomic causes of French industrial decline (such as taxation, increased social security contributions, the rigidity of the labour market, and so on) but, in spite of this, and even in the most affected sectors, there are still companies which manage to succeed. We are interested in finding out more about the 'microeconomic causes of success'. If, as a result of sessions at the Ecole de Paris, we can identify several recurrent factors which help explain industrial success, then perhaps young people – or even journalists and politicians – who read these session reports will have a more optimistic picture of this industry than that which is currently conveyed. They will discover, for example, that it can be an 'adventure playground' which is equally as exciting as a sporting competition.

Before handing over to Georges Jobard for his talk, I would like to thank the Union des industries et des métiers de la métallurgie (UIMM) and the Fabrique de l'industrie. It is thanks to their patronage that this session is able to take place.

TALK : Georges Jobard

Clextral is an engineering company located in Firminy near Saint-Étienne. It designs and produces specific machines for various industries. These industries include the food industry (for example cornflakes, aperitif snacks, fish feed, pet food for dogs and cats, and couscous), the paper industry (paper pulp for manufacturing bank paper and special paper), plastics (manufacture of compounds), chemicals (reactive extrusion), and the nuclear industry (safety equipment).

Clextral's technologies

The technology behind most of these machines is twin-screw extrusion. This involves an engine, a speed reducer to transmit power from the engine to the two shafts, a set of screws with complex shapes, technology which subjects the matter to both thermal and chemical reactions, and finally cutting systems which give the product its end shape. The advantage of this flexible technology is that transformation of the product is non-stop : for example, a twin-screw extrusion machine can produce up to 25 tonnes of fish food every hour.

We also use other technologies, for example to transform wheat flour into semolina and to dry it out in different aggregate sizes, or to clean, bleach and cut cotton fibres in order to produce paper pulp for bank notes. Finally, we manufacture safety equipment which supplies all the EPR (European Pressurized Reactor) nuclear power stations in France, and we have sold this equipment in Belgium, South Africa, Korea and China.

The history of the company

In 1956, one of the divisions of the Compagnie des Ateliers et Forges de la Loire (CAFL) acquired an operating licence for the patent of twin-screw technology which had been invented by Roberto Colombo, an Italian engineer, to produce plastic products. For years, this was the application which the CAFL used when selling machines intended to manufacture PVC profiles or polyamides to Rhône-Poulenc, for example.

The invention of the Cracotte crispbread

In 1970, the CAFL merged with the Société des Forges et Ateliers du Creusot to form Creusot-Loire.

In 1971, the Centre technique de l'union des céréaliers (CTU) commissioned a study in the United States to analyse what products can be made from corn. They discovered a process perfected by Wenger, a family-run company, during which a single screw machine cooks the corn grains under pressure (like in a pressure cooker), and when the corn comes out of the machine, it instantaneously expands and becomes crispy.

The CTU tried to find a French single-screw manufacturer with whom they could collaborate to make innovative products based on cereals. Since they did not find one, they chose the twin-screw extrusion technology perfected by Creusot-Loire. This company was iconoclastic enough to agree to put flour into a machine normally used for manufacturing plastic. The result was a flat crispbread, and it was a huge success. It was marketed in France under the name 'Cracotte' and has spread throughout the world ever since under various names and using a variety of recipes. Creusot-Loire developed this process jointly with Diepal, a company which was bought in the end by BSN.

From this moment onwards, our company was recognised in the food industry as possessing a technology which allowed it to create innovative products using very advantageous manufacturing conditions, in other words, non-stop production using very little water.

Clextral bought by Framatome

When the Creusot-Loire management realised that the company was about to file for bankruptcy, they wisely decided to divide up some of their activities into subsidiaries to give them some chance of survival. One such company, Clextral, was created in 1984. Its name comes from CL (Creusot-Loire), EXT (extrusion) and AL (*alimentaire* : food industry). In 1985, Clextral was bought by Framatome and became a subsidiary in its industrial machinery division.

The paper pulp activity

From 1976 onwards, Creusot-Loire worked with the Centre technique du papier (CTP) to try and make paper pulp using twin-screw technology. The person in charge of the CTP came from Grenoble with a bag of shavings which he poured into a machine used to make cornflakes. The result was something which looked like paper pulp. As a result, we decided to launch a pilot partnership with several paper manufacturers and perfected a procedure which used much less water and energy than normal.

The most interesting application of this process, the manufacture of banknotes, was perfected with the Banque de France. Having worked together for three years, we registered a three-way patent owned by Clextral, the CTP, and the Banque de France. The latter inaugurated its site in January 1991 and we signed a marketing agreement with them. For several years, the Banque de France showed our potential clients the fruit of our collaboration and each time that this resulted in a sale, we paid the Bank royalties. Thanks to the patent and to this exemplary co-operation with our first client, our market share was close to 75 % in global banknote production.

Leaving Framatome via an LBO

Towards the end of the 1990s, Framatome wanted to get rid of its diversified subsidiaries. We realised that Clextral was going to be sold to the highest bidder and noticed that several of our competitors were potential buyers. However, we wanted the company to continue its adventure and so we anticipated a different solution, an LBO (leveraged buyout). We met

with several investment funds, but we realised that we could not work together as their expectations in terms of return on investment were incompatible with our profession.

We found two other investment funds, the Union d'Investissement and AtriA, whose approach and vision was closer to ours. In 2001, we signed the LBO contract with these two funds and with GIMECA, the Fédération des Industries Mécaniques' investment bank. Fourteen of the Clextral managers invested their own money to be part of the company buyout, and 5 % of the shares were offered to employees via an employee savings plan. This plan included 50 % of Clextral shares and 50 % of diversified shares in order to limit risks for the employees. All employees became shareholders.

Acquisition by Legris Industries

In 2007, the investment funds announced that they wanted to withdraw their capital. We had to find a new shareholder. We chose Legris Industries, a diversified, family-run group.

Clextral today

Clextral currently employs 275 people including 227 in France and 48 in other countries.

It had a record turnover in 2012 of 62.1 million Euros. The 2012 operating profit was 8 %.

Our activity covers about twenty niche markets, each one with different clients and competitors. The markets are often very small with a reduced number of competitors (one to three) except for plastics where we have about thirty competitors.

We have global market shares of 30 % for cooking/extrusion in the food industry, 70 % for couscous production, and 70 % for the manufacture of paper pulp for banknotes.

The company's success is the result of two growth motors, innovation and internationalisation, and two other factors which I will mention later.

The central place of innovation

If we had concentrated on two-screw extrusion in the plastics sector, our company would be in serious difficulty today. Plastics manufacture is standardised and everyone uses the same procedures. Competition therefore is mainly centred on costs and the capacity to manufacture very large machines. Our German competitors are leaders in this sector.

This is why, since the start, Clextral's main growth engine has been innovation. Of our 275 employees, 80 are engineers and 3 of them have PhDs. We have 3 R&D centres in France, the United States and Australia, and we are technically sound in industrial property with 17 patents. In 2012, we spent 3.6 % of our turnover on R&D.

Becoming an innovative company

When Creusot-Loire sold its plastic products to Rhône-Poulenc, it did so according to Rhône-Poulenc's specifications and therefore remained a supplier. The client alone controlled the process. The fact that Clextral launched itself into the food industry was the reason it became an innovative company. Our first food industry clients did not know about twin-screw extrusion and so this gave us time to develop our process skills, and allowed us to present our innovation to our clients.

Whereas at this moment in time we generally employed mechanics, electricians and a few automation engineers, we started recruiting engineers for the food side of the business so that they could 'speak the same language' as our clients and were able to understand what was happening inside the machines. Likewise, when we started our paper pulp activity, we hired an engineer from the École française de papeterie. In 1994, we recruited a professor from the

Compiège technology university, Jean-Marie Bouvier, who was an expert in twin-screw extrusion and who had spent a sabbatical year working in the United States and knew the well-known American companies specialising in cereal technology. He has been managing our R&D teams since 1994.

Joint development with clients

It is important for us to work with our clients. When we make a few trial runs by ourselves, we let them look at the samples to see their reaction. They know their markets and they alone know whether they want to risk launching a new procedure or a new product.

When we first started out in the food industry, we had a pilot machine which helped us attract manufacturers in the sector. They came to Firminy with their raw materials and their engineers to work with our teams and equipment.

In 1985, we created a larger research centre at Firminy with pilot machines and accessories which made it possible to have small production lines in order to reassure our clients about the feasibility of their products, and even to produce small volumes so as to test new markets. Soon afterwards, we had to construct a second research centre using the same model as in the United States so that the major American companies could use the same equipment. Our third research centre opened in Australia in 2010 and coincided with the installation of a new process, extrusion porosification technology, which enables the manufacture of porous powders by reducing energy consumption.

Building an international scientific and technical network

We are constantly thinking about extending our scientific and technical network on a national and international level.

We belong to four competitive clusters : IAR (Industrie et Agro-Ressources), to diversify our activities based on cellulose and orienting them towards the biomass ; Axelera, to develop reactive extrusion ; Plastipolis, to develop the production of high-quality compounds ; and Viaméca, to advance development methods for new metallurgies.

In 2006, to celebrate the 50th anniversary of the twin-screw extrusion process at Firminy, we organised a scientific congress which brought together 300 participants from 38 countries. The aim was to discuss future applications for this technology in the fields of health and the environment. At this event, we presented an innovation which was developed in partnership with the Limagrain company and involved a biodegradable plastic made from corn, intended to be used as mulch on fields, and which has the unusual characteristic of disappearing after 40 days.

The internationalisation of the company

Clextral's second important growth engine is its progressive internationalisation, in particular in countries where, for obvious demographic and industrialisation reasons, the markets will be more dynamic in the coming years. In 2013, the GDP of emerging countries will catch up that of developed countries and the gap will most likely continue to quickly increase thereafter.

Our export turnover has increased from less than 50 % in 1990 to 84 % in 2010. In 2012, export figures outside of the Eurozone reached 73 % of total sales. In the knowledge that the Euro has been over-evaluated since 2004, this figure is a good indicator of competitivity and it also shows that the company is well placed in the most promising markets.

Present in 88 countries

Each year, we sell between 30 and 40 installations or new equipment almost everywhere in the world. Since Clextral started, we have been active in 88 countries, and we continue to sell

services every year in around 70 countries. The important place of services in our activity gives us a sound economic foundation because part of the service business is recurrent, whereas sales of new equipment can be very variable as they depend on markets and the economic climate.

Building relationships with clients

Our international development would not have been possible without the creation of numerous offices and subsidiaries abroad. Clients who buy machines or a line of production from us effectively agree to be our partner for the next twenty or thirty years. We need to create relationships with them – especially close ones – if we want them to trust us and agree to risk working with us. Being close to them geographically means that we can provide them with equipment and spare parts quickly and also offer them services, such as making processes reliable, training operating agents, and upgrading machines when the raw materials change or the company decides to change its products, and so on.

Our implantations aboard have also enabled us to benefit from other competitive advantages. For example, when Clextral sells machines to Brazil from Europe, our clients have to pay taxes on the products and these can be as high as 30 %. We set up a factory in Chile where our machines are assembled and because of bilateral treaties which exist between Chile and Brazil, our clients pay less tax when we sell machines to Brazil which were made in Chile.

There is another example with Algeria. Since Algeria does not have a very advanced 'culture of production maintenance', we needed to be on site in order to ensure the correct functioning of the couscous manufacturing lines. Even two years ago in Algeria it was still necessary to have a letter of credit in order to pay a bill worth 1,000 Euros. It was not difficult to buy a manufacturing line worth 1.5 million Euros but it became very tedious when one had to order spare parts. Thanks to our local subsidiary, we can now invoice clients in dinars.

Finally, our geographical proximity and very attractive service offer means that our products are more expensive than those of our rivals.

A pocket-sized multinational

We have been present in the United States since 1983 and since 1995 in China. However, the majority of our expansion in terms of subsidiaries and offices abroad has taken place in the last ten years : in 2002 in Chile, in 2006 in Algeria, in 2008 in Russia and Denmark, in 2009 in Australia and Morocco, in 2012 in Vietnam and Brazil. Clextral has become a 'pocket-sized multinational'. Of Clextral's 275 employees, 227 work in France and 48 abroad.

Communicating in 17 languages

To develop a close relationship with our clients and be able to innovate with them, we cannot be satisfied with just speaking English with them as this does not create enough complicity. In each of our foreign facilities, we have recruited a person who already has a thorough knowledge of the country, who wants to live there, speaks the language, shares its culture and even sometimes its religion. Today Clextral operates in 17 different languages.

A virtuous circle

Innovation and internationalisation strengthen each another because innovation creates added value which allows the company to establish itself abroad, and internationalisation constitutes a new factor of innovation. Raw materials are not the same from one country to another, and clients do not have the same habits. This constantly motivates us to look for new ideas.

When the company was called Creusot-Loire, two people embodied this synergy : Mr. Berger, a wonderful inventor who was obsessed with discovering new application fields, and

Mr. Spriet who, whenever a new process was perfected, was very enthusiastic about selling it throughout the world.

Modernising social relations

The profitability of the company is an important prerequisite for long-lasting innovation and winning international markets. A company which does not make money does not last very long, does not inspire confidence in its clients, bankers and shareholders, and is unable to recruit high-quality employees.

When I became assistant director of Clextral in 1989, the company had a very strong culture in terms of its products, innovation and respect for the client. However, it had also kept the strong trade union culture of a large group. The five trade unions were very competitive and constantly tried to up the stakes to get most employee support.

I set up an economics training session for all the employees, starting with very simple case studies such as a comparison between the budget of a company and that of a household. The aim was that everyone should understand that regardless of size there are important consequences if one spends more than one earns. When I spoke to the works councils, I also suggested that employees think about the reasons why we had become leaders in certain markets and lost others, and how we could improve and become more competitive. Gradually we managed to integrate these economic realities into the training programme, as well as this idea of competitivity added to that of quality which was already well established in the company. At the same time, we implemented a profit-share plan which meant that employees could be paid 15 % of the operating profit, in other words more than 20 % of post-tax profit.

This educational exercise enabled us in the long term to modernise social relations. After a number of years, I managed to make sure that the five trade unions had to agree on a common position before there was talk of negotiations regarding pay.

When the French law on the 35-hour working week came into force, I managed to make the trade unions agree that this reform would not incur any extra costs for the company. Since all our competitors are foreign, they are not subject to the same constraints as us, and any additional costs would have either forced us to increase our prices (which would have harmed our competitivity) or cut our margins (which would have compromised our ability to innovate and invest). I obtained this agreement as a prerequisite to negotiations. Our CGT (Confédération générale du travail) trade union representative got a dressing-down by his departmental delegate but after eighteen months of discussion, we managed to enforce the 35-hour working week in the company without it costing us a penny. The process of going from a 39-hour working week to 37-and-a-half – hour week was financed by spreading the payment of salaries over three years. For the remaining two-and-a-half hours every week, we implemented a break of half-an-hour every day for employees to chat among themselves without this being part of their work time. In the end, our employees are present 37-and-a-half hours every week in the company, and are paid for 35 hours' work.

A strategy shared by the shareholders

Corporate growth also supposes constructing a long-term vision designed by management which is both inspired by clients and supported by shareholders.

Our clients have always been keen to inform us about changes in the markets and have guided us in developing our strategies. Our successive shareholders agreed to these strategies even though this required a great deal of effort from our part in discussing and convincing them. All shareholders are tempted at one time or another to say to you 'Listen, we'll already make a profit this year and then we'll see'. One must be brave enough to answer 'We are a company and as shareholders you must be able to take risks and be patient. In return, we are going to do all we can so that your investment has a return in the long-term which is better than a savings account.'

Constraints on development

In conclusion, let me mention some of the constraints or barriers to development which we have encountered. The first is the overvaluation of the Euro. I remember reading an article in the economic newspaper 'Les Echos' in 2004 which predicted that if the value of one Euro exceeded 1.20 Dollars then the entire European industry would crumble. This is exactly what has happened.

If one wants to encourage innovation then one must allow clients' engineers and suppliers' engineers to discuss with each other. For about the last fifteen years in France, the relationship between these two has become very difficult because of barriers which have been put up by purchasers and lawyers.

In order to be present tomorrow in 150 countries instead of 88, we must develop the company, and internal growth will not be enough. When we were a Framatome subsidiary at the time of the LBO, or even today, the financial means intended for external growth have been too small. The success of medium-sized German companies is for a large part due to their capacity to absorb small and medium-sized enterprises (SMEs).

I am not going to dwell on the fact that the very high level of social security contributions and taxes handicaps French exports, nor on the weight and administrative complexity of public financing. French banks are not adapted to financing projects from export companies of our size, unlike German banks.

Finally, we are finding it very difficult to recruit young workers. Because of bankruptcies linked to the crisis in the car industry, we have managed to hire workers in their mid-forties who are very well trained, but it is very difficult, even if we offer training, to find young people who are both motivated and competent. Without quality workers, our country will find it hard to get industry back on its feet.

DISCUSSION

Production sites

Question : *Where are your production sites ?*

Georges Jobard : The Firminy site only produces the key parts of the machines. Contractors, half of whom are in the Rhône-Alpes region, produce the rest. We also have a production site in Denmark to repair the large screws for machines used in fish food manufacture. We have an assembly and boiler-making site in Chile for the assembly of machines intended for the Latin American market.

Recruitment

Q. : *How did you manage to attract 80 engineers to Firminy ?*

G. J. : The company has a good image and students studying at universities specialising in the food industry, the paper industry or thermal studies have often heard of our equipment. We have sold about 200 machines to laboratories including about 50 in France. Clextral combines the advantages of a global company (which makes it possible to see the world change in front of one's eyes) with the opportunities of small company (where it is possible to climb the job ladder very quickly). The person in charge of the Chile subsidiary has a degree (which he obtained two-years after the baccalaureate). He began as an automation engineer and then worked for a while in the United States before being appointed to his current job in Chile.

Q. : *People say that in France, because of the excellent engineering and technical training available, workers do not get offered sufficiently attractive careers. Is that the case at Clextral ?*

G. J. : I do not think that the careers offered by the company are the reason. The problem comes from the image which young people have of themselves. They often say 'the reason I am a blue-collar worker is because I was a bad student at school.' They are not very proud of having passed their CAP (certificate of professional competence) or their BEP (technical school certificate), or having been hired by the company. If a person does not have a good self-image and does not want to really enjoy his job, one cannot do it for him. The difference in pay between a motivated employee who feels comfortable about himself, is creative, pleasant with his clients and colleagues and rapidly becomes an 'intrapreneur' (a process which we refer to in-house as 'clextralising'), and an employee who does not seem to be very implicated in his work, may be as much as 10 or 15 %, and the productivity ratio may be one to three, or even one to ten. Quite early on, we have to face reality and fire him…

Q. : *Does this difficulty prompt you to turn towards automated forms of production ?*

G. J. : We have not cut corners on the quality of our investments and we have extremely high-quality machines which help us manufacture with very competitive costs. The percentage of salaries in our total product costs is negligible, therefore there is no reason to change our strategy. We are happy to manufacture in France with a quality network of sub-contractors, and we are continuing our training policy.

The shareholders

Q. : *Did the employees remain shareholders after the company was bought by Legris Industries ?*

G. J. : The Legris Industries group wanted the managers to remain at the helm of the company and for this to be the case, they asked us to reinvest temporarily with them. However, the employees did not remain shareholders. The period from 2001 to 2007, when I opened each annual employees' meeting with the words 'Dear shareholders', was marked by

great cultural progress in the company. Nevertheless, we maintained the profit-share plan which was one of the bases behind our strong social cohesion.

Q. : *What will happen if Legris Industries decides to sell Clextral ?*

G. J. : This is not Legris Industries' intention. In any case, Clextral was already put up for sale twice in the past, and each time it was our team of managers who chose the buyer. One does not buy an SME against the wishes of one's management board. When a potential buyer sees that the entire board refuses to co-operate with him, he does not keep trying unless he finds someone in the team who is ready to do anything in exchange for a big cheque. However, when the managers have a certain set of ethics, in other words when they believe that the industry has a long-term perspective, that they have the respect of both their clients and employees, and that their team is united, the shareholders can choose to share the company's strategy and support it, or forget about their shares.

My experience from our successive shareholders has taught me to stand up to any form of 'short-term tyranny'. Even when I was an executive at Framatome at the end of the 1990s, we were being told that we had to create 'shareholder value' more quickly. Nothing was easier : we just had to decrease the innovation effort. It was the quickest way to improve results of course, but ten years later the results would have been very poor. Luckily, there were a few of us who refused to go through with this method.

In the light of Clextral's story, we understood that our future depended less on the shareholders who could leave when they wanted than on the pertinence of our strategy. The solution therefore was to listen to the clients and make our employees work for their best interests.

Competition

Q. : *Who are your competitors ?*

G. J. : In the field of plastic extrusion which is relatively standardised, we have some very serious rivals notably the Germans. On the other hand, in the food industry where the machines have to be adjusted differently for each procedure and each client, we do not have many competitors. Our closest rival is a Swiss-German company which is a great deal bigger than Clextral and is the world leader in grinders and has evolved into cereal processing.

Q. : *Is competition centred more on prices or innovation ?*

G. J. : We do not allow ourselves to undercut prices because this would be catastrophic for the market. We believe strongly in quality, innovation and service. In our field, when a machine does not work it is very detrimental to a client because production lines are designed to work continuously for years. Some of our competitors have suffered a great deal because they are not able to offer sufficient reliability. We are also very enthusiastic about innovation. One of our clients came to us when his usual supplier failed to find a solution to his problem. Working for several types of industries is an asset for us. Sometimes we have had to use talents developed in the plastics field for applications in the food industry. We are the only ones to have developed such expertise which can be used in different fields.

Q. : *Do you have competitors in China ?*

G. J. : One of our competitors took part in a joint venture in China. However, after a few years, his Chinese partner pulled out. This created a new competitor for us. I have often been approached by the Chinese but I have never managed to come to an agreement with them. In general, they explain that they want to keep the Chinese market for themselves, and that we can have the rest of the world, that we can provide them with the key pieces for their machines, and that if they are too expensive, they would have the right to copy them. I would prefer to abandon this market which, in any case, is quite small in view of the Chinese food culture.

Q. : *Why then do you keep an office in Shanghai ?*

G. J. : We intended to sell paper pulp factories and we had to hire a Chinese person to carry out the negotiations. Thanks to him, we won two big contracts. Then our clients used these two factories to copy them and build a third one. We kept our employee and we instructed him to visit Chinese electricians and explain to them that all French nuclear power stations are equipped with Clextral security equipment. This enabled us to gain nearly 80 % of this market in China.

Competitive clusters

Q. : *What are the advantages of competitive clusters for you ?*

G. J. : We have not yet seen their impact in terms of turnover (with the exception of the sale of a few laboratory machines). However, the clusters have enabled us to get our R&D projects certified and to obtain subsidies from the FUI (Fonds unique interministériel : French Interministerial Fund). We work for example with Limagrain and the National Institute for agronomical research into the selection of cereals, and we can produce cornflakes with a reduced amount of water while maintaining superior crispness and taste. Another project involves the replacement of glass fibre with flax in certain plastic products, with similar mechanical characteristics, less energy consumption and the possibility of combining flax fibres with bio-sourced plastics.

I greatly appreciate finding practices in competitivity clusters which existed when I started my career and which have disappeared in France : these practices include allowing engineers from different companies to discuss among themselves without buyers and lawyers getting in their way and hindering co-operation.

Q. : *Some SMEs find it difficult to develop efficient networks in competitivity clusters whereas large groups generally manage to achieve this. What is your secret ?*

G. J. : The main barrier to enter these competitivity clusters is that one is not sufficiently familiar with the culture and behaviour of large groups. Undoubtedly, the fact that we are used to working with world market leaders has helped us in this respect. It is sometimes very difficult for the head of an SME to understand the language of a large group or that of a university professor. I was trained at Framatome, Jean-Marie Bouvier is a university professor and we jointly manage an SME. Between the two of us, we speak three languages. In France, working in silos is commonplace. People should cross over from one universe to another more often.

An atypical career path

Q. : *Why did you choose to manage an SME having started in a large group ?*

G. J. : I graduated in engineering from the École nationale supérieur de l'aéronautique et de l'espace (SUPAERO, the French national school of aeronautics and space) and I began my career working on the electronic controls of the Concorde. Between the end of the Concorde project and before I started working for Airbus, I was not sure what I wanted to do next. Since I come from the *département* of Saône-et-Loire, I joined Framatome (which had its factory in this *département*). I greatly appreciated the pioneering character of this company which sold nuclear power stations before even constructing the factories which manufactured their components. After a few years, the nuclear industry slowed down and Framatome asked its engineers if they wanted to work in the industrial equipment division which had been part of Creusot-Loire. This is how I arrived at Firminy. I realised that I loved working in an SME where one has a global vision of the world and the company, and pushing a button actually produces an effect ! Furthermore, one has to constantly meet challenges and be able to motivate people in order to let them take part in the company's larger project. Therefore, at

the age of 40, I discovered the profession which really interested me – being an entrepreneur in an SME – and I have remained there ever since.

Presentation of the speaker :

Georges Jobard : engineering graduate of SUPAERO. He has managed Clextral since 1993 having had an industrial career in the nuclear industry. He was a foreign trade advisor and then vice-president of the Fédération des Industries Mécaniques (Federation of Mechanical Engineering Industries). He has presided over the Industry Innovation Fund (Fonds pour l'innovation dans l'industrie : F2I) since 2010.

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