



INDUSTRY CAN DO IT

2020
ANNUAL AND
CSR REPORT
#2019 Financial year



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Fives in 2019

A industrial engineering group, Fives designs and manufactures machines, process equipment and production lines for the world's largest manufacturers.

EXPERTISE

SERVING MANY MARKETS

STEEL AERONAUTICS ALUMINIUM
AUTOMOTIVE ENERGY CEMENT & MINERALS
CHEMISTRY & PETROCHEMISTRY
LOGISTICS OIL & GAS SUGAR GLASS [...]

KEY FIGURES

€**1,999**^M
of sales



€**1,841**^M
of order intake



More than **8,400**
employees
in nearly 30 countries



€**120**^M
of EBITDA



€**33,6**^M
of R&D investments

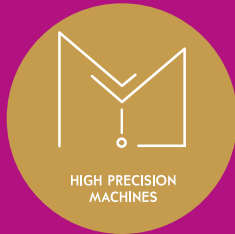


1,952 patents
in force in 609 families

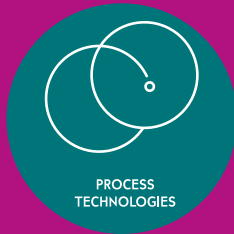


expertise in three major Activities and transversal competencies

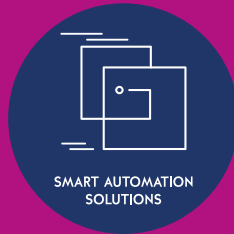
Order intake by Activity



19%



41%



32%

OTHERS

8%

FIVES IN THE WORLD

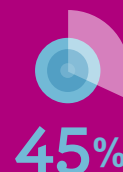


An international presence, close as possible to manufacturers

A diversified **ORDER INTAKE** portfolio:



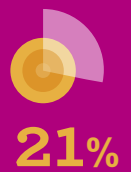
AMERICAS



EUROPE



AFRICA
MIDDLE EAST



ASIA
OCEANIA



MORE THAN 100
locations in 30 countries

Research and testing center in **7** countries



Employees of **65** different nationalities

Evolving for a changing world

“



In 2019, as a result of the Group's reorganization around three major activities, we became a more agile organization. Our improved financial results demonstrate the effectiveness of the measures taken in 2018 to pursue sustainable and profitable growth.

The dynamic pace of our innovations, particularly towards digital and environmental efficiency, along with developing the Group's talent, enables us to continue to prepare for the future in an increasingly complex and unpredictable environment; the COVID-19 crisis was a reminder of this.”

Frédéric SANCHEZ

Chairman and Chief Executive Officer, Fives

CHAIRMAN & CEO'S MESSAGE

Frédéric SANCHEZ

Fives played its cards right in 2019, in a complex and uncertain world.

The Group reorganized its businesses into three major Activities : High Precision Machines, covering our entire machine tool portfolio, focused on precision; Smart Automation Solutions, where speed, flow management and automation are critical; and Process Technologies, the Group's historic business, serving major raw material processing industries with one constant priority, sustainability. These primary businesses are supported by transversal expertise, specifically helping us to accelerate the digital development of the Group's subsidiaries, as well as their service-related activities.

The reorganization promoted our ability to perform in a more agile manner to responsively address the dynamically changing markets we serve. In conjunction, we have accelerated our transformation and continued the efforts implemented in 2018, restoring sustainable growth, enhancing control of operating margins and reducing structural costs. These initiatives are reflected in our year-end results. We recorded approximately €1.9 billion in well-rounded orders with significantly improved margins vs. 2018. Our profitability, compared to 2018's gross operating profits, reflects an increase of more than 6%.

2019 was also characterized by the adoption of a new sense of purpose,, Faire aimer l'industrie, and its associated brand signature, Industry can do it. Both completely define our organization and provide a path for the future.

In 2020, the world demonstrated its unpredictability once again, and the COVID-19 epidemic rapidly became a global pandemic; one of the most significant health and financial crises of our time. This unprecedented situation requires caution and humility.

Since the beginning of the crisis, our first priority has been keeping our internal and external stakeholders safe; a mindset that remains our perspective. In coordination with the Group's

Senior Executive Committee, we are closely monitoring the operational and commercial conditions of all our subsidiaries, supporting the implementation of the best available options, ensuring business continuity for our customers and mitigating the financial impact of the crisis; all while adhering to the most stringent health and safety standards.

It's still too early to measure the actual impact of COVID-19 on Fives overall. However, the scope of the crisis will likely affect major global trends. I am completely convinced that Fives has the assets and resilience to overcome this situation and embrace these changes. Developments we implemented a few years ago within the Group, including digitizing our work practices and offer, will become even more worthwhile. We will also see opportunities emerge which Fives will be able to capture, i.e.: logistics and e-commerce.

There will be greater awareness of the impact mankind has on the planet and its consequences on health. Fives' commitment to reduce its environmental footprint and that of its customers will become a greater asset for differentiating ourselves. Finally, we rely on our expertise, - the Group's men and women - who will shape the Fives of the future.

Industry can do it, I am confident of that, and it can learn from this crisis, if we continue to work together in a collaborative and responsible way.

2019 RESULTS

buoyant commercial activity in an erratic market

In a global economic environment that is more volatile than ever before, the Group's commercial activity in 2019 followed several trend reversals.

Following on from a positive year in 2018 and based on economic growth forecasts which were still, high the first months were very promising. The Group recorded a strong order increase for equipment and small systems, specifically in the Smart Automation Solutions activity, and in the Steel and Energy segments of the Process Technologies activity.

The summer marked an end to this period, in the wake of trade and geopolitical tensions and the growing hesitation in the financial markets. This situation reflected in the PMI (Purchasing Managers Index) manufacturing index, which, globally, reached

its lowest level in over six years. In this context, orders placed with the Group slowed significantly, while clients postponed many decisions regarding capacity investments.

Positive developments in trade negotiations between the United States and China, Brexit agreements, and the return to accommodative monetary policies finally offered a few rays of sunshine at the end of the year, reviving business momentum.

In this economic environment, that was both less well-oriented than 2018 and particularly erratic, the order intake for 2019 was €1,841 million. While orders were down from 2018 (€2,003 million), due to the decrease in large projects, they nonetheless broke records in equipment, small systems and services.

Order intake (€ millions)

	2017	2018	2019
Smart Automation Solutions	555.7	623.4	581.3
High Precision Machines	406.5	423.7	352.0
Process Technologies	968.6	838.7	761.4
Transversal activities and other activities	186.2	117.0	146.0
Total	2,117.0	2,002.8	1,840.7

Growth in sales driven by the Smart Automation Solutions activity

In 2019, the Group reached sales of nearly €2 billion, a record high. This performance stems from the continued growth of the Smart Automation Solutions activity, whose underlying markets,

(including e-commerce and distribution) are highly favorable, supporting the demand for high-speed sorting centers and automated platforms in Europe, the US and Japan. The sales for the Group's other activities remained stable when compared with 2018.

Sales (€ millions)

	2018	2019
Smart Automation Solutions	530.2	582.7
High Precision Machines	417.7	414.1
Process Technologies	850.1	859.5
Transversal activities and other activities	152.5	142.6
Total	1,950.5	1,998.9

Rebound in operational profitability

In 2019, the Group achieved an EBITDA of €120 million, i.e. 6% of sales, increasing significantly vs. 2018. The improved profitability (+ 1.2 points) reflects two things: on the one hand, healthy margins, as a result of strengthening key operational processes after the 2018 fiscal year which was marred by various execution issues (the first in over twenty years); and, on the other hand, reduced overheads, following cost-reduction actions in the divisions where the business outlook is less favorable (notably the automotive, aerospace and aluminium sectors).

A solid and profitable order book to start 2020

The Group ended 2019 with an order book totaling over €1.4 billion. While not as full as the previous fiscal year, this order book has a higher margin rate owing to the improved execution of ongoing projects (Compared to the beginning of 2019, some orders whose margins were degraded in 2018 remained) and also a more favorable mix (fewer large orders with lower margins).

Additionally, the decrease in the order book is concentrated in the Process Technologies and High Precision Machines activities, whose break-even points have been lowered through company cost-reduction actions since the end of 2017.

Closing order book (€ millions)

	31.12.17	31.12.18	31.12.19
Smart Automation Solutions	397.5	499.7	504.7
High Precision Machines	235.2	246.2	190.3
Process Technologies	715.9	706.2	611.9
Transversal activities and other activities	128.0	91.7	95.2
Total	1,476.6	1,543.8	1,402.1

Coronavirus crisis

2020 started with the COVID-19 pandemic, initially, China, then above all in Europe and in almost all of the other countries where the Group operates. In this situation, Fives adopted stringent measures to protect the health and safety of its employees and, moreover, its various other stakeholders. A specific organization was introduced to guarantee business continuity and continue to serve our customers as much as possible.

While it remains too early to assess the consequences of the crisis on the Group's business in the short-term, past market trends should be confirmed in the medium term. Some segments, including aerospace (served by the High Precision Machines activity) and aluminium (served by the Process Technologies activity) are likely to remain affected for the foreseeable future. Conversely, the Smart Automation Solutions activity, driven by the underlying e-commerce and distribution segments (automated logistics platforms), has great growth prospects, strengthened by pandemic-related constraints.

The health crisis could also accelerate underlying market trends that have been present for the past several years (regionalized globalization, digitization of production processes, systematic integration of societal and environmental dimensions in investment choices, etc.). To a great extent, Fives anticipated these trends in its strategic, innovation and organizational choices, thereby strengthening its resilience and medium/long-term growth potential.

GOVERNANCE & ORGANIZATION

Becoming more agile

At the end of 2018, Fives chose to modify its governance and management structure to become more agile and to be able to respond rapidly to the complexity of its dynamically changing markets.

The high standard of governance is connected to all of the Group's business lines, and positively supports Fives' transformation.

The pillars of governance at Fives

Decentralization
Synergy
Trust
Flexibility
Pragmatism
Ethics
Control
Customer adaptation

Having become a simplified joint-stock company (SAS) in December 2018, Fives reinforced its governing body:

The Group is still managed by its Chairman and Chief Executive Officer, Frédéric Sanchez, who relies on a Deputy Chief Executive Officer, Martin Duverne, and is overseen by a Supervisory Committee, including members from outside the Group.

The Chairman and the Deputy Chief Executive Officer are assisted with decision-making by operational bodies, including the Senior Executive Committee. In terms of organization, the latter is supported by an Executive Committee and Local Coordination and Steering Committees.

SUPERVISORY COMMITTEE

With members from outside the Group, meetings are held several times during the year, with responsibility for overseeing Fives' management. The range of experience, skills and personalities makes this a major asset for discussing the challenges, industrial prospects and for assessing the Group's development.

In 2019, the Supervisory Committee met four times.

Members as of December 31, 2019:

Chairman: Philippe Reichstul

- François Dufresne
- Dominique Gaillard
- Pierre Heinrichs (Replaced by Alain Cianchini, in January 2020)
- Heyoung H Lee Bouygues
- Jean-Georges Malcor
- Antonio Marcegaglia
- Laurence Parisot
- Jean-Dominique Sénard

SENIOR EXECUTIVE COMMITTEE

This management body answers to both the Chairman and Chief Executive of Fives, meeting regularly to define the Group's cross-functional priorities and policies.

The Senior Executive Committee manages talent and their development, responding to cross-functional operations and organizational questions, making required budgetary decisions. It also manages unforeseen events that may potentially have a material impact on the life of the Group, as well as a crisis or emergencies. Its members are part of the Executive Committee.

In 2019, the Senior Executive Committee met nine times.

- Frédéric Sanchez, Chairman and Chief Executive Officer
- Martin Duverne, Deputy Chief Executive Officer
- Denis Mercier, Deputy General Manager of Fives
- Suresh Abye, Finance Director
- Raphaël Constantin, Deputy General Manager, President of the High Precision Machines Division
- Alain Cordonnier, Deputy General Manager, President of the Cement & Minerals Division
- Guillaume Mehlman, Deputy General Manager, President of the Steel & Glass Division
- Céline Morcrette, Human Resources Director
- Luigi Russo, Deputy General Manager, President of the Smart Automation Solutions Division
- Frédéric Thrum, Deputy General Manager, President of the Energy Division
- Michelle Shan, Country Director - China

THE EXECUTIVE COMMITTEE

The Executive Committee is primarily in charge of ensuring the implementation of decisions made by the Senior Executive Committee and reviewing the relevance and effectiveness of cross-functional policies based on feedback. It is a place for dialogue, information exchange, and sharing experiences for its members, dedicated to reinforcing the cross-functional influence of the Group's actions. In 2019, the Executive Committee met three times.

From left to right:

- Frédéric Sanchez, Chairman and Chief Executive Officer
- Martin Duverne, Deputy Chief Executive Officer
- Denis Mercier, Deputy General Manager of Fives
- Suresh Abye, Finance Director
- Hervé Boillot, Mergers & Acquisitions Director
- Daniel Brunelli-Brondex, Country Director - India

- Jean-Marie Caroff, Director of International Development
- Raphaël Constantin, Deputy General Manager, President of the High Precision Machines Division
- Alain Cordonnier, Deputy General Manager, President of the Cement & Minerals Division
- Sébastien Gauguier, President of the Aluminum Division
- Arnaud Lecœur, Group General Counsel
- Guillaume Mehlmán, Deputy General Manager, President of the Steel & Glass Division
- Céline Morcrette, Human Resources Director
- Frédéric Renaud, Country Director - Italy
- Luigi Russo, Deputy General Manager, President of the Smart Automation Solutions Division
- Frédéric Thrum, Deputy General Manager, President of the Energy Division
- Michelle Shan, Country Director - China
- Thierry Valot, Innovation & Digital Director



COUNTRY COORDINATION AND STEERING COMMITTEES

These geographic-based committees ensure the implementation of cross-functional policies adopted by the Senior Executive Committee, adapt them as necessary to the needs of each country, and encourage synergies between subsidiaries within the same country but belonging to different Divisions.

MANAGING RISK

“



In 2019, the Group created an Internal Audit Department, reporting directly to the Audit Committee, which in turn is overseen by the Group Supervisory Committee. This dedicated team is able to take action worldwide, helping subsidiaries to manage risks and ensuring compliance with Group Directives.

”

Florent PRIME
Head of Internal Control

RECONCILING ENTREPRENEURSHIP AND RISK MANAGEMENT

Over several years, Fives has expanded its area of influence with its challenges, adapting accordingly in an increasingly complex world. Since 2004 the Group has established directives, defining understandable guidelines for all stakeholders (employees, clients, suppliers, investors, etc.). The guidelines reflect the Group's willingness to ensure seamless contractual fulfillment, while anticipating opportunities and risks; making customer care and attentive service a fundamental part of all its actions.

The Directives cover topics ranging from intellectual property and CSR, to customer risks, taxation linked to contracts, HR, travel safety, visual identity and information systems. They are critical to the proper development and success of the Group as both a risk control

and management tool; core aspects of the Fives' internal control system.

The objective of the Internal Control Department is primarily to help the Divisions and Subsidiaries improve risk management. It also serves to adapt the Directives to changes in the organization of Fives and the markets it serves. Lastly, Internal Control's role is to support the subsidiaries and divisions with their annual self-assessment. Better anticipation, improved information sharing, learning, awareness, training, understanding responsibilities and risks are key to move forward together.

HIGHLIGHTS



A new risk mapping

In order to ensure better awareness, Fives has defined eight risk categories based on their nature and criticality (in terms of probability and impact), such as Group governance & organization, project & operations management or personal and environmental safety and security.



A stronger internal control team

In 2019, the risk control system - previously strengthened in 2018 with the creation of an Internal Control Department - was reinforced with a field team dedicated to internal audits, performing internal audit engagements at subsidiaries' sites.



“Quotation” challenge

The Internal Audit team focused on a key process for all Group subsidiaries: Quoting commercial offers, the key to generating value and a foundation for cost control. In total, 21 best practices were identified, including 8 that were considered undeniably essential and subject to a global action plan.



Supporting business transformation

Fives Intralogistics Corp. is seeking to develop its EPC (Turn-key projects) activities, requiring strengthening specific skills (Project management, engineering, sub-contractors on-site management etc.). The Internal Audit team has helped the subsidiary to identify the main risk areas and define an action plan.

INNOVATION & DIGITAL



Digital affects all markets, ramps-up development, paves the way for new business models and shifts the balance of traditional value chains.



Thierry VALOT
Innovation & Digital Director

INNOVATING QUICKER, CHEAPER AND CLOSER TO THE MARKET

The current 4th industrial revolution is related to the internet of things, and therefore the connected factory.

In light of the hyper-connection of industrial robots and equipment, warehouses and production sites, Fives' innovation efforts are pursuing four objectives, with the aim to widely deploy the industry of the future and smart factories amongst its clients:

- Improve the productivity of equipment already in service and new equipment
- Improve the user experience and offer value-added services
- Address quality issues, particularly in cutting-edge sectors such as aeronautics
- Skillfully combine machine capacities and human skills.

KEY FIGURES

€ 33.6 MILLION
in R&D investments



30 R&D
and test centers



1,952 PATENTS
in 609 families, including
46 filed in 2019



FOCUS

QUESTIONS FOR THIERRY VALOT, INNOVATION & DIGITAL DIRECTOR

What is Fives' position regarding the industry of the future?

The Group's major asset is that we can combine digital and process expertise due to our ability to draw on data developed by our subsidiary Fives CortX. Supervision tools, digital twins and predictive algorithms are just a few of the resources which enable Fives to further enhance its capacity in developing the most advanced equipment that meet the changing needs of manufacturers, and to provide additional preventive maintenance services. At Group level, we offer over 160 digital solutions, including augmented machines, services (simulator training, remote optimization, preventive maintenance), equipment design (sizing and calculation tools) and a customer portal.

Is Fives' R&D comprised solely on developing new industrial equipment? ?

We could say the driving principle of Fives innovation is to push the boundaries of production tools and models. Innovation at Fives is not measured solely on the launch of new equipment. It also includes the teams' ability to incorporate new production constraints or new products.

What are the Group's activities in composite materials?

Composite materials are instinctively strong, yet lightweight; preferred by the aeronautics industry, as well as other sectors, including renewable energies and biomedical. There are significant development projections for the use of these new materials. Fives supports manufacturers to increase the productivity of their composite part production systems by including in-process inspection and other operations, including drilling and assembly. We have formed partnerships with leading institutions in this field, including IRT Jules Verne in France, and the CNRC in Canada.



HIGHLIGHTS



A Digital Committee to coordinate the Group's digital acceleration

Fives has created a Digital Committee comprised of its "digital experts". Its mission is to support the Divisions' digital strategy, particularly through the development of a roadmap, covering both IT tools and the development of innovative solutions, focusing specifically on cybersecurity.



Fives Connect, to improve the user experience in industry

Fives is working with Visiativ Software as part of a joint venture to launch Fives Connect, a customer services platform. Fives Connect is part of the Fives global digital services offer, and includes Fives CortX predictive maintenance and performance tracking solutions.

[Find out more](#)

HIGHLIGHTS



Cybersecurity is at the heart of Fives' data strategy

Fives has developed a connection kit, "Gateway", to connect industrial equipment in an ultra-secure manner. It was adapted for a large number of industrial configurations and facilitates the deployment of predictive maintenance and performance tracking solutions offered by Fives subsidiaries.

[Find out more](#)



Deploying virtual environments for enhanced training

Fives ECL has implemented a simulator for training employees on handling bridges in electrolytic cells. Similar to a flight for aircraft pilots, this tool allows aluminum industry operators to train and practice 100 operational processes.



Grinding cycle times reduced by 30%

Fives has worked in partnership with a car manufacturer to develop an AI-based solution, which helps reduce the camshaft grinding cycle time by 30%. This allows the manufacturer to increase production speeds without investing in a new technology.

[Find out more](#)

FOCUS

USING DIGITAL FOR OPTIMIZING SERVICES OFFERED TO ENERGY COMPANIES

In 2019, Fives was involved in a variety of projects, including smart glasses to improve collaboration between its international teams, guide operational workers on-site, reduce the response time at customers' sites and expedite the setup of delivered equipment. The system is linked to a smartphone application and is currently being tested.

Alongside this project, Fives is working on the connectivity of brazed aluminum exchangers. In the United States, this equipment is used to continually adapt production for market requirements and requires continuous visibility of the thermo-mechanical constraints for maximizing its life span. In 2019, the Group developed and tested data collection and a processing system using smart sensors. Customers can now see production data on dashboards in real time, including temperature variations and exchanger distortion, monitoring their compliance.

Over time, this solution will include artificial intelligence to anticipate failures and offer an associated predictive maintenance service.



FRENCH LEADER OF METAL 3D PRINTING

A global leader, founded in France, in metal 3D printing

Over the course of the industrial revolutions, Fives has developed its technologies to meet the needs of manufacturers for the overall performance of production tools. With 3D printing, the Group offers a process technology that pushes the boundaries of design and manufacturing, providing numerous assets for the industry of the future.

Through AddUp - its joint venture with Michelin - Fives is now the French leader in 3D metal printing. The company offers holistic metal additive manufacturing solutions, to suit every client's needs, business sector, experience or the volume of parts to be produced.

In 2019, AddUp made its offer even more competitive, acquiring BeAM and Poly-Shape in 2018.

- The design of metal 3D printing machines with 2 additional technologies (DED and PBF) representing 85% of the market.

- Series component production, rapid prototyping and post-processing
- Modular and mobile workshop solutions for machine installation in any environment.
- Training and consulting services, supporting a customer's product development, including design optimization of parts through proof-of-concept (POC) and small volumes.
- Applications: Manufacturing precision parts, part repair, adding functionalities; innovations with a high added value...

AddUp has developed strong alliances with key organizations via joint ventures and partnerships, improving market accessibility:

- PRINTSKY, dedicated to aeronautics and space (joint venture with the research firm Sogclair);
- ADDILYS, dedicated to the tooling industry (joint venture with the technical center IPC);
- The FAMERGIE platform, dedicated to companies in the energy sector, in partnership with the CEA

FOCUS

TRAINING FOR HIGHER IMPACT

What are the assets of 3D metal printing? How can we get the most out of it? In 2019, AddUp launched a training offer, creating an appealing and easily accessible 3D metal offer for its targeted audience, engineering.

AddUp Academy Online, an e-learning platform, offers training covering all 3D technologies, with a significant focus on metal. Dassault Systèmes has selected AddUp to create courses dedicated to metal additive manufacturing as part of its new online "Learning Experience" training platform.

In addition to this training, AddUp has created innovative materials to support its clients: a video game « AddUp Adventure" and a serious game "Additive Architect", allowing several teams to interact on the subject of 3D design.

Finally, to allow visits to its Clermont-Ferrand workshops as well as some client sites, AddUp offers unique and fully immersive tours using virtual reality, providing individuals the ability to explore rarely open facilities.

[Find out more](#)



KEY FIGURES



An **Alliance** of three
three French companies:
AddUp, BeAM and Poly-Shape



Over **380** employees



With presence in
Europe, the **United States**,
Japan, **Canada** and **Singapore**



2 technologies

LBM (laser beam melting) and
DED (directed energy deposition)



Workshops located in France in **Clermont-Ferrand** (63), **Strasbourg** (67),
Salon-de-Provence (13), **Saint-Pierre-du-Perray** (91), in **Carpi**, Italy

HIGHLIGHTS



The launch of the first automated workshop concept at FormNext

AddUp has an industrial mindset. Its engineers have invented a solution to transition into mass production. This innovation is being developed as part of the Aéroprint project with Dassault Aviation.



A unique integrated, modular and mobile plant concept

AddUp has worked with CESI and the start-up Capsa, offering a range of modular and flexible solutions for installing turn-key 3D metal printing workshops in a short time frame; both internally and externally, outside adhering to stringent safety standards.



“La Mallette”, an offer for the luxury sector

AddUp and its partner DECAYEUX STI, a specialist in metal transformation and finishing, have created a collection of unique items specifically to illustrate the possibilities offered by metal additive manufacturing in the luxury industry, and to demonstrate their industrial feasibility.

TALENT MANAGEMENT



Fives is expanding and reorganizing. The role of human resources is to help management teams transform the organization, while continuing to develop employees' skills and attract new talent. The digitalization of HR tools and processes is a great support.



Céline MORCLETTE

Directrice des Ressources Humaines

BECOMING MORE ATTRACTIVE TO CANDIDATES

In 2019, the Group continued to recruit proactively. Anticipating its use and providing an attractive showcase for talent who wants to join Fives, the Group consolidated its digital ecosystem: consolidating partnerships with job search sites, a new LinkedIn strategy, and new processes to monitor and animate on-line feedback.

- consolidation of partnerships with job search sites,
- new strategy on LinkedIn,
- new process for monitoring and facilitating online reviews and comments.

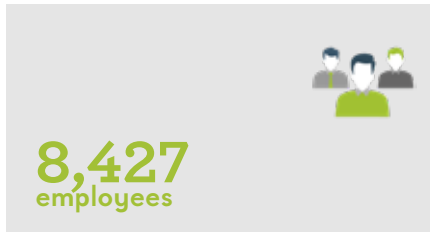
FOCUS

CAREER MANAGEMENT AT THE HEART OF FIVES' HR STRATEGY

Providing employees with the opportunity to extend their skill set, and benefit from the internal mobility system at Fives, continued to be one of HR's primary initiatives for 2019. Year after year, the Group tracks an increased number of employees through CEDRE, a career management tool bringing together HR and managers. It evaluates the performance and potential of each employee and determines an action plan, supporting their development within the company. CEDRE engages discussion on the desires and development potential of employees at all Group companies, and improves its ability to develop its employees and their expertise or managerial capabilities, consolidating its talent pool. In 2019, the Group sought to go further, adding career path definition to the system. Progress continued throughout the year, including the definition of associated training courses.



KEY FIGURES



HIGHLIGHTS



Reinforcing the e-learning offer

Fives is adapting its training offer, reflecting changes in its business lines, including additive manufacturing, management, the development of collaborative tools, and predictive maintenance. The Group now offers an effective online training catalog, that is diverse and provides a variety of digital platforms.



Becoming a Fives “partner”

In 2019, the subsidiary Fives Nordon recognized 24 employees for their skills and expertise. They have joined the Fives Nordon partner community, aiming to extend each year. This partnership scheme is an excellent means to employee retention and to the transfer of knowledge.

[Find out more](#)

Delivering solutions to meet our customers' needs



Our business is organized into three major Activities and transversal skills. This allows us to offer effective and sustainable solutions. In 2019, while a decline in orders linked to major projects occurred, we received a record number of orders for equipment, small systems and services.



Martin DUVERNE

Deputy Chief Executive Officer

In 2019, Fives' organization was simplified, boosting synergies between different Group entities and offering increasingly comprehensive solutions to manufacturers.



HIGH PRECISION
MACHINES



PROCESS
TECHNOLOGIES



SMART AUTOMATION
SOLUTIONS

The Group's businesses are now presented as three major Activities:

- **'High Precision Machines for Advanced Manufacturing'**, covering skills focused on precision, including the entire machine tool offer;
- **'High Performance and Sustainable Technologies for Process Industries'**, serving raw material transformation industries;
- **'Smart Automation Solutions for E-commerce, Courier, Distribution and Manufacturing'**, focused on speed and flow management.

Transversal activities, covering essential skills support these three major activities, escalating the digital development of the Group's Subsidiaries, as well as their service activities.



HIGH PRECISION MACHINES



The High Precision Machines Division is a consolidation of Fives' complete machine tool offering. This regrouping allows us to implement synergies and offer our customers global solutions, especially in the area of high-performance machining.



Raphaël CONSTANTIN

Deputy General Manager,
President of the High Precision Machines Division

With more than 150 years of expertise, Fives' High Precision Machines Division combines its entire range of machine tools with leading legacy names: Landis, Cincinnati, Giddings&Lewis, Liné Machines, Forest-Liné, Gardner, Giustina, Daisho, to name a few. The Division includes approximately 2,000 specialists and 20 industrial locations in more than 12 countries.

In 2019, the High Precision Machines Division was established and implemented synergies for purchasing, production, services and innovation. Through these synergies, Fives can maintain a resilient and flexible business in a dynamically changing market.

The Group's diversification, initiated a few years ago, is developing with the first order bookings in renewable energy (wind power), electric vehicle and defense sectors. With being less dependent on the internal combustion engine market, the Division has been able to maintain its performance.

Finally, the new organization and development of the High Precision Machines service offer, particularly the establishment of new workshops in China, Mexico and Europe, enables the Division to provide its customers local refurbishment solutions to better support them in their quest for performance and optimization.

HIGHLIGHTS



Fives supports the rapidly-growing Space Industry

In the field of rocket engine nozzle machining, Space X purchased a Giddings & Lewis Vertical Turning Center 1,600mm to machine Copper Booster Nozzles for the Dragon Rocket Boosters, and Aerojet/Rocketdyne purchased two Horizontal Boring Mills, supporting their next generation Space Launch Systems for space shuttle engines.



Landis technologies support crankshaft production for Mercedes-Benz AG

Fives secured an order from Mercedes-Benz AG, upgrading nine existing grinding machines and supplying six new Landis LT2e grinding machines for crankshaft production. In this manner, the Group is supporting the car manufacturer in the evolution of their engine technologies, while allowing them to anticipate the diversification of their production.

[Find out more](#)



Fives supports Nexter for the production of chassis parts

Nexter (KNDS Group), a leader in European land defense, ordered an automated production cell from Fives comprised of four Forest-Line V-Star machines for high-speed machining of basic vehicle chassis parts. The project includes a commitment from Fives on part cycle times.

[Find out more](#)



Liné Machines Robotic Systems selected for automating helicopter production

Bell Helicopter has ordered a Liné Machines milling machine, equipping one of its plants in Texas (USA) for blade production. This major investment followed the sale of a Liné Machines Automated Cell to Airbus Helicopter as part of a process modernization project, increasing production at its brand-new facility in Dugny (France).



Fives joins Ferrari's chain of excellence

Ferrari has awarded Fives a contract to equip its historic plant in Maranello, Italy. A Rapidcharge® M Elite 9-process fluid filling machine was delivered in early 2020 to produce both the Ferrari "V12 engine" vehicle and a new hybrid vehicle, creating more space on the assembly line.

[Find out more](#)



Innovation: Fives launches a new high-performance PcBN cutting tool

The CITCO CiBN™ 577a is the next generation solution for continuous to moderately interrupted cuts in bearing steels. It provides both excellent robustness and wear resistance, while increasing tool life, machining speeds and production, including improving wear predictability.

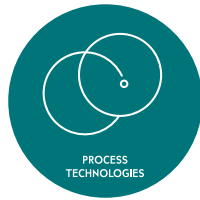
FOCUS

HIGH-PERFORMANCE TECHNOLOGIES FOR THE ELECTRIC VEHICLE INDUSTRY

In grinding and thanks to its Landis 3LVe product range, Fives offers an adaptable solution, meeting production requirements for transmission shafts, and providing the flexibility needed for customizing and transitioning the design for hybrid and pure EV vehicle transmissions. This combination of performance/flexibility immediately attracted the interest of major automotive manufacturers as soon as the machine was brought to market, and a first order was placed by General Motors.

Another order first for transmissions, is a laser welding machine for connectors and hairpins for Ford's electric motors. Finally, in fluid filling, Fives received several orders from major car manufacturers as part of their plans to increase electric vehicle production: 3 RapidCharge® M Elite machines for manufacturing the electric Smart Fortwo at Daimler's Hambach site in France, and 6 RapidCharge® machines for carrying out leak tests in a ventilated chamber on the batteries of a leading French car manufacturer at several of its sites.





PROCESS TECHNOLOGIES

ALUMINIUM



In a challenging environment where most Primary Aluminium stakeholders strive to optimize their throughputs, Fives teams continue to support closely their customers by providing concrete solutions to improve productivity and process reliability, reliability, in particular through digital offers and services.



Sébastien GAUGUIER

President, Aluminium Division

In a complex environment, facing slowdowns in key aluminium sectors, including automotive and manufacturing industries, resulting in production overcapacity and lower value on the London Metal Exchange (LME), all aluminium producers have been struggling to maximize their throughput and reduce their Net Carbon Consumption.

In this context, in 2019, Fives clearly demonstrated its ability to deliver state-of-the-art technologies and superior services for primary aluminium plants based on its wide range of expertise and proven track record.

- In Bahrain, the ramp-up of the facilities provided for achieving the completion of a new production line in a record time,
- In Russia, new anode baking systems have started up in two Russian smelters and equipment have been commissioned for the revamp of a Green Anode Plant,
- In Canada, Fives supported one of its customers, increasing amperage through the modernization of one of the key pieces of equipment that was initially provided,

- In the Middle East, Fives' teams upgraded a Green Anode Plant to improve operator health and safety.

New contracts were from two aluminium producers, one in Europe and one in the Middle East, trusted Fives' expertise for pollutants emissions control, modernizing their Fume Treatment Centers, and another European customer chose Fives to convert its existing anode baking technology. Additionally, for services, Fives signed a long-term service agreement in Bahrain and a technical assistance contract, providing maintenance resources in Saudi Arabia, demonstrating Fives' ambition to develop partnerships with its customers.

HIGHLIGHTS



A 5-year maintenance contract in Bahrain

To optimize the sustainable performance and efficiency of the Line 6 overhead cranes, Fives and Alba established a long-term service agreement for turn-key maintenance. The contract covers not only 24-hour corrective maintenance, but also preventive maintenance.



Environmental challenges associated to capacity increase

In Canada, Fives is working with Alcoa on a creeping project in order to boost the Gas Treatment Center capacity to deal with increased pot exhaust flow. The success of the project links closely with a good upstream analysis from Fives' specialists, identifying bottlenecks and coordinating interventions.



Fives' anode baking technology - at the core of a customers' choice

Fives started two new installations on Riedhammer furnace technology in Russia, while a European customer has selected Fives to upgrade its baking furnace as part of a gas conversion project. While responding to production and environmental constraints, Fives' technology has made a difference with its reliability, versatility and robustness.

[Find out more](#)



Fives at Alba, a new benchmark for the aluminium industry

The line 6 project has been a major achievement, with 14 pot tending machines (PTM), pre-assembled on site and backed by a 24/7 turn-key maintenance contract. The first anode was produced at the Green Anode Plant in less than 24 months, relying on 4.0 technologies, and the gas treatment center records high performance levels, with fluorinated emissions (HF) that amount to less than 0.45 mg/Nm³.

[Find out more](#)

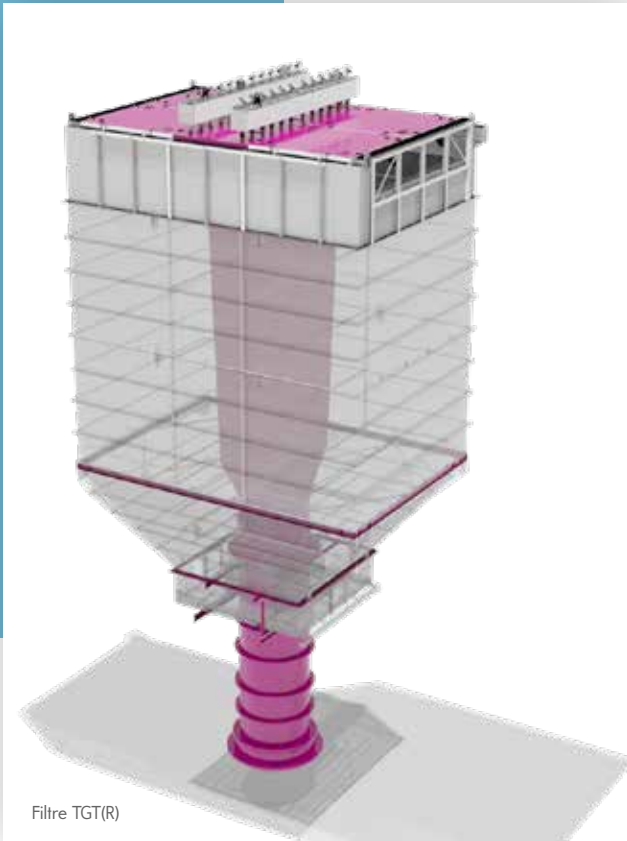
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MEETING ENVIRONMENTAL CHALLENGES

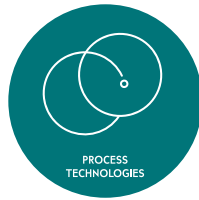
Fives developed solutions that offer unequalled performance, first, through its fluorinated emission (HF) abatement solutions, an environmental contaminant with negative impact on segments of vegetation and livestock, Fives has avoided thousands of tons of direct HF emissions annually: today's existing challenge is the fugitive HF emissions and the latest Fives' solutions targeted at reducing them up to 50%.

Furthermore, Fives contributes to reducing both carbon consumption and anode effect rate with its state-of-the-art anode production solutions and equipment for electrolytic cells,

Fives is also committed to systematically tracking and addressing all potential cost savings. The best illustration of this general mission is the Amelios Suite digital solution, targeted at providing aluminum producers all key indicators and process parameters throughout the anode lifecycle. This allows them to improve anode quality and resistance to oxidation, resulting in lower CO₂ emissions.



Filtre TGT(R)



PROCESS TECHNOLOGIES

CEMENT & MINERALS



Signing a strategic partnership with the world's leading cement producer and developing a new crushing technology for the global economy are just a few examples of our commitment to creating new opportunities, particularly by offering innovative solutions with excellent environmental performance.



Alain CORDONNIER

Deputy General Manager,
President of the Cement & Minerals Division

The Fives Cement & Minerals Division offer ranges from design to supply, turn-key installation of process equipment, grinding workshops, and complete cement lines, along with associated services. Fives offers core process technologies, including crushing, grinding, classifying, drying, pyroprocessing, filtration and gas treatment.

In 2019, Fives was dealing with a challenging economic situation, managing geopolitical uncertainty and cement production overcapacity, limiting industrial investment. In spite of this, the Group continued receiving orders for grinding workshops and equipment, and continued ongoing projects worldwide, resulting in more responsive teams and significant ability to adapt to manufacturers' requirements, globally.

The company has expanded its services and assistance, offering new inspections methods for rotary kilns and mills, along with new capabilities for remote monitoring and support.

HIGHLIGHTS



Adopting an international cooperation framework agreement with CNBM

The agreement was signed in March of 2019, providing Fives new opportunities to collaborate with CNBM, the world's leading cement producer, for plant modernization projects and new projects in China and other countries. Environmental performance is a core part of this agreement.

[Find out more](#)



Innovation: Fives launches the FCB Preca-Max®

Fives has developed a new combustion chamber, maximizing the use of alternative fuels at cement plants, the FCB Preca-Max® which can be integrated into the burning line for new or revamping projects. The FCB Preca-Max® offers significant flexibility and seamless combustion of coarse and high-moisture fuels.

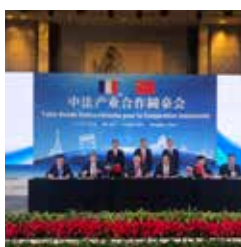
[Find out more](#)



Supplying two grinding workshops for Cem'In'Eu in France

Cem'In'Eu chose Fives to equip its future production sites in Drôme and Val de Loire. The first cement grinding workshop (250,000 tons/year) will have a 34 tph CEM II A/L FCB B-mill (ball mill) operating in a closed circuit with a high-efficiency FCB TSV™ classifier.

[Find out more](#)



Fives becomes a member of the World Cement Association

In August 2019, Fives joined the World Cement Association (WCA) as an Associate Corporate Partner and became vice-chair of the Innovation & Technology committee. This position highlights Fives' ability to support cement producers to pursue optimized environmental performance for their plants.

[Find out more](#)

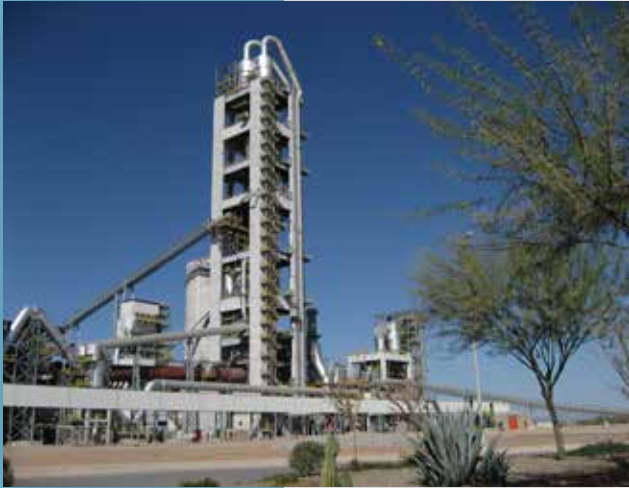
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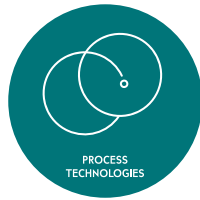
IMPROVED ENVIRONMENTAL PERFORMANCE, A CHALLENGE IN THE CEMENT INDUSTRY

The global cement industry is an extremely energy-intensive activity. It requires tackling crucial environmental problems, including reducing CO₂ emissions, improving energy efficiency and protecting natural resources. To achieve these objectives and reduce its environmental footprint, the industry is turning to efficient, reliable and sustainable processes and technologies.

Fives plays a role in this approach, supporting institutions and producers involved in the initiative, offering innovative solutions with unparalleled performance, such as:

- The FCB Horomill® offers the lowest energy consumption in the world, without any water injection, and produces high-quality cement, optimizing the cement/clinker ratio
- The FCB Preca-Max® supports optimizing the use of alternative fuels which are coarse, diverse, and with high moisture levels
- The FCB Rhodax® 4D uses selective crushing to recover 100% of demolition concrete, reusing high-quality aggregates, producing mechanical sand and salvaging previously de-carbonated cement paste to produce new cement.





PROCESS TECHNOLOGIES

ENERGY



The Energy division successfully completed several ambitious projects and achieved key development milestones. This enables us to fast-track our ambitions in innovation and digital, designing solutions with the smallest environmental impact possible and optimizing the performance of equipment throughout its lifecycle.



Frédéric THRUM

Deputy General Manager,
President of the Energy Division

Fives' Energy division is comprised of three activities: Energy | Combustion, Energy | Cryogenics and Energy | Sugar.

In the combustion sector, the burners and combustion systems designed by Fives are used in all industries, specifically cement, minerals, steel, energy and oil and gas industries. In the past year, the Energy | Combustion teams commissioned many pieces of equipment on site and continued to develop new, highly efficient solutions with reduced emissions to meet its customers' productivity and carbon footprint objectives.

In the cryogenics sector, Fives maintained its position as the world's leading supplier of brazed aluminium heat exchangers, cold boxes and Cryomec® cryogenic pumps for natural gas, industrial gas and petrochemical processing plants. The activity continues to strengthen its position in the US, a key region for its development, broadening its range of services relying on digital

technology to provide customers with faster solutions and foster exchanges between international teams.

In the sugar and bioenergy sector, Fives provides processing equipment to produce beet sugar, cane sugar and bioethanol, along with comprehensive workshops, providing maintenance services for all installed machines worldwide. Fives' solutions are renowned as the most efficient in the market for sugar and energy yields and for supporting its customers at every stage of their long-term projects.

Fives matches its expertise in these three activities with know-how in high-tech industrial piping for all players in the industry, most notably, completing a major project for GRTgaz.

HIGHLIGHTS



Concluding the study phase for Kristall, a leader in Russia's sugar industry

Fives was awarded a contract to supply a complete crystallization workshop for Kristall group's new sugar plant with a capacity of 20,000 tons of beets/day. The Group completed all of the mechanical and electrical studies for the project and has started manufacturing all the equipment.



Fives' cold boxes become larger

Fives' teams have designed a cold box for a major customer in the US., weighing in at over 400 tons. It measures over 40m high and is used by a plant in Texas, designed to produce over a million tons of ethylene per year.

[Find out more](#)



The launch of a compact high-performance burner

Fives has developed a compact, all-in-one version of its Pillard NANOxFLAM® burner with unrivalled performance levels for NO_x, CO₂ emissions and energy efficiency. Designed with a "Plug & Play" system, it can be easily installed on small and medium-sized boilers used in all industries.

[Find out more](#)



A natural gas injection system for ships

Fives has supplied one of its customers in ship building with 64 cryogenic cold-ends, integrated into the pumping units. As a result, the boats' hybrid engines will all run on LNG. This will reduce SO_x emissions by 99% and NO_x emissions by 86%. Ultimately, this technology will equip seven LNG carrier and five ethane carriers.

[Find out more](#)



A successful pilot pipe conversion project

Fives converted pipes used to transport type B gas into type H gas pipes for GRTgaz, Europe's gas leader situated in the Hauts-de-France region. The project, completed on time in early 2019, required the involvement of its teams for 14 months.

[Find out more](#)

FOCUS

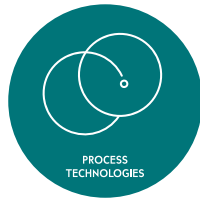
SUPPORTING THE DEVELOPMENT OF "ENVIRONMENTALLY-FRIENDLY" ENERGY

Fives has joined forces with Air Liquide, Lorraine University and the CEA, studying and developing solutions for using hydrogen, a source of energy used as fuel in vehicles. Hydrogen is a high interest alternative interest for replacing fossil fuels, while compensating the challenges inherent in electric vehicles: Rare materials in batteries, long charge times, limited range with a maximum load...

As part of the project, Fives' experts are developing new heat exchangers and testing its cryogenic pumps with Air Liquide to meet hydrogen's technical requirements: A very low liquefaction temperature (-253°C), high-pressure pumps (400-900 bars) and tight seal.

Fives also signed a "territoire d'industrie" (industrial region) protocol for the Grand-Est region with the French government, promoting the development of clean energy.





PROCESS TECHNOLOGIES

STEEL & GLASS



2019 was a very successful year for the Division, particularly for reheating furnaces sales, high-precision cold rolling mills, and cutting-edge induction technologies. Fives gained further recognition for its technologies in “greener” glass production .



Guillaume MEHLMAN

Deputy General Manager, President
of Steel & Glass Division

Fives offers process expertise, cutting-edge technologies, and digital solutions, enabling customers to optimize their performance in steel, tube and pipe, and glass production.

High performance and energy efficient solutions

The steel and glass industries both have a significant environmental impact. They work on different solutions to become more energy-efficient, less resource-intensive, and limit pollutant emissions; all while ensuring a high-quality finished product. Fives has also accepted these challenges, offering manufacturers technologies for managing these challenges.

Our reheating technologies specifically guarantee better quality products, and reduced energy consumption and emissions to meet the most stringent environmental standards. These characteristics are recognized by steelmakers worldwide who have awarded Fives with several contracts for reheating furnaces in 2019, establishing the Group as one of the world leaders in this sector.

Also, in the steel industry, new applications for steel products are rising from the global move towards clean energy. Several contracts were signed with silicon steel producers, and this is where Fives' technologies guarantee the best electromagnetic properties for high demand applications in the energy sector and electric vehicle production.

Correspondingly, Fives has confirmed its position as a world leader in the design and supply of high-precision cold rolling mills for stainless steel and ultra-high strength carbon steel.

In the glass sector, Fives is ideally positioned to support its clients in their transition to a “greener” glass model, transforming existing lines with the reconstruction of hybrid, electrical and combustion furnaces. Backed by its unique experience in electric melting, Fives has made a name for itself as a leading figure in sustainable glass production. In this vein, Fives has developed a unique solution with its EcoFlex hybrid furnace technology.

Providing greater added value to clients

In the area of tube and pipe production, Fives has filed a patent for its exclusive technology: A highly flexible OTO laser cutter for stainless steel tubes. In 2019, the first tube mill line was equipped with this technology in Italy.

Several strip processing line renewal projects were carried out by Fives in Sweden, China and the United States, increasing the value of customers' assets. Fives was able to address complex problems, from extending the product range to increasing capacity, due to an innovative approach and state-of-the-art technologies,

The Group has benefited from a buoyant flat glass market in Europe, especially with ultra-clear glass, strengthening its collaboration with major industry figures, including Siscam and Saint-Gobain, with major reconstruction contracts and by supplying innovative equipment. Fives was involved in the reconstruction of the Manfredonia float furnace in Italy, completed in record time for Siscam.

HIGHLIGHTS



Recognized expertise in reheating furnaces

2019 was characterized with commercial successes in the reheating furnace sector, including contracts signed for steelmakers in Turkey, Russia, India, China, the Philippines, Spain, France and Poland, along with others.

[Find out more](#)



New orders for silicon steel production

In China, TISCO selected Fives to design and deliver two new lines dedicated to high-permeability grain-oriented steel. In Russia, five CELES EcoTransFlux™ inductors were contracted to be used for ultra-rapid heating of grain oriented and non-oriented steel.



A global leader in high-precision cold rolling mills

Two Chinese steel companies have chosen the new DMS 20Hi EcoMill cold rolling mill, which can produce stainless steel with 30 microns of thickness from the full width of the strip. An order also arrived from POSCO in South Korea for a reversible cold rolling mill DMS 20Hi EcoMill, processing GIGA steel – Ultra Advance High Strength Steel (U-AHSS) and TWIP – for automotive applications.

[Find out more](#)



Tube and Pipe: A commercial success worldwide

United States, Canada, Italy, Ecuador, Uzbekistan, Russia, India, China... In 2019, Fives signed numerous contracts: Complete OTO tube mill lines, Robopack – automatic packaging machines, Bronx straighteners, as well as finishing equipment for seamless pipe production.

[Find out more](#)



Specialty glass: A leader in electric soldering

Fives was selected to fulfill three major electric furnace orders, primarily for cosmetic and pharmaceutical applications.

[Find out more](#)

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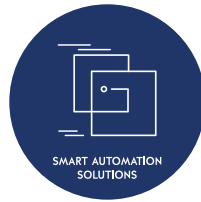
SMARTLINE, SUPPORTING DIGITAL PERFORMANCE

Fives is the first provider in the steel industry to propose and deploy fully automated, controlled strip processing lines, including predictive models and artificial intelligence algorithms, delivering a high level of productivity.

The solution utilizes predictive models, based on metallurgy for all upstream process steps, from the steel shop to the cold rolling mill. It provides a multitude of benefits: Optimized energy costs, flexible production, improved performance, maximum line speed, all without compromising on quality.

[Find out more](#)





SMART AUTOMATION SOLUTIONS



We are heavily investing to provide our customers with the local, responsive and professional service they desire. Our stability, agility, and the forward-thinking approach with our solutions are key assets, supporting our customers' growth.



Luigi RUSSO

Deputy General Manager, President of the Smart Automation Solutions Division

Fives' Smart Automation Solutions Division is a major player in high value-added automation industry, with the ability to provide a broad portfolio of proprietary offerings to its customers.

With 1,600 employees, the Smart Automation Solutions division offers global coverage, guaranteeing support with the proximity required for successfully completing its projects. Fives has a local presence in each of the main European countries, as well as regionally-situated offices in North America and Asia—primarily in Japan, South Korea and China.

The organization is based on strong regional platforms, ensuring we are close to our customers and can reliably complete projects, while fostering the exchange of skills and technical solutions between the Group's subsidiaries.

The division primarily serves three sectors, with sales of approximately €600 million:

- Courier, postal and e-commerce centers -Fives' sortation s and singulation technologies have become the market standard.
- Distribution and retail markets- Fives develops automated storage, automation solutions and warehouse management software.
- The agricultural-food and automotive industries - Fives develops high value-added flow management solutions.

HIGHLIGHTS



GENI-Ant™, for more agile logistics operations

Launched in October 2019, the GENI-Ant™ optimizes the productivity of operations in logistics warehouses. Fives' autonomous mobile sorter is the only solution of its kind for e-commerce, postal and courier services, meeting specific needs for flexibility, productivity and time savings for preparation.

[Find out more](#)



A new success in the wood working industry

LEICHT Küchen AG, the leading German manufacturer of premium kitchens and interior design, trusted Fives with the creation of a comprehensive robotic sorting system for its new German plant covering 430,000 ft². The facility handles 13,500 panels daily, used to make customized cabinets.

[Find out more](#)



A new solution for Deutsche Post-DHL Group

DHL, the global leader in transport and logistics, called on Fives to optimize the automation of its platform at the Cologne-Bonn airport. The 160,000 ft² sorting center will allow DHL to rapidly process 20,000 letters and parcels every day, using a cross-belt sorter, covering 6.5 feet per second.



A close collaboration with Système U since 2013

In 2019, Fives was trusted to mechanize all of Système U's fresh produce platforms, after the successful design and delivery of six fully automated and robotic OPR (Order Picking Robotic) platforms designed to prepare food orders at room temperature.



A final assembly line for Jaguar Land Rover in Solihull, England

Fives Conveying was trusted to build conveyance solutions for the final assembly line of the Land Rovers main body—the optimization of operations supported the robust growth of the Solihull production site. The Group provided a comprehensive solution, including conveyers and the assembly line, for rear axles and front axles.

[Find out more](#)

FOCUS

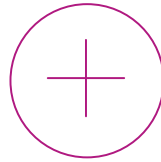
A COMPREHENSIVE ECOSYSTEM FOR FLEXIBLE, SCALABLE AND CONNECTED SOLUTIONS

Launched in October 2019, GENI-Ant is a transport technology which combines modularity, versatility and scalability. This AMR (Autonomous Mobile Robot), which optimizes operational efficiency at logistics warehouses, is part of a broader automation and digital ecosystem including robotization, IT solutions and predictive maintenance.

"Intralogistics is experiencing significant technological upheaval. Logistics platforms must combine general productivity, scalability in view of increasing flows and responsiveness due to increasingly stringent delivery constraints. The robotization of logistics processes, vision systems, artificial intelligence and key software suites (WMS, WCS, MES), remote commissioning and facility monitoring using predictive tools are significant drivers of innovation and performance which we offer to our clients," Oussama Cherif Idrissi El Ganouni, Head of Innovation for Smart Automation Solutions.

[Find out more](#)





TRANSVERSAL COMPETENCIES



Fives combines its industrial process expertise and the development of digital solutions to support manufacturers throughout the value chain. Over the next few years, our maintenance offer will continue to expand via digital, agile and effective solutions."



Martin DUVERNE

Deputy Chief Executive Officer

Serving industrial performance

Worldwide, manufacturers are experiencing more stringent requirements for reliability, technical performance and economic optimization. Fives provides a comprehensive offer, guaranteeing the performance and sustainability of its clients' equipment. Throughout its history, Fives has reinvented its offer, responding to industry requirements and adapting to highly technical production processes, especially by developing digital offers through its subsidiary Fives CortX, and Fives Connect, a customer service platform launched in partnership with Visiativ.

A major player in industrial maintenance

2019 was characterized by the development of technical and technological innovations, leading to the launch of a new predictive maintenance offer, combining artificial intelligence and field expertise, implemented with several customers.

In conjunction, the first specialized in-house training academy created for industrial maintenance experts was developed, addressing the shortage of specialized individuals in this sector.

2019 was also a year for renewing historic contracts and the start of a maintenance services for new customers won over by the quality of the work and dedication of Fives' team members.

Fives CortX

Fives is developing a comprehensive data processing solution combined with artificial intelligence to address issues for optimizing production and industrial processes. In 2019, the solution was chosen by one of the world's leading adhesive plastic film manufacturers.

In 2019, Fives CortX, a Group subsidiary specializing in the field, celebrated its 2nd anniversary and created an Industrial Vision center of expertise, providing additional insights for the Data Science team's analyses. It is now located in the US, based on the support of a local representative, to backing US entities from the High Precision Machines division with their development.

Lastly, rounding-off a busy year, Fives CortX joined forces with Visiativ, a leader in the digital transformation of companies, strengthening its offer for predictive maintenance and a complete tool for manufacturers.

Enfin, pour compléter cette année riche en réalisations, Fives CortX s'est associé à Visiativ, acteur de la transformation numérique des entreprises, afin de renforcer son offre en matière de maintenance prédictive et ainsi proposer un outil complet aux industriels.

Fives Connect : A global and agile digital services tool

24 hour support, technical document consultation, digitization, ticketing and remote maintenance operations, spare part sales... Fives Connect, created in partnership with Visiativ, supplements the Group's offer, facilitating access to its community of experts and expanding its customer digital services offer. It also includes Fives CortX data analysis and artificial intelligence solutions reinforcing the management and digital monitoring of a customer's equipment and facilities.

HIGHLIGHTS



Combining artificial intelligence and industrial know-how

With its customer (A steel company), Fives has jointly established a machine learning model to control a galvanization line. Combined with the Fives proprietary metallurgic model, this predictive intelligence solution has assisted in optimizing productivity and improving quality, all while reducing energy consumption.

[Find out more](#)



A training academy for future experts in industrial maintenance

To meet its customers' requirements and address a shortage in specialized professionals, Fives created the Fives Academy - Maintenance. Certified training provided by Fives experts, targeting developing key skills for candidates and for preparing them to meet the industry's expectations.

[Find out more](#)



Defense contract renewals

The quality of Fives teams is recognized by its discerning customers in the defense sector. One initial contract related directly to the maintenance of production resources at a site in France. It was extended to an additional two sites, and now includes infrastructure maintenance at one of the sites.



Fives has a significant fleet of equipment and is committed to delivering results

A major aeronautics company has renewed its confidence in Fives, awarding it with a second maintenance contract for production resources performance obligations. The scope covers over 7,000 pieces of equipment, including machine tools, presses and thermal and surface treatment resources.

FOCUS

A FIVES PREDICTIVE MAINTENANCE OFFER - ALREADY ADOPTED BY MANUFACTURERS

Fives proposes a predictive maintenance offer, the result of combined expertise from Fives Maintenance and Fives CortX subsidiaries, supported by the technology partners of Visiativ and Sick.

Utilizing sensors, Fives experts gather and analyze data on equipment operations. The methodology is iteratively perfected with project stakeholders, refining indicators, maximizing the detection of weak signals and establishing a predictive algorithm adapted to the equipment in question.

By predicting future failures in a customer's machine, Fives avoids slow-downs or shutdowns in production processes, additional costs linked to repairs and the production of parts with potential quality issues; a predictive maintenance schedule can be established to anticipate the spare parts consumption cycle and their availability.

This solution was implemented by Fives for one of its aerospace customers, optimizing productivity of a group of 12 machining centers in France.

[Find out more](#)





Committing to promote a responsible industry



Our CSR commitments, especially those linked to fighting against climate change and our contribution to local economic and social development, reflect our purpose “Faire aimer l’industrie”, including our willingness to create long-term value for all of our stakeholders.



Denis MERCIER
Deputy General Manager

Since 2019, Fives’ CSR commitments have evolved, and now include new issues regarding the diversity of activities and geographic locations, including the level of maturity of Group subsidiaries. Fives seeks to reinforce its actions in key areas, reflecting its desire to be a responsible manufacturer and drive its commitment to promoting the industry of the future.

These new commitments are based on four pillars:



BEING A RESPONSIBLE EMPLOYER

Being a responsible employer means providing an inspiring and safe working environment for the Group's employees. Fives is developing several areas, simultaneously: encouraging the expression of Group diversity and all talents, while creating initiatives and tools, offering even safer working conditions.

Supporting all talent

2019 was a pivotal year for Fives human resources department. This year allowed us to prepare for the launch of two major plans, shaping the new Group Diversity policy, in correspondence with our CSR policy, and the new Group purpose, Faire aimer l'industrie, targeted at women and young professionals.

A variety of initiatives were implemented in 2019, encouraging and supporting female talent, including negotiating partnerships with associations to promote women in industry in both France and the United States, the design of a specific support program for female managers, the development of a survey sent to all Group female employees across all business lines and countries, measuring expectations, offering adaptive solutions, test of a dedicated coaching, and discussions on specific mentoring. The results of these programs will be visible in the mid and long-term.

How can we attract the employees of the future?

For young professionals, Fives sought to strengthen its mentoring program and commitment towards a mobilization plan 'La France, une chance. Les entreprises s'engagent', which has four objectives:

- Encourage individuals to discover businesses for getting on the right path and for learning more.
- Gain access and define paths for long-term employment, targeting the most vulnerable people;
- Support individuals living in the most precarious areas;
- Facilitate access to basic products and services for the most deprived populations.

Fives chose to launch these objectives, primarily for priority neighborhoods (QPV). The Group wants to increase the number of mentors involved with these individuals (Approximately 40 in 2019).

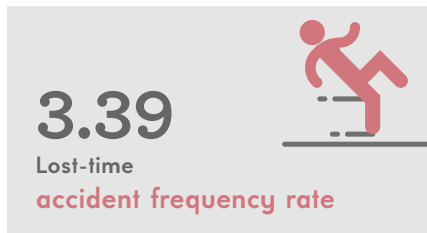
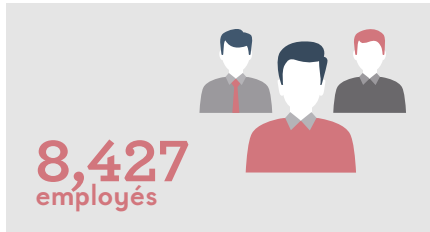
Ensuring employee safety

For over 10 years, the Group has successfully reduced the number of lost-time accidents by two-thirds, due to the development of a strong safety culture, focused on anticipating and preventing risks, with the advancement of tools and sharing of best practices. Service activities (maintenance operations, modernizing facilities, etc.) have increased.

Since 2017, the growth has led to a rise in the number of accidents at clients' sites. In 2019, Fives was saddened to report the death of one of its American employees, following an incident, working at a customer's site.

Fives has made it a priority to reinforce preventative actions, and to control risks for any work performed at a customer's site where employees typically work alone. In support of this, the Group's HSE department is currently developing tools to facilitate risk analysis at third-party sites, where the working environment is more challenging to control.

KEY FIGURES



HIGHLIGHTS



Training in maintenance professions

To address a shortage in labor and the non-desirable perception of maintenance professions, Fives has launched the Fives Academy-Maintenance, offering training to meeting the market's recruitment needs; from lifting equipment to collecting and analyzing data for predictive maintenance.

[Find out more](#)



Encouraging new vocations for women

Fives Nordon, specializing in industrial pipework projects, welcomed a group of female job seekers, introducing them to the organization and its professions to change their perspective of industry, encouraging them to apply for a job. A project in partnership with Pôle Emploi (the French Job Center).

[Find out more](#)



Changing the view of people with disabilities

Fives Cinetic developed a partnership with Cap Emploi, linking companies with disabled jobseekers; two completed an internship at the subsidiary. Fives Cinetic also welcomed a "Wheelchair Rugby" athlete preparing for the Tokyo Olympic Games.

FOCUS



DIGITAL SUPPORTING SAFETY

“Find it/Fix it”: An application dedicated to health & safety, developed by Fives, and installed at the Alouette aluminum plant in Quebec, where the Group has inspected the lifting equipment for several years.

The user-friendly application allows any employee who finds an at-risk situation to take a photo and address the situation immediately or send a repair request by email with the simple tap of a button. These alerts automatically feed indicators and are reviewed on a monthly basis.

In September 2019, the initiative received first prize at the “Occupational Health and Safety Awards” issued by the CNESST (Committee on Workplace Health and Safety, Equality and Standards) in Quebec, for the Innovation category, during the “Partnerships of Excellence” evening organized by the Alouette Aluminum Plant.

[Find out more](#)

MINIMIZING THE ENVIRONMENTAL FOOTPRINT OF OUR ACTIVITIES

Combining environmental performance and operational excellence

To minimize the environmental footprint of its activities and improve its customer's environmental performance, Fives actions are based around two working priorities:

- Taking action at its own industrial sites to control environmental impact
- Designing innovative solutions which create value for industrial customers

A new objective for reducing energy consumption at its sites

In 2019, Fives emphasized its commitment to fight against climate change, setting a new global objective for energy consumption: Reducing its by 10% per hour between 2018 and 2022..

Group energy consumption



In 2019, the Group continued reducing its overall energy consumption, despite the increased number of sites. The ratio of kWh/hour has remained stable

Developing top environmental performance solutions

Different solutions developed by Fives contribute to the environmental performance of its industrial customers.

• What are the current and future environmental issues?
Our customers deal with numerous environmental issues: Reducing pollution, limiting the production of waste and the consumption of natural resources, as well as combating climate change; a major issue for manufacturers.

• What solutions are currently proposed by Fives?
In 2019, Fives offered 70 different solutions contributing to a manufacturers' environmental performance: Fighting climate change and the depletion of fossil fuels, limiting impact on the health of people, and the environment (The emission of pollutants and particles), preserving natural resources.

FOCUS

WHAT ARE THE R&D PRIORITIES FOR THE FUTURE?

Improving the energy efficiency of production processes, limiting the consumption of natural resources, the reduction of emitting pollutants, and contributing to the global economy are some of the issues the Group includes in its offer and its R&D priorities.

Here are a few examples of solutions under development at Fives:

- The development of hybrid furnaces for the glass industry, supporting manufacturers in their energy transition, allowing the use of electric furnaces for both specialty glass and float glass
- The development of solutions to burn alternative fuels for steel (biogas, green hydrogen, etc.)
- The development of digital solutions for optimizing the performance of production lines with energy/material savings (Aluminum, sugar, steel).

SUPPORTING LOCAL DEVELOPMENT

Providing a positive contribution to local social and economic development

“Faire aimer l’industrie”, Fives’ new purpose, is also reflected by this new commitment, formalized in 2019. Making a contribution to local development is defined by playing an active role as a direct and indirect social and economic leader in regions where the Group operates.

This Group-level commitment is supported in business activities by each of the Subsidiaries. Therefore, many Fives companies are working to promote local economic development through partnerships formed with various organizations (associations, institutions, job-seeking centers, schools, etc.).

The Group has also established the foundation for a skills sponsorship program. Over time, it will allow employees to work with an association on activities based around two areas: Employment and environmental protection.

FOCUS

WITH LA RUCHE INDUSTRIELLE, FIVES SPREADS ITS WINGS IN THE LYON REGION

Fives is working alongside regional and local industrial players, contributing to local economic development. In the Lyon region, this includes La Ruche Industrielle. The association challenges traditional partnerships and uncovers collective intelligence in three areas: Manufacturers, institutions and schools/laboratories, carrying out specific projects together.

This platform, part of the French Fab movement, is located at “Vénissieux Inter-entreprises”, the heart of the pilot site for Lyon industry. Comprised of 14 members, including Fives, La Ruche Industrielle encourages the sharing of experience to create an ecosystem conducive to innovation, and to support the emergence of a competitive and sustainable industry in France.

La Ruche Industrielle is a method for industrial players in the Lyon area to support each other in finding answers to today’s challenges, developing their operational performance, and making contact with regional organizations that may be able to provide assistance.

[Find out more](#)



LA RUCHE
INDUSTRIELLE



BEING A RESPONSIBLE ECONOMIC ACTOR

Fighting corruption, managing conflicts of interest, fraud...our businesses and in some of the regions where we operate, requires us to be vigilant. By applying our Business Ethics Charter, we uphold our values and protect our business."



Clément BASCOUL
Group Compliance Officer

ETHICS, CORNERSTONE OF THE GROUP'S COMPLIANCE POLICY

Fives undertakes managing its activity, in all countries where it operates, with strict compliance to applicable laws and regulations. Ethics is a fundamental part of the values supporting Fives.

They are crucial values ensuring sustainable growth of its activities and they create a long-term competitive advantage. In 2019, the Group Compliance Department committed to strengthening and deploying this strict policy regarding business ethics: Supporting management teams with decision-making, and promoting a culture of integrity focused on all Fives' employees.

Notably, the Business Ethics Charter outlines the rules of conduct, guidelines and ethical obligations each employee must observe in all circumstances in their daily performance of duties. The Business Ethics Charter is based on the principle of "Zero tolerance" regarding fraud in any forms.

HIGHLIGHTS



A Business Ethics Charter

The Group has adopted a Business Ethics Charter, the backbone of its compliance program, in order to uphold business integrity and to comprehensively understand business issues, particularly with regard to compliance with the highest ethical standards and the conduct of activities in a changing environment.



Employee training

The Compliance Department deployed a classroom training program on business ethics, providing support to Group managers who may be confronted with corruption issues.



In-house whistleblowing system

Fives has established a whistleblowing system, allowing any employee to report any activity that may violate the principles and commitments of the Code of Conduct, the Business Ethics Charter, and in general, regulations relating to business ethics.

FOCUS

WHAT IF CUSTOMS MANAGEMENT BECAME A COMPETITIVE FACTOR?

Customs administrations worldwide monitor the flow of goods to fight fraud, terrorism and international trafficking.

In order to secure the international supply chain and identify trusted operators, customs authorities, together with the World Customs Organization, have set up customs certification programs for international trade actors.

Customs certification programs implemented nationally (Authorized Economic Operator in the European Union and China, Customs-Trade Partnership against Terrorism in the United States, etc.) allow operators to receive benefits and incentives as part of their international operations in exchange for commitments on securing their supply chain.

Although Fives has been pursuing the AEO (or equivalent) certification process for several years now, the Group has decided to accelerate the certification of its subsidiaries in order to meet two objectives:

- Ensure its internal processes are recognized by authorities and business partners
- Benefit from the administrative facilitation of its import and export operations.





fives

Industry can do it

Fives

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