



Compagnie Industrielle et Financière de Bussy

Key figure:

95  
apprentices



## Focused towards the future

Welcoming trainees and apprentices is an integral part of Groupe CIF's culture. By considering them to be future employees, we devote special care to recruiting, integrating, and supporting them.

Job positions are defined based on specific technical skills and requirements in terms of safety, the environment, and quality.

Support will be provided throughout their careers within our companies, through a policy of training and a continued search for knowledge, the opportunity to make day-to-day progress, and by relying on modern methods such as Lean Manufacturing in order to reduce costs, improve response times, and to simplify processes.

Each employee contributes, at his or her own level, to the performance and development of Groupe CIF by striving to improve its key competitiveness factors.

## Capabilities by company site

	FC	CMD	FCMD	FAD	ROCHE	AHD
R&D, ENGINEERING	●	●			●	●
CASTING (IRON AND STEEL)	●			●		●
FABRICATION					●	
MACHINING - MEDIUM DIMENSION	●	●			●	●
MACHINING - LARGE DIMENSION	●	●	●	●		
FINISH-GRINDING - GEAR TEETH		●				
INSPECTION/TESTING	●	●	●	●	●	●
ON-SITE SERVICES	●	●	●		●	
GEARBOX REPAIR/REFURBISHMENT		●	●			



AUGUSTE CAPITAIN



ANDRÉ CITROËN

1831



FERRY CAPITAIN

1901



## Two centuries of technological progress towards Industry 4.0

In 1831, a royal ordinance granted Auguste Capitain the right to establish an iron-ore crushing operation, consisting of a mill driven by a hydraulic wheel, along the banks of the Marne River in Bussy, near Joinville, in the heart of the Haute-Marne region of France. In 1835, after the construction of a blast furnace, daily production of cast iron reached 1,500 kg.

In 1901, the foundry equipped itself with a four-tonne open-hearth furnace enabling the manufacture of cast steel components.

Throughout the last century, major investments were made to reinforce and increase the machining capacity of the mechanical workshop, through to the 1980s, when the installation of a gear cutting machine with 12-meter diameter capacity signaled the arrival of Ferry-Capitain on the large open gearing market.

Groupe CIF has entered the 21st century by modernizing its infrastructures and machine tools, and by emphasizing the use of technical means based on information technology and numerical control. The production sites are becoming more inter-connected and flexible to develop into manufacturing plants of the future.

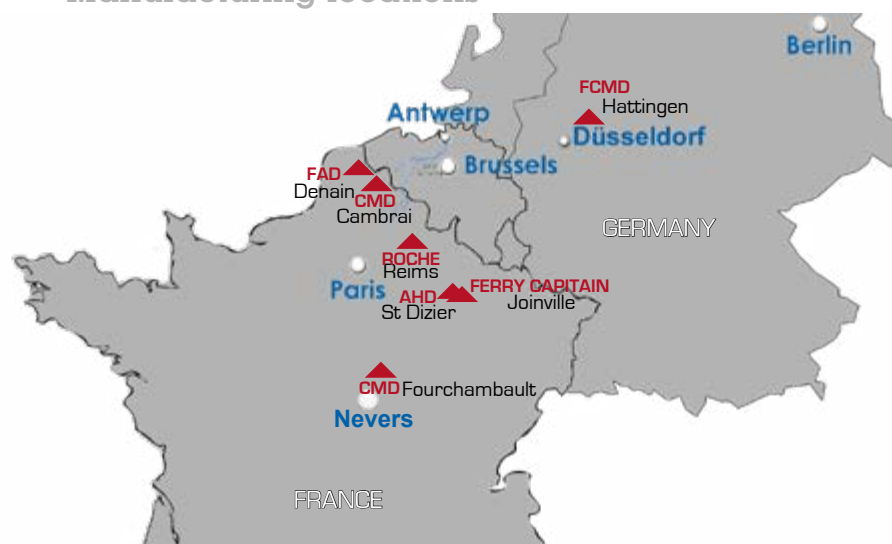
# Le groupe Compagnie Industrielle et Financière de Bussy...



## Key figure

Since 1831,  
**6** generations  
of directors from  
the same family

## Manufacturing locations

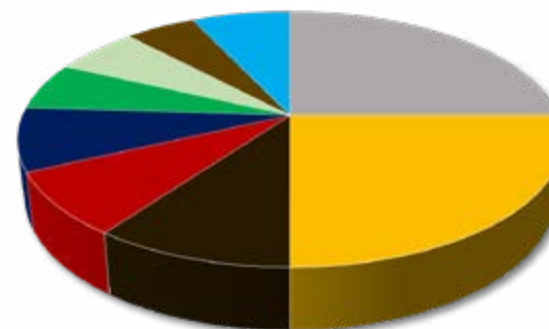


## A group serving heavy industry

Groupe CIF is globally recognized as a leading supplier to heavy industry. Consequently, the mining, cement, metallurgy and energy markets constitute the four pillars of its business.

The development of activities within the environmental, oil & gas, aerospace, railway, sugar industry and other specific and frequently complex applications, serve to complete this diversified spectrum.

## Distribution of sales by business sector



## At the heart of industrial Europe

Bolstered by a history spanning over 100 years and involving the greatest names in French and European industry, Groupe CIF now consists of 6 companies, all of which have their production sites located in the industrial basins of the North-East of France and in the Ruhr Valley in Germany.



R&D,  
ENGINEERING



CASTING



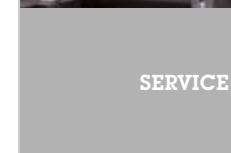
MACHINING



FABRICATION



GEARING



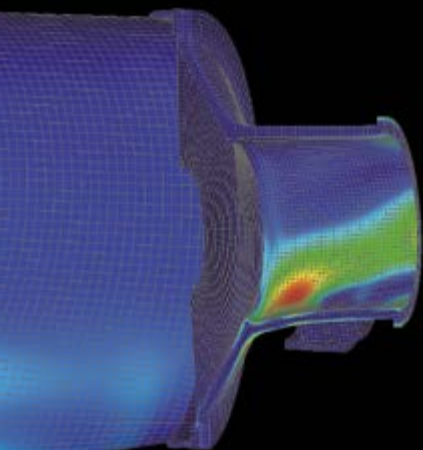
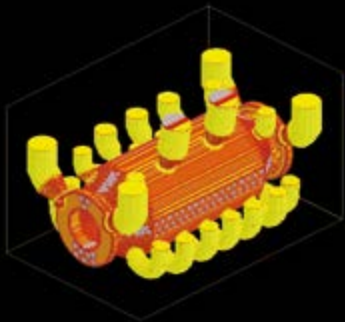
SERVICE





*Inventing involves  
thinking outside the box.*

( Albert Einstein )



## Engineering ■ R&D

### AHD

- Casting solidification simulation
- Co-engineering

### ATELIERS ROCHE

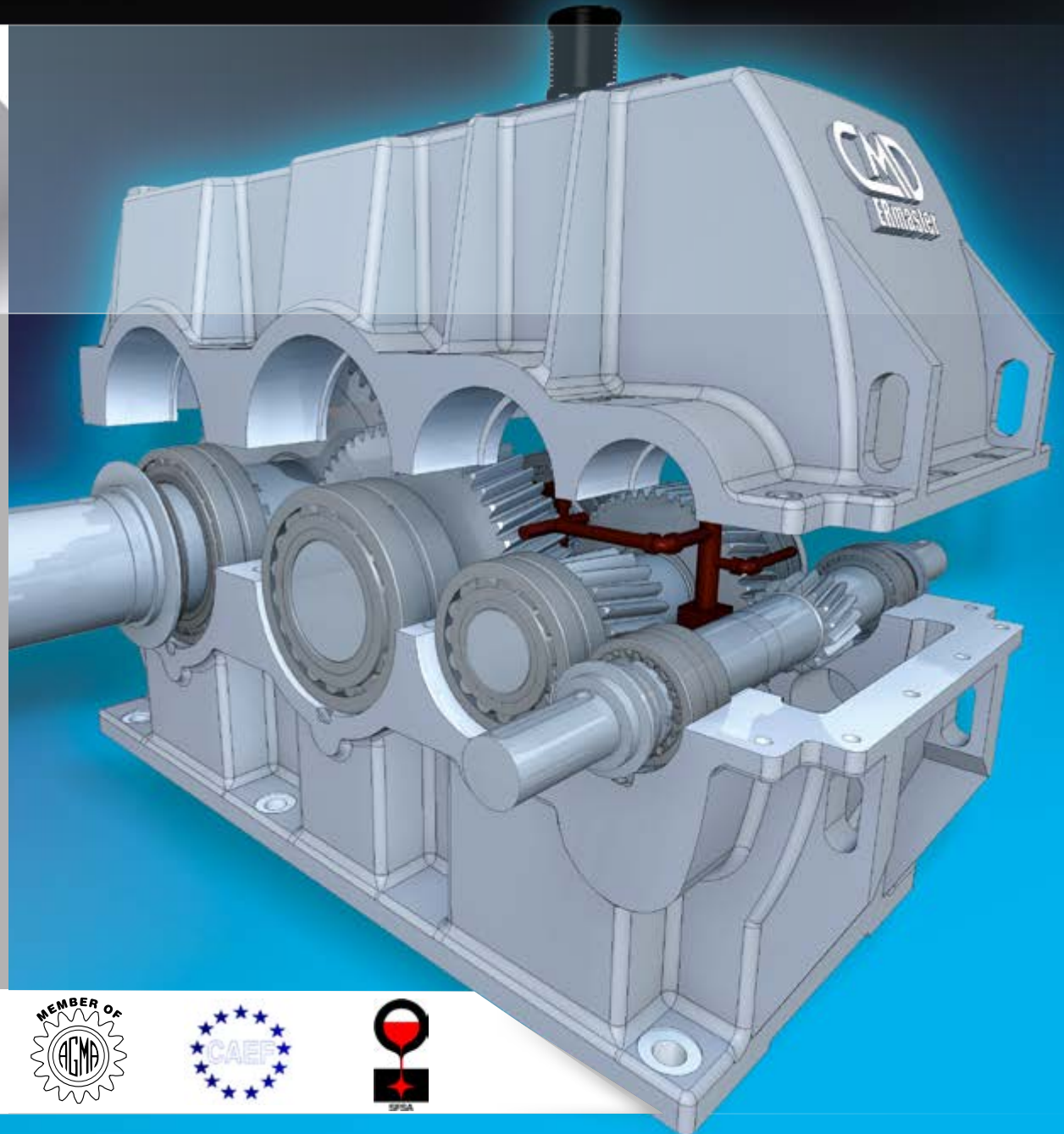
- Design and development of custom production machines

### CMD

- Design of mechanical drive trains
- Custom gearbox design
- Development of custom mechanical couplings
- Reverse Engineering
- Finite Element Analysis (FEA)

### FERRY CAPITAIN

- Gearing design
- Development of proprietary metal grades (FerryNod®, Ferrynox®)
- Casting solidification simulation
- Conversion of fabrications to castings (iron or steel)
- Reverse Engineering



... continually invests in R&D ...



**Key figure**

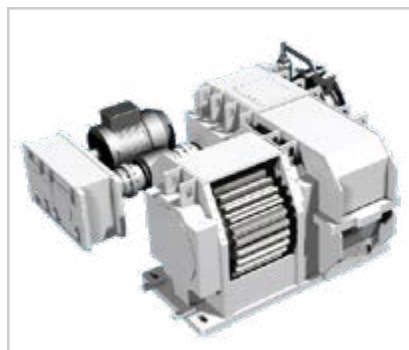
**1**

**new patent  
every 4 months**

### Designer of standard and custom gear-boxes

Groupe CIF's companies are renowned for the manufacturing, installation and maintenance of the products they supply, in large part due to their teams of engineers, experts in product design and performance evaluations extensively supported by finite element analysis.

Groupe CIF's design departments provide solutions to customers' requirements, whether through the optimization of the selection of a standard gear reducer, or by developing custom product designs to suit an end-user's specific needs.



### A specialist in customization

With extensive know-how in the optimization of casting shapes and tolerances, acquired through years of practical experience and supplemented by tools such as solidification simulation software, Groupe CIF routinely proposes design improvements for all types of components.

Its metallurgical expertise, which is continually advanced by its R&D activities, plays a critical role in the development of new grades of cast iron and steel.



### Upstream...

- Installation diagnostics and technical auditing,
- Customer needs analysis,
- Solution optimization,
- Design in accordance with international standards,
- Metallurgical expertise.

### ... and downstream:

- Installation, verification and commissioning,
- Production monitoring, staff training,
- Definition of preventive maintenance programs.





*A well-planned and well-managed experience provides satisfaction comparable to what an artisan feels in reviewing a job well done.*

( Pierre Joliot )



## Patterns and molding

Groupe CIF's multiple foundry sites utilize several pattern and mold making technologies, from traditional wood and polystyrene patterns, to state-of-the-art pattern-less sand mold machining. With the capability of casting iron and steel alloys in smaller semi-automatic molding lines, medium-sized flasks, and large-dimension pits, a very broad range of castings may be produced.

## Cast Iron and Steel Foundries

Our technical expertise allows us to produce several types of cast iron: Ductile (spheroidal graphite), Grey, Alloyed (Cr, Ni-Hard, Ni-Resist) and also cast steels: Carbon, Stainless, Duplex, Super Duplex.

Cast Material Grades	Max. Finished Part Weight
Spheroidal Graphite (Ductile) Iron	120 t
Ni-Resist Iron	20 t
Ni-Hard Iron	20 t
Carbon and Low-Alloy Steel	80 t
Refractory Steel	50 t
Stainless Steel	25 t
Duplex Steel	20 t
Super Duplex Steel	10 t



... expert in the shaping of ferrous alloys ...

#### Key figures

**20 000 t/yr**  
cast steel

**10 000 t/yr**  
cast iron

#### Heat treatment

Our modern equipment, which includes several gas and electric furnaces, enables a wide range of treatments for carbon, alloy, and stainless steels, as well as white or spheroidal graphite iron, thus meeting the majority of our customers' requirements:

- Tempering
- Normalizing
- Forced-air quenching
- Water quenching/Hyper quenching

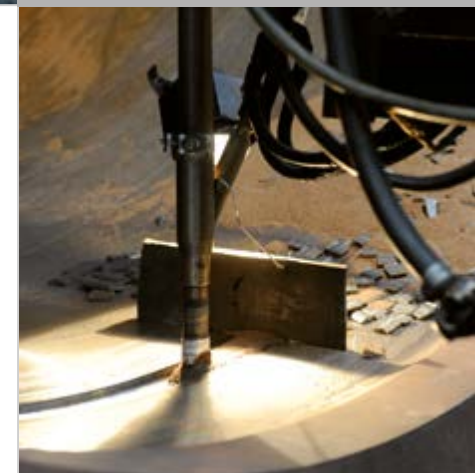
#### Welding methods

- Automatic submerged arc welding
- Semi-automatic MIG-MAG (pulse) welding
- TIG welding
- Shielded metal arc welding

#### Fabrication / Welding:

Teams of highly-qualified welders, using technologically-advanced welding equipment, can carry out full component or accessory assembly:

- Piece work and small production runs
- Custom parts, having steel plate thickness of 8 mm or more
- Thermal spraying
- Hardfacing
- Strip weld overlay (cladding)



- All types of ferrous alloys
- Large dimension parts
- High tonnage parts
- Hyper quenching



*None of us  
acting alone  
can achieve success.*

( Nelson Mandela )

## **Machining 4.0**

The machining and gear cutting processes used by Groupe CIF are at the leading edge of technology. Computer-aided manufacturing, and digitally-controlled machines, ensure a high level of reliability in meeting customers' needs.



... through the synergy and complementary nature of six companies ...



**Key figures**  
Machining  
**Ø 16,5 m**  
Gear cutting  
**Ø 16 m**

## Machining and cutting resources

Groupe CIF has within its facilities over 200 machine tools available for rough- and finish- machining and gear cutting. Through ongoing upgrades, over half of the machine tools employed are CNC-equipped.

In addition, the duplication of certain production capabilities in a number of Groupe CIF plants provides a high level of reliability and flexibility.

Our extensive experience and the multiple capabilities of our various sites enable us to fully meet our customers' technical, quality and delivery needs.

## Cutting (excluding reducer gears)

	CMD	FC	FCMD
0 to Ø 4,5 m	4 cutting machines		
Ø 4,5 m to Ø 8 m		2 cutting machines	
Ø 8 m to Ø 12 m		4 cutting machines	
Ø 12 m to Ø 16 m			2 cutting machines

## Grinding

0 to Ø 6,5 m	6 cutting machines	
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- Mechanical drive trains for power ratings of 17,000 kW (2 x 8,500 kW) and beyond...
- High hardness cast steel and FerryNod® gears
- Cutting quality
  - Gears - ISO 8 (AGMA 10)
  - Pinions - ISO 6 (AGMA 12)
- Grinding quality
  - Gear wheels and pinions - ISO 5 (AGMA 14) and ISO 2

*The conscience is an  
extremely sensitive  
precision instrument.*  
( Victor Hugo )





... to take your industrial projects from A to Z.



**Key figure:**

**200**

**site visits per year  
on 5 continents**

### On-site services

Over thirty qualified engineers and technicians within Groupe CIF are capable of traveling the world over to meet the needs and expectations of customers directly on-site, for operations ranging from installation and commissioning of supplied products, to preventive maintenance and technical assessments.

- Reverse Engineering
- Supervision - commissioning
- Monitoring
- Assessments / Advice / Training
- Refurbishment of all types/brands of gearboxes



- Ultrasonic testing
- Magnetic particle inspection
- Radiographic testing
- Vibration analysis
- Contact verification
- Dimensional measurement
- Metallurgical analysis



*Trust is an invisible  
bond that leads  
a team to victory.*  
( Bud Wilkinson )



### Mineral processing

Groupe CIF offers a full range of casting, machining, fabrication, and related services required for the manufacture of key components for grinding mills, crushers, kilns and dryers used in the global mining industry:

- Girth gears up to 16 m in diameter;
- Shafted pinions;
- Parallel shaft reducers, couplings and inching drives;
- Segmented mill heads and trunnions;
- Integral mill heads
- Crusher mainframes
- Mining shovel and haul truck components





# Expertise in mining and cement processing...

## Key figure

**170**  
million Euros  
in sales

## Cement industry

With decades of experience in supplying the cement industry with kiln and dryer components such as girth gears, pinions, reducers, tires and rollers, Groupe CIF has particular expertise in the defining and supplying of complete gear drive systems for all types of rotary equipment. Our field service personnel have all the necessary skills to carry out on-site measurements and evaluations, and to make technical recommendations as required.



- Girth gears up to 16 m in diameter
- Kiln tires
- Shafted kiln support rollers
- White metal bearings (ALC Bearings®)
- Parallel-shaft reducers
- Special gearboxes (JUMBOREX®, ROLLEREX®, MILLREX®)
- Grinding tables
- Mill heads
- LS and HS couplings







*Trust is to all  
human relations  
what foundations are to all  
human constructions.*

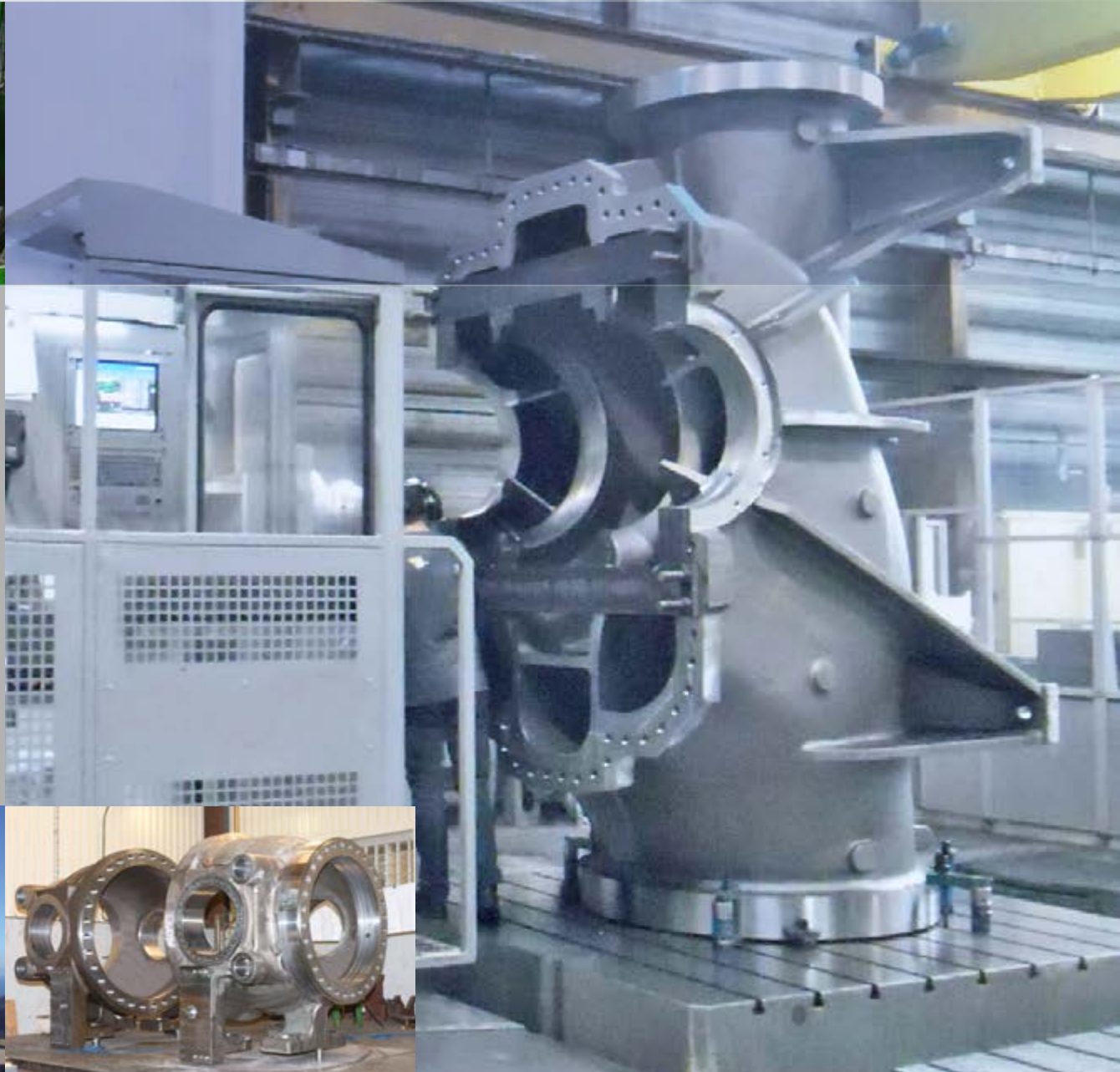
( Daniel Desbiens )



## Energy

Groupe CFP supplies numerous parts for power generation equipment and systems used in the safe and reliable distribution of energy.

- Wind turbine components
- Coal grinding mill components (vertical or horizontal)
- Turbine housings
- Worm gear sets
- Hydroelectric turbine components
- Compressor, pump & valve components
- Compressor cylinders





... energy and metallurgy ...

Key figure

**66 %**  
of sales  
are exported

### Metallurgy

Providing expertise and innovative solutions, Groupe CIF is a partner in major industrial projects in the iron and steel industry. In sintering plants, major international producers have selected Bogiflex® and Haflex® drive systems for their operational flexibility and reliability.



- Double-helical gears and pinions
- Bogiflex® drive system
- Coiler drums (for Steckel mills)
- Custom spacers and couplings
- Pellet cars
- Pinion stands and gearboxes for rolling mills
- Converter and ladle tilting systems



*A petty impatience can ruin  
a great project.*  
( Confucius )



### Infrastructure

- Lock or dam handling winches
- Hoisting systems
- Barge hinge components
- Mechanical jacks
- Rollers & bearings





... infrastructure and sugar processing .

Key figure

**1500**  
employees

### Sugar processing

Groupe CIF supplies components for sugar extraction processing of beets and cane. For cane milling and crushing, Groupe CIF has designed and developed reduction gearboxes specifically adapted for this type of application. A complete size range is offered to cover the full breadth of crusher capacities.



- Diffuser gears
- Diffuser tires
- CANEflex®, CANEmaster® and ERsun® reduction gearboxes for cane crushers
- Gearboxes for mixers and crystallizers
- Shafted rollers



*Science and art  
come to man  
through experience.*

( Aristotle )

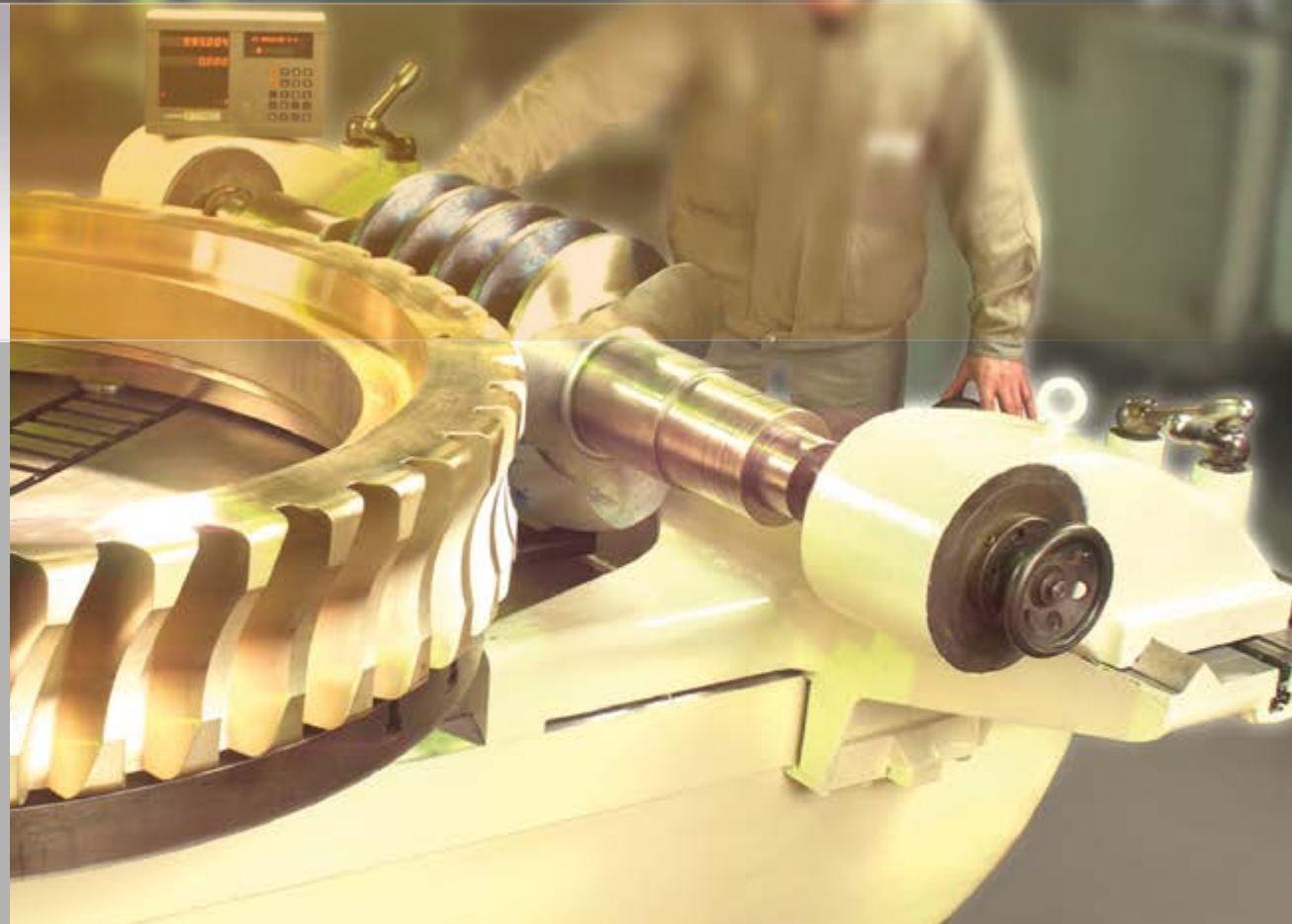
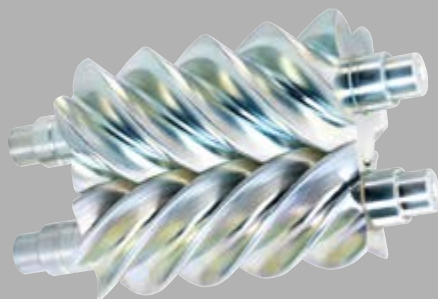


### **Worm gearing / Rotor screws**

Groupe CIF designs and manufactures worm gear sets in an extensive range of sizes and ratios, for torque transmission applications up to 3000 KNm.

Worm wheels, within a diameter range of 50 to 3000 mm, are made from centrifugally-cast bronze, or bronze overlaid onto high-performance steel hubs.

Worm screws, up to a diameter of 420 mm, are made from induction-hardened or case-carburized steel.







# Groupe CIF: the strength of a multi-site commitment to Quality, as certified per version 2015.

## Key figure

**7**  
**factories**  
in Europe



## Custom solutions for heavy industry

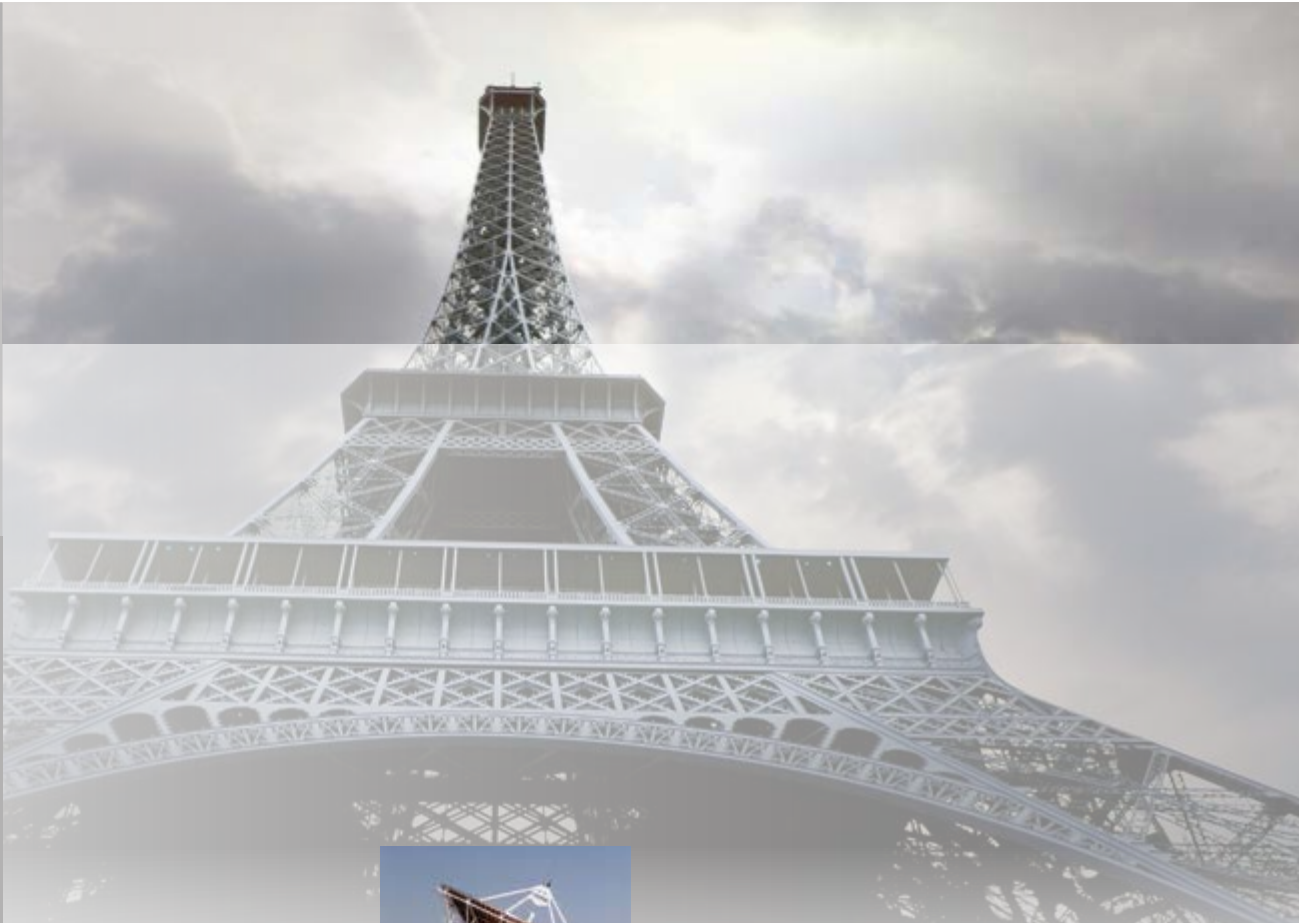
Although Groupe CIF is known for having supplied parts for the Channel Tunnel, pulleys and reduction gears for the Eiffel Tower, and wind breaks for the Millau Viaduct, it also makes full gear drive systems for applications in gold, nickel and copper mines located in countries such as Chile, Africa, Australia and Russia.

The respect of individuals is a central tenet of Groupe CIF's organizational policies, and it is within this context that we develop our operations in a responsible and ethical manner, and maintain safe and secure work environments in all of our production sites.

Our industrial activities are driven by a focus on continuous improvement in the areas of quality, health and safety, environmental and energy management, and we encourage all of our stakeholders to be active participants in this approach with all of our companies.

## Other :

Environmental,  
Pulp and paper,  
Rail,  
Aerospace,  
Dredging,  
Public works,  
Works of art





## Compagnie Industrielle et Financière de Bussy

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[www.legroupecif.com](http://www.legroupecif.com)



 Manufacturing locations

 Sales agencies

 Representatives

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