STEEL INDUSTRY

>> One Single Partner for all Your Needs <<
HOT STRIP MILL GEARBOX

190 Tons - Power: 9 MW at 27 rpm
Size = 8,8 x 4,4 x 4,9 meters (L x l x h)
HOT STRIP MILL GEARBOX

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Size = 8.8 x 4.4 x 4.9 meters (L x l x h)

CAST IRON AND STEEL         FABRICATION           MACHINING                               MECHANICAL POWER TRANSMISSION SOLUTIONS
STEEL PROCESS

IRON MAKING

STEEL MAKING

CONTINUOUS CASTING
ORE RECOVERING

HOT ROLLING
ORE RECOVERING

# MATERIAL HANDLING

ERmaster® for belt conveyors

ERsun® for bucket wheel

# SINTERING/PELLETIZING PLANT

Bogiflex®

Pellet cars

Sprocket wheel

Haflex®
MILLS, DRYERS, MIXERS, ROTARY KILNS FOR DIRECT REDUCTION IRON PROCESS

Complete drive systems

Girth gears

ERmaster® parallel-shaft reducers

Mill Heads

White metal bearings

Pinions

Riding ring fitted on kiln shell

MECHANICAL POWER TRANSMISSION SOLUTIONS
STEEL MAKING & CONTINUOUS CASTING

TUNDISH CAR AND MOULD ADJUSTMENT

Roller screw mechanical jacks
Worm gear sets
Continous casting : Bearings refurbishment
Gear couplings for rollers

CONVERTER TILTING AND TAPPING

Ladle crane
Haflex®
Bogiflex®
Special gearboxes
IRON MAKING

- Furnace Bell Hardfacing
- Bogiflex® Gearbox for Torpedo Cars
- Liners

HOT ROLLING

- STECKEL MILLS
  - Coiler drums

Thermomechanical analysis for optimal design:

<table>
<thead>
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<th>FC Reference</th>
<th>Temperature (°C)</th>
<th>Stress Rupture (Mpa)</th>
<th>Creep Rate 1%</th>
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<tr>
<td></td>
<td>100h</td>
<td>1000h</td>
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<tr>
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Special coating for oxyde pick ups or surface damage issues:
Groupe CIF, though the synergy and complementarity of the machine tools of six companies, is capable of handling complex projects, from engineering to manufacturing.

Our policy of continuous investment, our extensive experience and the multiple capabilities of our various sites enable us to fully meet the quality and delivery requirements of our customers.
Testing

Fabricated gear wheel on VBM

Gear wheel on CNC center

Pinion on gear grinder

Assembly

Testing
# SPECIAL GEARBOXES & GEARS SETS FOR HOT & COLD PROCESSING

- Gear wheel
- Pinion stand casing
- Pinion stand
- Reducers for tubes mills

Worm gears and gearboxes for mechanical jacks, screw down and cooling bed
REFURBISHING OF ROLL CHOCKS

SPINDLES AND GEAR COUPLINGS
# OUR ADDED VALUE

## R&D - ENGINEERING

- Finite Element Analysis (FEA)
- Solidification and Flow Simulation Modeling
- Mechanical drive train design (open and enclosed gearing)
- Development of custom mechanical couplings
- Re-design of fabrications to castings (SG Iron or cast steel)
- Technical staff of approx. 100 engineers/technicians
- Multiple patents each year

## MATERIAL DEVELOPMENT

- Proprietary metal casting grades (FerryNod®, Ferrynox)
- Full metallurgical test lab
Over thirty qualified engineers and technicians within Groupe CIF are capable of travelling over the world for operations ranging from installation and commissioning of supplied products, to preventive maintenance and technical assessments.

- Reverse Engineering
- Supervision - Commissioning
- Monitoring
- Assessments/Recommendations
- Refurbishment of all types/brands of gearboxes