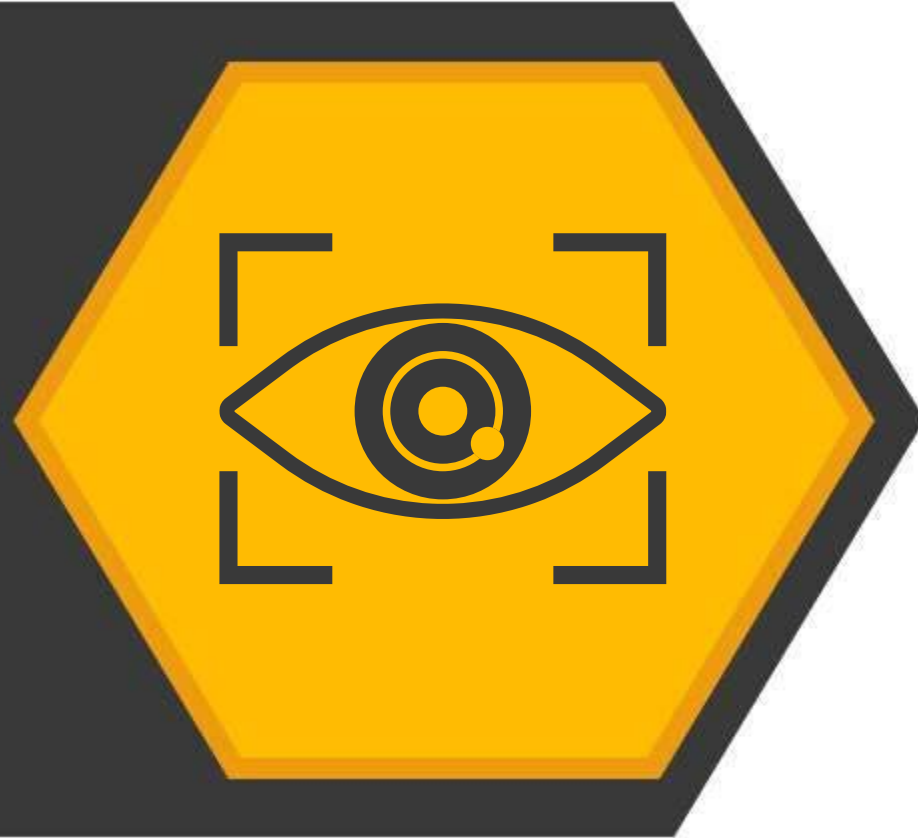


Qadbros Engineering

Capabilities, Products and Services





Vision

Manufacturer of heavy equipment and provider of engineering & design solutions to sugar, cement, steel, mining and general industry through an integrated focus on customer, quality, excellence and innovation and by inculcating a culture of ethics & employee well-being

Mission

Become a globally recognized heavy equipment manufacturing brand of Pakistan by providing high quality products and reliable engineering & design solutions to sugar, cement, steel, mining and general industry, in partnership with reputable international companies, and also be an employer of choice



Core Values



PERFORMANCE DRIVEN CULTURE

A culture that enables, values, and recognizes individual and collective performance, and where employees have ample opportunities to develop personally and professionally and contribute to organizational excellence and innovation



CUSTOMER FOCUS

We remain committed to ensuring full satisfaction of our customers in all aspects of product quality, delivery and service

INTEGRITY

We value and uphold integrity as informed by Islamic teachings



RESPECT

We are committed to treating everyone with courtesy, politeness and constructive engagement.

EMPLOYEE WELL-BEING

Committed to a workplace where physical, emotional and spiritual well-being of all stakeholders is ensured



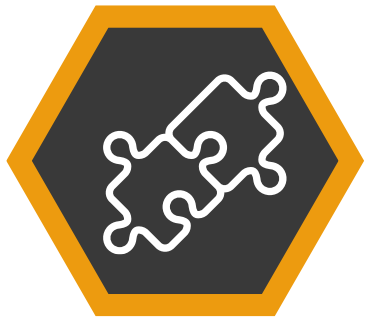
ISLAMIC ETHICS

Our organization remains committed to Islamic ethics, with a particular focus on interest-free financial transactions (*to shun economic exploitation*) and providing time and space for prayers (*to reinforce equality and human accountability to Allah Almighty*)

History



130 years old family-owned business, spanning over four generations



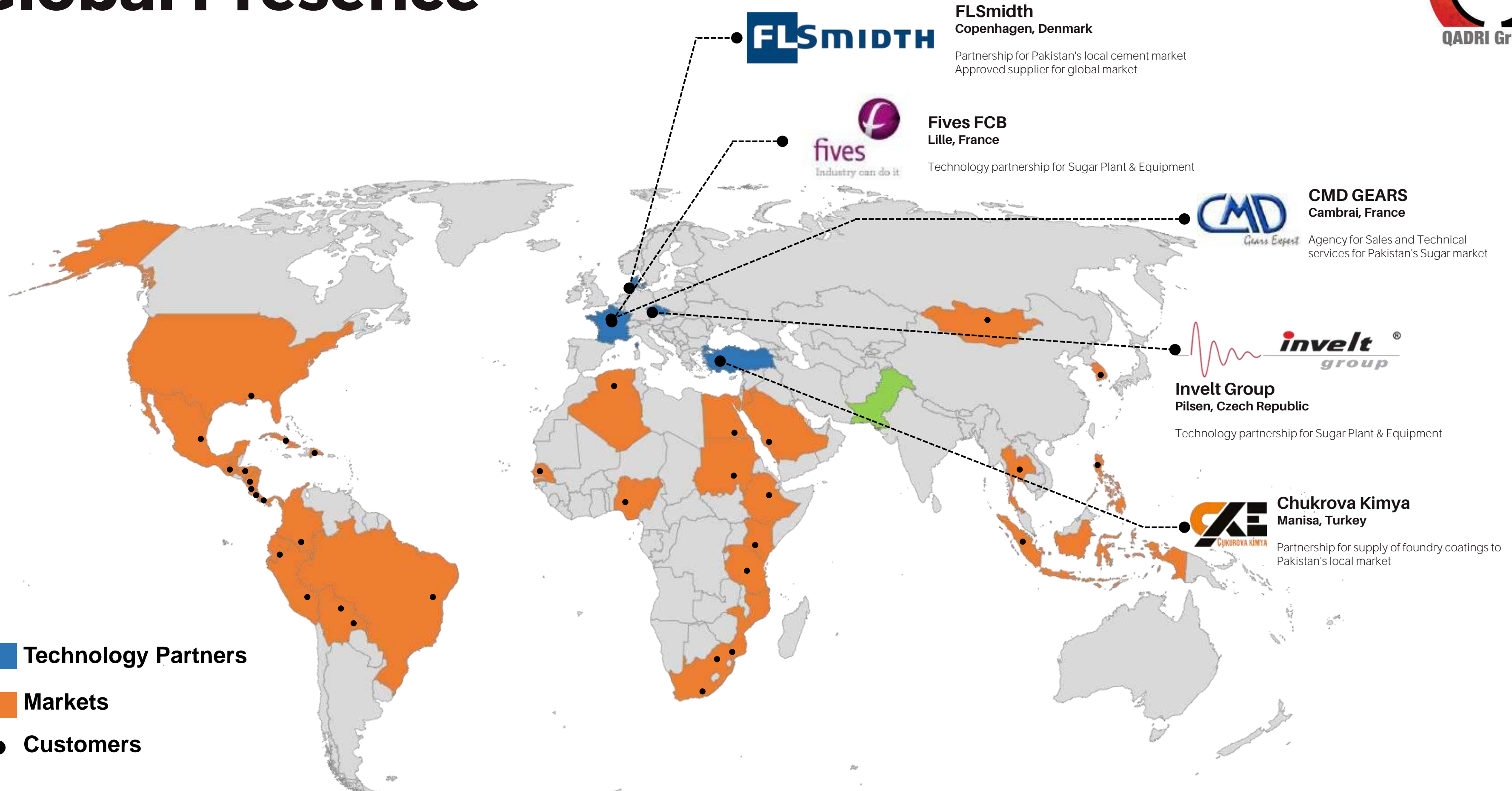
Vertically integrated manufacturing; foundry, machine shop and fabrication



Manufacturers & Exporters for Sugar, Cement, Mining, Steel, Power, Auto & General industry



Global Presence



Technology Partners

Markets

Customers

Customer Base



SUGAR

AMERICAS

18 Countries ; 67 Factories

AFRICA

10 Countries ; 38 Factories

FAR EAST ASIA

6 Countries ; 31 Factories

PAKISTAN

92 Plants



CEMENT & MINING

AMERICAS

39 Countries ; 70+ Plants

AFRICA

44 Countries ; 85 Plants

MIDDLE EAST

7 Countries ; 19 Plants

PAKISTAN

28 Plants

Foundry Facilities



Foundry 1

Specializing in heavy cast iron castings upto 40 Tons and large quantities of heat and wear resistant castings

■ Cupola Furnace

Annual Capacity — 9600 Tons

Single Piece Pouring Capacity — Max 40 Tons

■ Induction Furnace

Annual Capacity — 2000 Tons

Single Piece Pouring Capacity — Max 2000 kg

■ Covered Area: 180,000 sqft

Foundry 2

Steel foundry with an annual capacity of 7500 Tons

■ Induction Furnace

Annual Capacity — 7500 Tons

Single Piece Pouring Capacity — Max 40 Tons

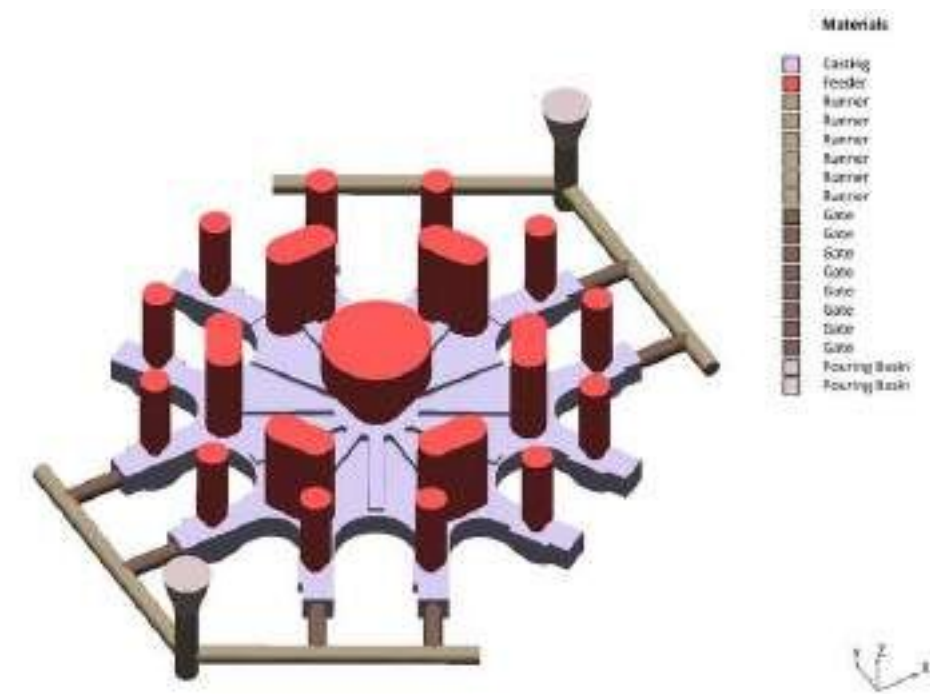
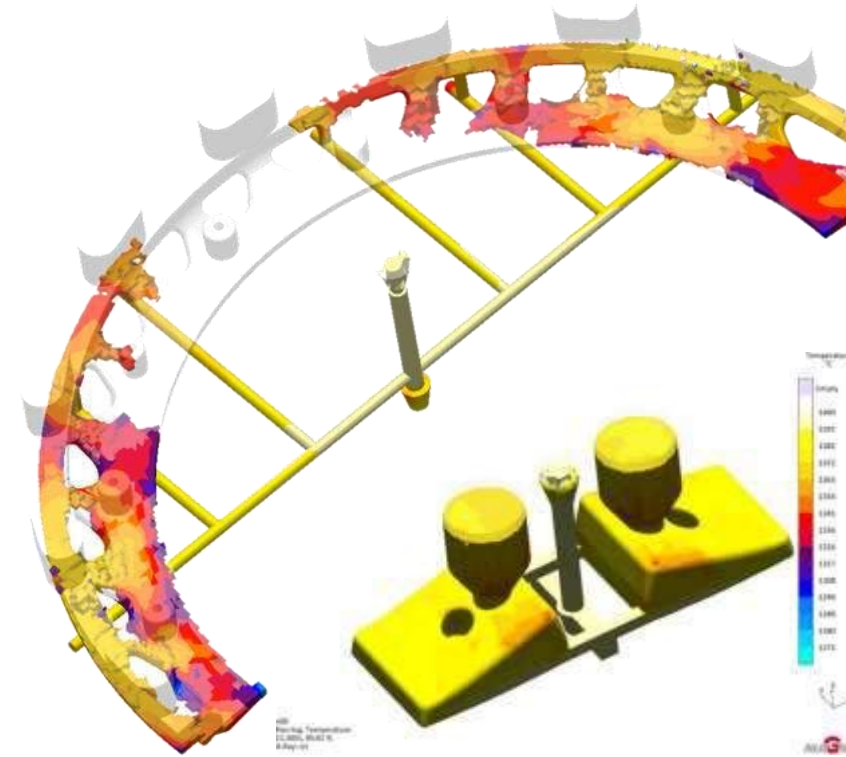
■ Covered Area: 170,000 sqft

Foundry Facilities



METHOD - ENGINEERING

- Product design software: Solid works, Inventor
- Magmasoft — Casting Simulation



PATTERN SHOP

- 3 axis & 4 axis CNC Routers

x : 1500 mm, y : 3000 mm, z : 500 mm

Accuracy : $\pm 0.5\text{mm}$

Foundry Facilities

MOULD PREPARATION

- No bake sand moulding system
- Continuous sand mixers — upto 100 Tph
- Carousel moulding line for efficient mould throughput while maintaining precision



Foundry Facilities

MELTING

- Cupola Furnace : up to 40 ton single piece casting
- Induction Furnace : up to 40 ton single piece casting



Foundry Facilities

HEAT TREATMENT

- Four heat treatment furnaces — Upto 4 x 6 x 6 m
- PLC controlled process
- Normalizing, Annealing, Quenching and Tempering



FINISHING OPERATIONS

- Mechanized riser cutting & surface grinding
- Shot blasting — 4.5 x 4.5 m

Machining Capabilities



- **600,000 hours of Annual Machining Capacity**
- **Covered Area: 100,000 sqft**

Machining Capabilities

HORIZONTAL LATHES

- Max Turning Diameter : 2500 mm
- Max Length : 15000 mm
- Loading Capacity : 70 Tons



VERTICAL LATHES

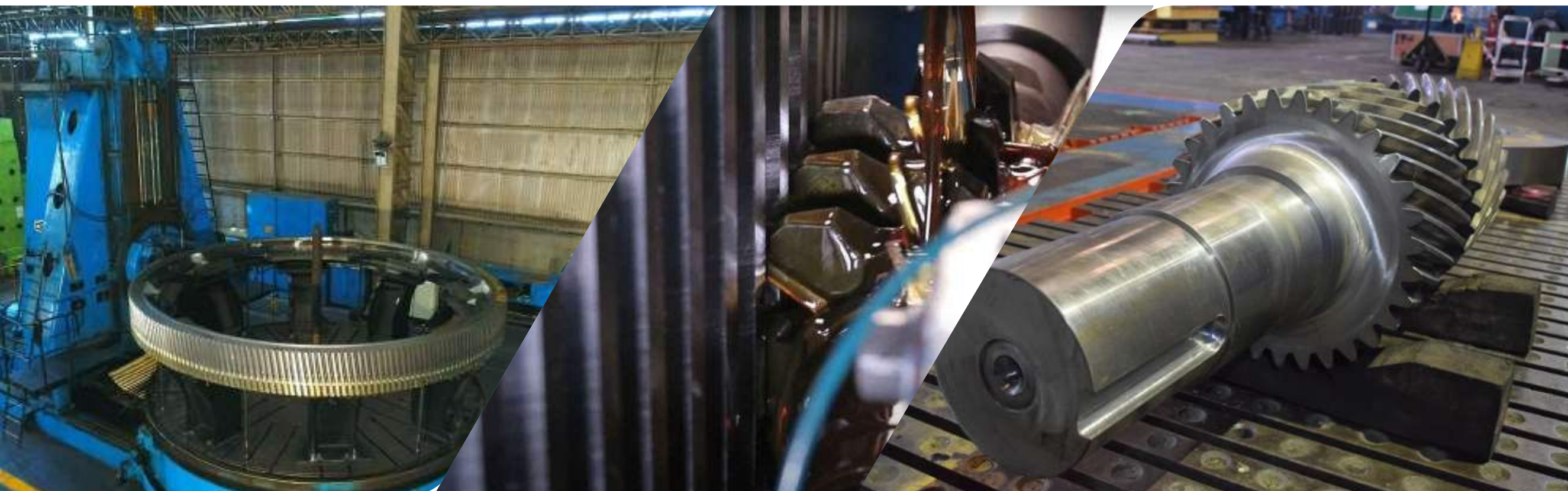
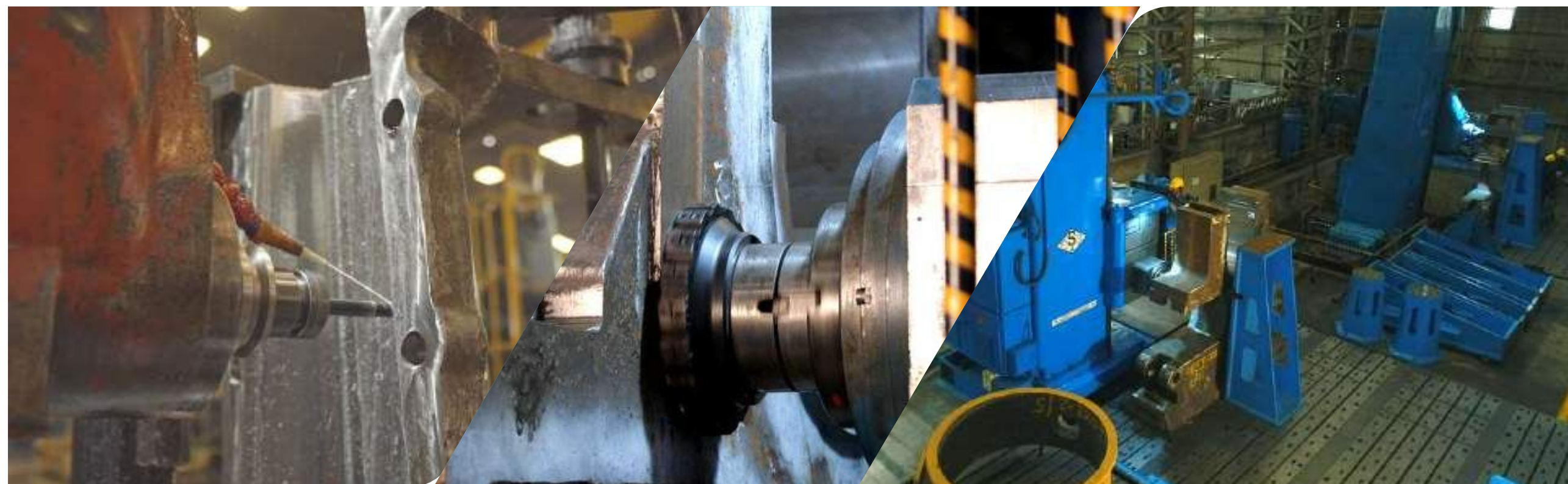
- Max Turning Diameter : 7000 mm
- Max Height : 5000 mm
- Loading Capacity : 100 Tons

Machining Capabilities

HORIZONTAL BORING

Manual and CNC Operated

x : 10000 mm, y : 5000 mm, z : 2000 mm



GEAR HOBGING

- Max Turning Diameter : 6000 mm
- Upto 40 Module

Machining Capabilities

VERTICAL MILLING

x : 3500 mm, y : 1750 mm, z : 1000 mm

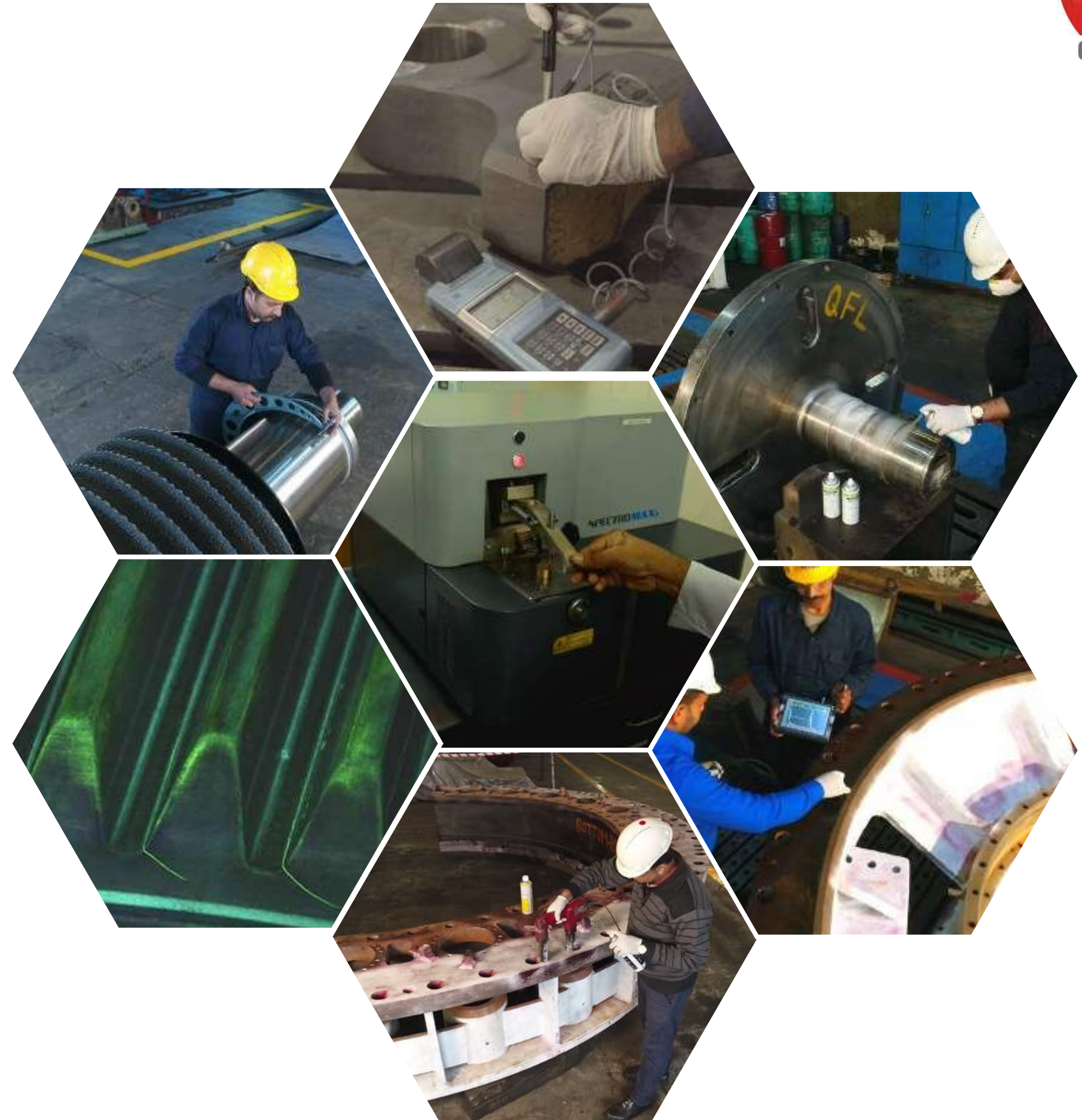


INDUCTION HARDENING

- Hardening up to 62 HRC
- 16 to 40 Module
- Max Diameter: 7000 mm

Quality Compliance

- Dimensional Inspection
- Hardness
- Microstructural Analysis
- Chemical Analysis
- Mechanical Testing (Tensile, Impact)
- Nondestructive testing (DPT, MPT & UT)



Certifications



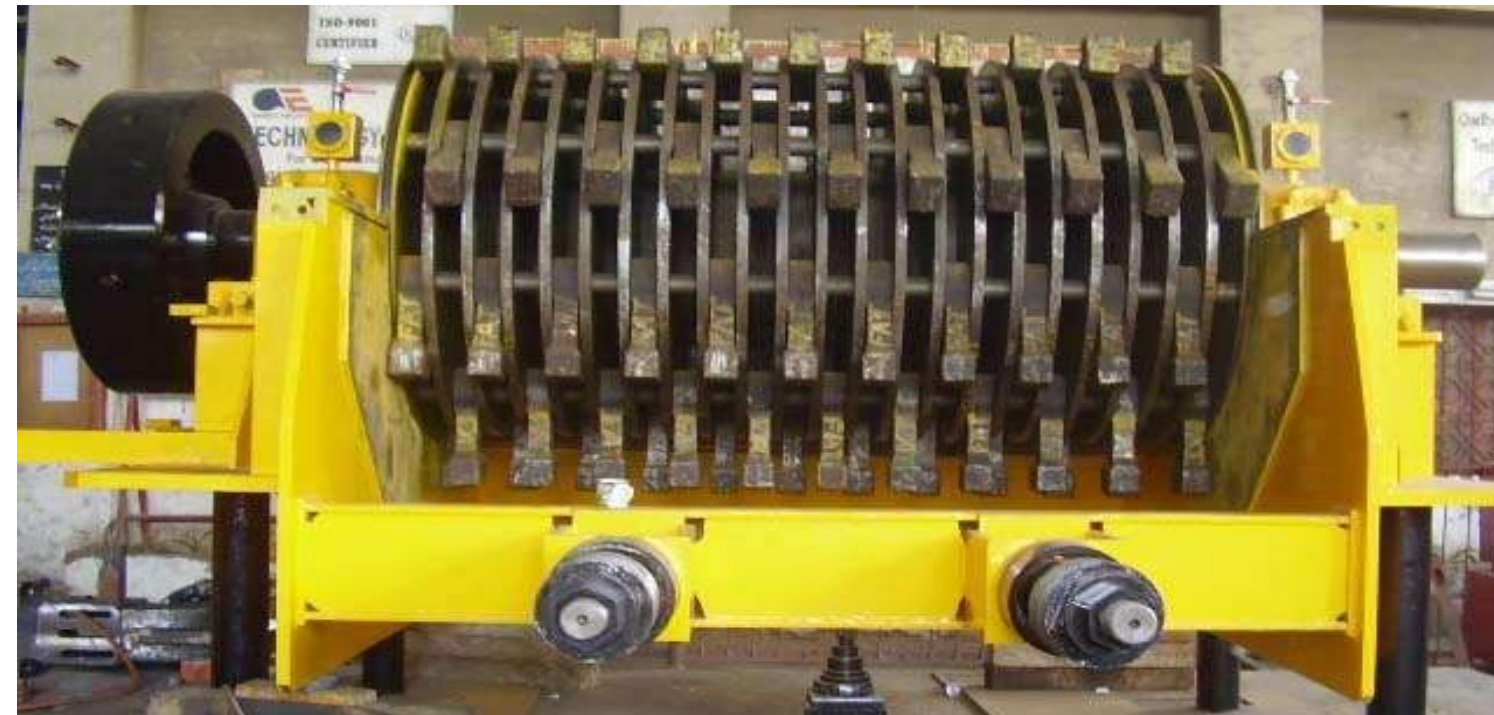
ISO 9001:2015 — Quality Management System

ISO 14001:2015 — Environmental Management System

ISO 45001:2015 — Occupational Health & Safety



Product Portfolio – Sugar



Scope of supply



Cane Receiving and Handling

- Cane Feeding Table
- Cane Conveyors
- Cane Levelers

Cane Preparation

- Cane Knives
- Cane Shredders
- Prepared Cane Elevators

Cane Crushing

- Cane Crushing Mills
- Multi-misalignment Couplings
- Slow Speed Gearboxes
- Intermediate Carriers
- Bagasse Carriers
- Overhead Cranes



Heavy-Duty Cane Knife



PROVEN RUGGED DESIGN

- Primary knife stagger angle is 120°
- Secondary knife stagger angle is 60°
- Installation of primary and secondary knife sets make sure continuous act upon the stream of cane stalk
- Replacement of knife is very easy
- Installed with heavy-duty self-aligning roller bearings

HIGH EFFICIENCY

- Swing dia. 1676 mm helps to achieve recommended tip-velocity 60 m/sec at low rpm
- Combination of primary & secondary knife sets helps to achieve 60 ~ 70 PI which will substantially increase the performance & efficiency of the shredder

RECOMMENDED INSTALLED POWER

- Primary knife set 15 kWh / ton of fiber
- Secondary knife set 30 kWh / ton of fiber

Manufactured for LASUCA SUGAR FACTORY , LOUISIANA , USA
Customized Manufacturing according to customers requirement

Top-Fed Shredder | Qadri – Skoda Design



Manufactured for AL-MOIZ SUGAR FACTORY , PAKISTAN

GRAVITY FED TYPE

(Max. Crushing Capacity 8,500 TCD)

Cane preparation Index 90⁺

HIGH EFFICIENCY & HIGH CAPACITY

- Excellent fiber particle size distribution
- Extremely robust fabricated assembly
- Better feeding of the mills
- Excellent cane preparation index (90⁺)
- Improved final bagasse moisture
- Consistent higher bagasse density
- Lower bagasse pol loss

PROVEN TECHNOLOGY

- Fine preparation by separating the fibers and opening the cell wall efficiently
- Excellent juice extraction at each stage of extraction process
- Increases bulk density of the prepared cane, thereby increasing the capacity of the extraction plant
- Easy to maintain

MECHANICAL & COST EFFECTIVE

- Cost effective & reliable solution

FLEXIBLE & COMPLETE OFFER

- A wide range of technical & design services available to optimize cane preparation system to meet customer's need
- Portfolio includes a large range of Shredder size

In-Lone Fiberizer



Manufactured for MADRE-TIARA SUGAR FACTORY , GAUTEMALA

HORIZONTAL FED TYPE

(Max. Crushing Capacity 8,500 TCD)

Cane preparation Index 90⁺

HIGH EFFICIENCY & HIGH CAPACITY

- Long fiber length with more open cells
- Cane preparation index 90 or more
- Better feeding of the mills
- Good combustion in the boilers

PROVEN TECHNOLOGY

- Suitable to prepare long or chopped cane or mix of both
- No need of cane knives before fiberizer
- Can be installed on the existing cane conveyor
- Easy to maintain

MECHANICAL, OPERATION & ENERGY SAVING

- Capital investment for complete in-line fiberizer system is 10% to 20% less than conventional cane preparation system
- Up to 20% energy saving in operation
- Large swing dia. (1830 mm) to achieve 90 tip velocity with low rpm

FLEXIBLE & COMPLETE OFFER

- A wide range of technical & design services to optimize cane preparation system to meet customer's need
- Portfolio includes a large range of various sizes

MillMax® | Two-Roller Cane Crushing Mill



MillMax® 102"

designed by Fives Cail France

(up to 35% reduction in energy consumption)

PROCESS

- Good extraction and final bagasse humidity achievable

MECHANICAL & OPERATION

- Low maintenance costs (no 3rd roll, no trashplate)
- Low installation costs (with existing drive to increase crushing)
- Robust, easy mill settings & operator friendly
- Bearing liners having integral water cooling system

ANTI-REABSORPTION DEVICE

- RLD device ensures the continuous compression of the bagasse at discharge to avoid reabsorption of juice

ENERGY SAVING

- Low power absorbed per ton fiber
- Up to 35% less power consumption

SAVINGS

- 25% less annual maintenance cost
- Portfolio includes a large range of mill sizes

Heavy Duty 4-Roll Mill | Fives – Fletcher Design



50" x 100" 4-Roll Mill
designed by Fives Cail France

(Max. Crushing Capacity 20,000 TCD)

HIGH EXTRACTION EFFICIENCY & HIGH CAPACITY

- Large bearing journals to bear heavy loads
- easily convertible from 4-roll to 6-roll mill
- Under feed roll directly engaged with feed roll
- All mill rolls are easily convertible to perforated type to maximize the juice drainage

ULTIMATE & PROVEN TECHNOLOGY

- Continuous improvement based on bicentennial and global Expertise of the sugar industry
- Robustness and long-life of the steel frames analyzed with FEA

EASY MAINTENANCE & OPERATION

- Easy horizontal adjustment of mill rolls
- Easy external adjustment of trash plate
- Floating type scraper for mill top roll
- New design mill bearings, steel housing and bronze liner both have independent water cooling system

FLEXIBLE & COMPLETE OFFER

- A wide range of technical & design services to optimize mill according to customer's need
- Portfolio includes a large range of mill sizes
- Tailor-made consultancy according to customer's need

Heavy Duty 4-Roll Mill | Qadri – Skoda Design



55" x 95" 4-Roll Mill

Manufactured for LULA – WESTFIELD SUGAR FACTORY , LOUISIANA , USA

(Max. Crushing Capacity 20,000 TCD)

Heavy Duty 4-Roll Mill | Qadri – Skoda Design



39" x 72" 4-Roll Mill

Manufactured for SAN CARLOS SUGAR FACTORY , COLOMBIA

(Max. Crushing Capacity 6,000 TCD)

Multi-Misalignment Coupling



Manufactured for CASUR SUGAR FACTORY , NICRAGUA

*Customized Manufacturing according to customers requirement
(Easy to install and low-cost maintenance)*

HIGH MILL EFFICIENCY

- MMC is designed to eliminate all the undesirable effects of tail-bar and coupling arrangement
- MMC allows free floating of Top Roll
- No axial load transmitted to gear

PROVEN TECHNOLOGY

- Mis-alignment between Gear Shaft and Mill Top Roll due to alignment error in installations is fully compensated by the MMC
- MMC is the first choice to use with new generation of Gear

MECHANICAL, OPERATION and SAFETY

- Easy to install
- Safe & smooth operation is guaranteed by back-up slings
- Competitive capital cost followed by low cost maintenance

FLEXIBLE & COMPLETE OFFER

- A wide range of technical & design services available to optimize mill drive system to meet customer's need
- Portfolio includes a large range of MMC sizes

Recent Supplies of Cane Crushing Mills

BOLIVIA

- GUABIRA , S.A. *

COLOMBIA

- PROVIDENCIA , S.A.
- INCAUCA , S.A.
- PICHICHI , S.A.
- SAN CARLOS , S.A.
- MAYAGUEZ , S.A.
- MANUELITA , S.A. *
- RIOPAILA CASTILLA , S.A

GUATEMALA

- LA UNION , S.A.
- PALOGORDO , S.A.

GUADELOUPE

- DAMOISEAU

MEXICO

- EL HIGO
- SAN CRISTOBAL
- BENITO JUAREZ

NICARAGUA

- CASUR , S.A.

PARAGUAY

- MANDUVIRA

PERU

- LAREDO S.A.A.
- PUCULA S.A.A.
- DEL CHIRA

REUNION

- LE GOL

SENEGAL

- RICHARD TOLL

USA

- LOUISIANA SUGARCANE COOP

ZAMBIA

- NAKAMBALA SUGAR FACTORY *

ZIMBABWE

- TRIANGLE SUGAR FACTORY *

PAKISTAN

- ADAM
- AL-MOIZ (UNIT-I)
- AL-MOIZ (UNIT-II)
- ASHRAF
- CHANNAR
- DARYA KHAN
- FATIMA
- GULF (JKS II)
- HABIB
- HAMZA (UNIT-I)
- HAMZA (UNIT-II)
- HAQ BAHU
- HUNZA
- HUSSAIN
- ITTEFAQ
- JDW (UNIT-I)
- JDW (UNIT-II)

PAKISTAN

- JDW (UNIT-III)
- JUHRABAD
- LAYYAH
- MAKKAH
- MADINA
- MEHRAN
- MIRPURKHAS
- NEW DADU
- R.Y.K.
- RAMZAN
- SAFINA
- SHAHMURAD
- SHEIKHOO
- TSML-KANJWANI
- TSML-ZAMAND
- TWO STAR

** supplied without rollers*



Mill Rolls & Re-shellings

DOOR-TO-DOOR SERVICE

- One-stop solution for mill roll collection, shipping and re-shelling

EXCHANGE OFFER

- We receive your worn-out roll (with defective shaft) and replace it with a brand-new roll
- Get reimbursement of the scraped roll adjusted in the price of brand-new roll

REFURBISHMENT

- NDT inspection of the old shaft
- Refurbishment of mill roll shaft (bearing journals , square-end , keyways , ...etc.)
- Fully automated & controlled process
- Heat treatment of shaft in PLC furnace (in case of refurbishment)

FLEXIBLE AND COMPLETE OFFER

- Available re-designing facility of your existing conventional roll to perforated mill roll
- Wide range of shell materials available suiting your operational requirements ;
 - GREY CAST IRON (BS1452 Grade 220)
 - SG IRON (SG-40 / SG-50)
 - CAST STEEL (SAE 1035)
 - **Cast-Alloy**
grey cast iron 'specially' engineered for enhanced performance of sugar mill rolls





PERFORATED MILL ROLL

ENHANCED PERFORMANCE

- May increase juice extraction 1 – 2.5 %
- May decrease bagasse moisture 2 - 3 %
- Specially designed ' multi-hole ' brass nozzles to avoid chocking , recommended for
 - discharge roll of all mills
 - top roll of the last mill

FLEXIBLE AND COMPLETE OFFER

- Available re-designing facility of your existing conventional roll to perforated mill roll
- Wide range of materials available suiting your operational requirements ;

SHELL

- GREY CAST IRON (BS1452 Grade 220)
- SG IRON (SG-40 / SG-50)
- CAST STEEL (SAE 1035)
- **Cast-Alloy**

grey cast iron 'specially' engineered for enhanced performance of sugar mill rolls

SHAFT

- EN 8 / SAE 1045
- EN 19 / SAE 4140
- EN 14B
- EN 3A

HARD-FACING , ARCING & TEAR-DROPS

- Specially designed roughening of mill rolls shells ;
 - to reduce wear on shell
 - to enhance bagasse grip for better extraction



Mill Crown Pinions

DESIGN SIMULATION PROCESS

- Drawings are tested on simulation software to evaluate the tooth profile and smooth operation at minimum and maximum working centers

SMOOTH PROFILE

- Tooth profile fully machined to achieve precision & smoothness

HEAT TREATMENT

- PLC controlled heat treatment facility helps to ensure execution of required heat treatment cycle to achieve the required mechanical properties

INDUCTION HARDENED

- Tooth profile induction hardened with latest state of the art technology to increase wear resistance

FLEXIBLE & COMPLETE OFFER

- Available re-designing facility to redesigning according to customer's requirements
- A wide range of materials available for your choice (like ; AISI 1045 ; AISI 4140 ; AISI 4340 etc.)



MILL ROLL BEARINGS

INNOVATIVE DESIGN

- Water-cooled design liners for Mill Roll Bearings
- Steel housing and bronze liner both have the independent water-cooling system

WIDE RANGE OF MATERIALS

- BS 1400 : LG-2
- BS 1400 : LG-4
- BS 1400 : PB-1
- BS 1400 : PB-2
- SAE-64
- SAE-65
- SAE-67

FLEXIBLE AND COMPLETE OFFER

- Available re-designing facility for your existing bearings to the new innovative design
- Addition of advance sealing arrangement to prevent oil leakage and contamination



Slow Speed Gears

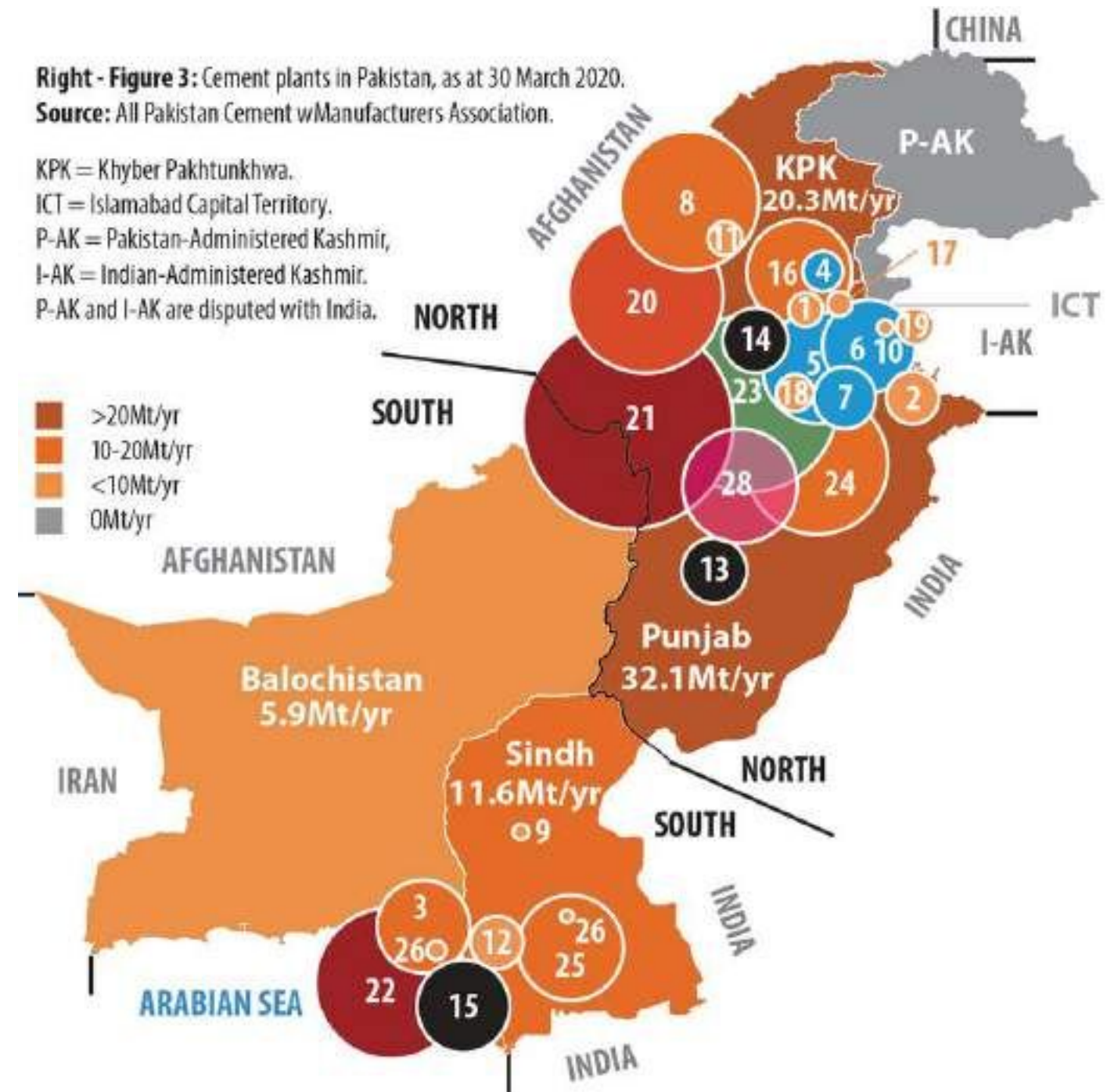
Customized Manufacturing according to customers requirement
Manufactured for LA CABAÑA SUGAR FACTORY , EL SALVADOR

Product Portfolio — Cement



The Cement Market in Pakistan

- 26 plants in Pakistan, 52 production lines
- 69 Million Ton per annum production capacity
- Cement production capacity expected to grow by 43% by 2023
- Qadbros entered the market for cement wear parts in 2013
- Collaboration with FLSmidth in 2019
- **Qadbros is now the leading supplier in the local cement sector; 80% market share**



QADBROS – FLSMIDTH COLLOBORATION

- Transfer of technology and product know-how from FLSmith to Qadbros
- FLSmith conducting routine audits of Qadbros production processes and quality protocols
- Evaluation of RFQs and Specifications as per FLSmith standards
- Training of Qadbros technical staff
- Assuring that all products comply to FLS quality specifications
- Development of products for the export market, +1000 TiC Hammers delivered to FLS customers globally

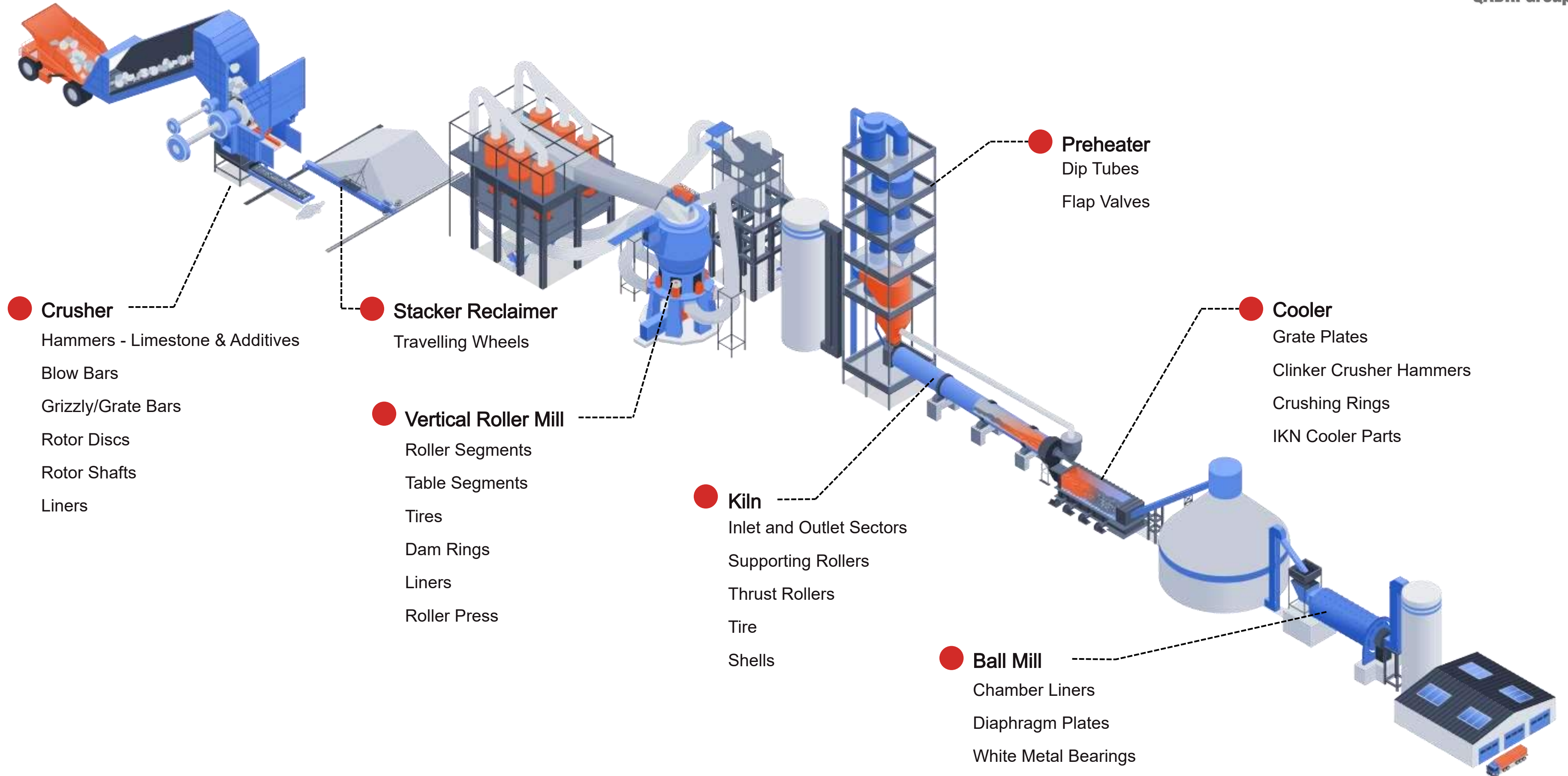


QADBROS – FLSMIDTH COLLOBORATION

- **QADRI-Group, Pakistan** signed on 18th May 2023, **TWO** landmark agreements with the world-renowned FLSmidth, Denmark
- Agreement to use FLS Technology & Intellectual Property to manufacture Hammers, Blow Bars, Ball Mill Liners, and Dip Tubes for supply to cement plants located in 37 countries across Africa and the Middle East
- Agreement to promote & sell FLS-manufactured Products to cement plants located in those 37 countries across Africa and the Middle East as well as to offer Professional Services of FLS experts to cement plants in those 37 countries
- With inclusion of Central American countries and further territories, **the number of countries under these agreements now stand at 89.**



Scope of supply



- Crusher**
 - Hammers - Limestone & Additives
 - Blow Bars
 - Grizzly/Grate Bars
 - Rotor Discs
 - Rotor Shafts
 - Liners

- Stacker Reclaimer**
 - Travelling Wheels

- Vertical Roller Mill**
 - Roller Segments
 - Table Segments
 - Tires
 - Dam Rings
 - Liners
 - Roller Press

- Kiln**
 - Inlet and Outlet Sectors
 - Supporting Rollers
 - Thrust Rollers
 - Tire
 - Shells

- Preheater**
 - Dip Tubes
 - Flap Valves

- Cooler**
 - Grate Plates
 - Clinker Crusher Hammers
 - Crushing Rings
 - IKN Cooler Parts

- Ball Mill**
 - Chamber Liners
 - Diaphragm Plates
 - White Metal Bearings

Bi-metallic Insert Hammers

Low-Wear Crushing Solution

- Maximum striking hardness from the start
- 2 — 3 times increased life



Case Study — Maple Leaf Cement

Application: Limestone Crusher

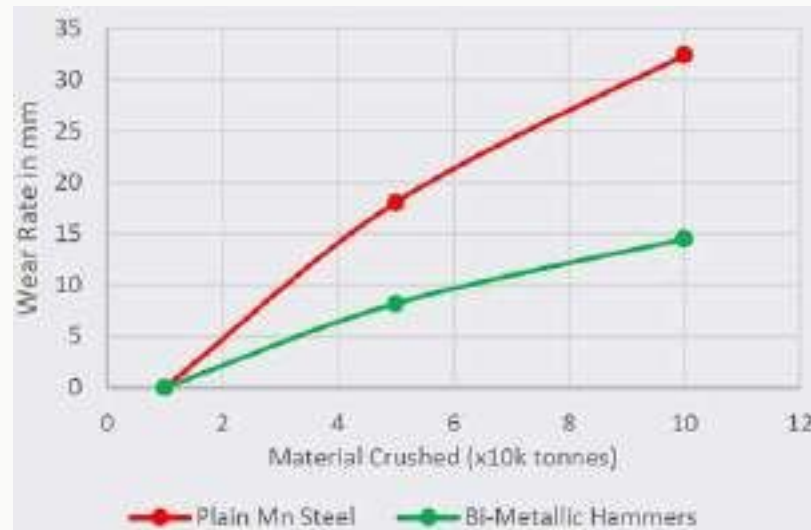
Performance: 2.8 MT crushing (still in operation) compared to 1 MT from Plain Manganese Steel Hammers



Case Study — Fauji Cement

Application: Limestone Crusher

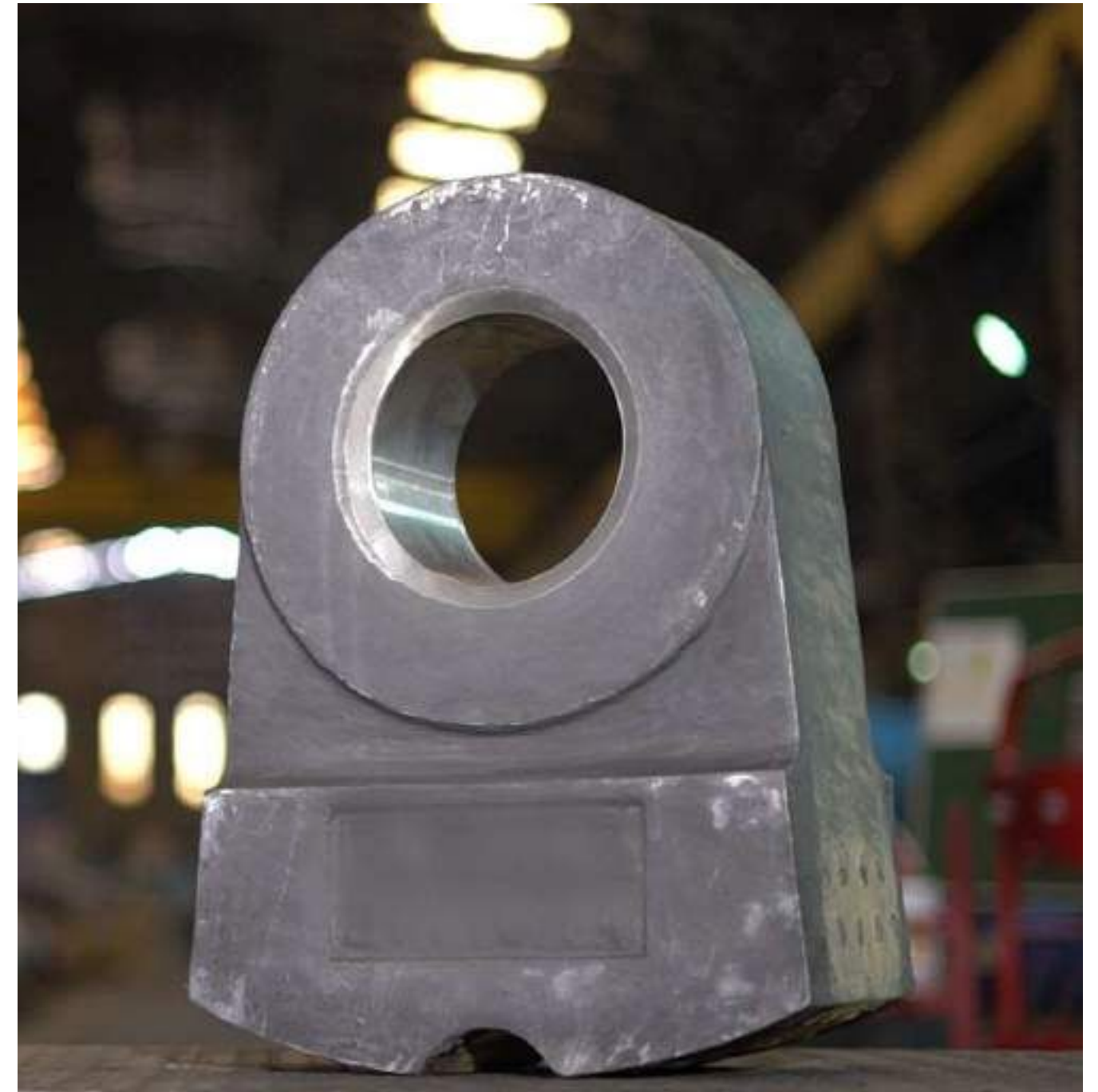
Performance: 14.5 mm wear on one side after 100,000 Tons of crushing. Compared to 32.5 mm wear on standard manganese hammers



Case Study — Bestway, Kallar Kahar

Application: Clinker Crusher

Performance: 0.3 grams/Ton wear on TiC Hammer compared to 0.8 grams/Ton on Plain Manganese Steel Hammers



Blow Bars

Titanium Carbide delivering exceptional wear performance

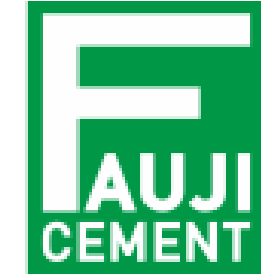


■ Specifications

Material : Manganese Steel with TiC Inserts

Dimensions : 120 mm x 500 mm x 3000 mm

Weight: 1500 kg



■ Delivered to customers in Saudi Arabia, Congo and Colombia



Grizzly Bars



- Superior resistance against abrasion
- Stringent control of microstructural properties



Dip Tubes

Cast central pipe for high temperature cyclones



■ Focus on dimensional precision & metallurgy

Stringent process control to comply to chemical composition

Assuring dimensional accuracy through foundry automation and in-house trial assembly



Case Study — Lucky Cement, Karachi

Material: ASTM A297 Gr.HK

Installation: Cyclone C5

Performance: 12 months life



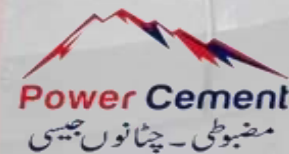
Case Study — Cherat Cement

Material: ASTM A297 Gr.HK

Installation: Cyclone C5

Performance: 15 months life, compared to 9 months life of local supply.

Since 2018, Cherat has ordered 12 sets for two lines to Qadbros



Kiln Inlet & Outlet Sectors



- Short installation time
- Longer lifetime
- Reduced maintenance time
- Reduced clinker dust emission

Case Study — Lucky Cement, Karachi

Material: ASTM A297 Gr.HK

Line Capacity: 3000 Tpd

Performance: 36 months of operation



Kiln Supporting Rollers

Forged shaft with Forged / Casted Roller



■ Order from Fives FCB for 6 Kiln Supporting Rollers

Location: Senegal

Plant Capacity: 6,500 TPD

Roller Dimensions: Ø 2250 mm x 1100 mm

Weight: 37,000 kg (assembled)



■ Recent delivery to Lucky Cement, Karachi

Material : Forged Steel Shaft + Casted Roller

Dimensions : Ø 1600 mm x 850 mm

Weight: 16,000 kg (assembled)



IKN Cooler Parts

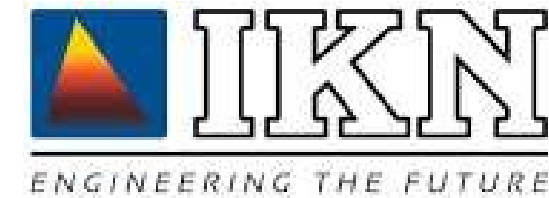
Wear Boards, Guillotine, Ridges, and all stages of blades



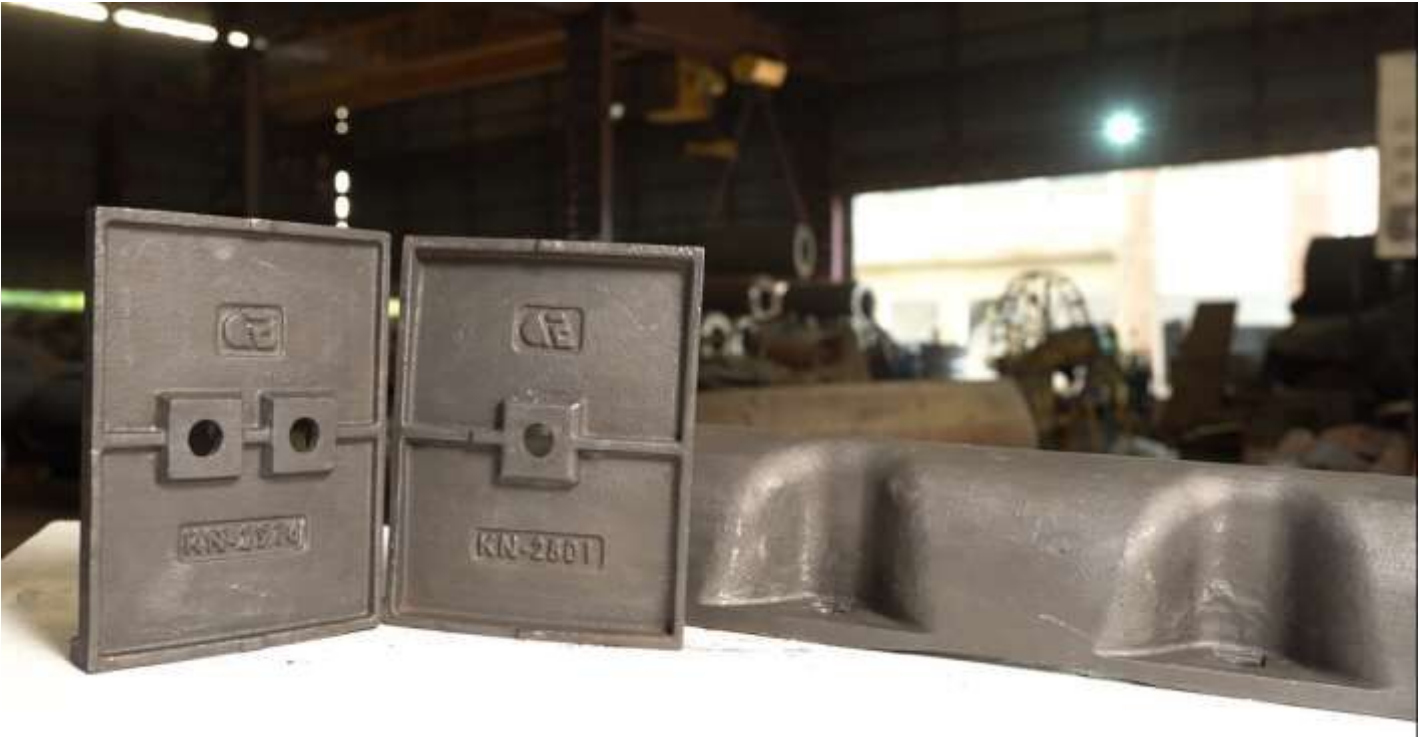
- IKN Cooler parts are currently being imported from OEM in Germany. Qadbros can now produce these thin-walled castings locally

- Product development through Reverse Engineering Tools

- Samples delivered to Attock Cement and Maple Leaf Cement



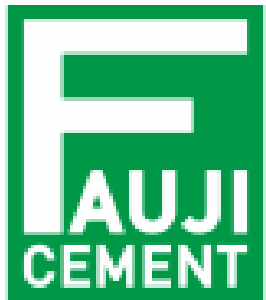
Cooler Parts



Pfister housing + Plates

Refurbishment

- Shrink fitting of Stainless Steel Sleeve inside the Pfister casing
- Final Internal Diameter : 1000mm \pm 0.2 mm



Wear Parts for Ball Mills

Step Liners and Intermediate Diaphragm Plates

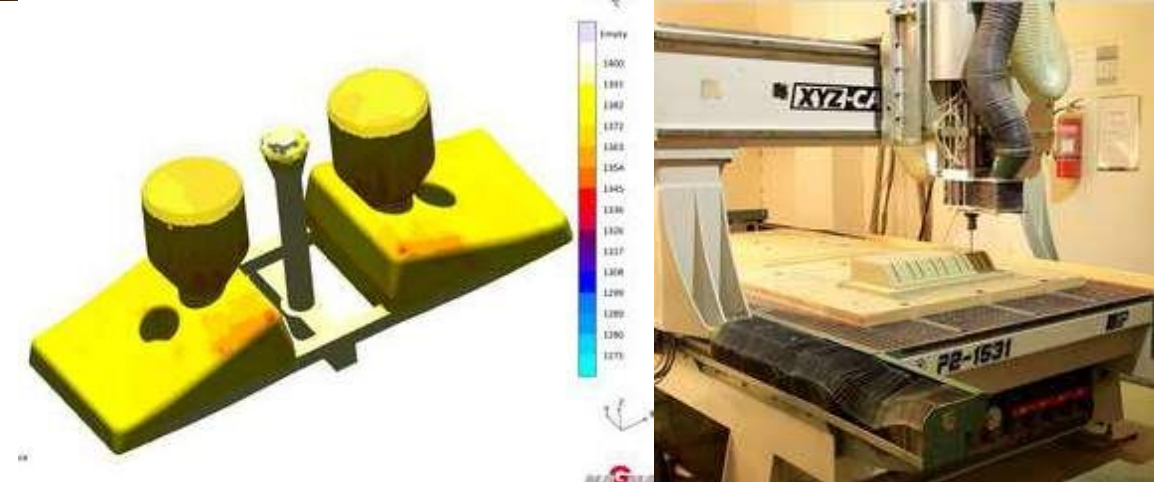


- **Extensive quality testing**

Chemical, Microstructural and Dye Penetrant Testing to ensure enhanced product life

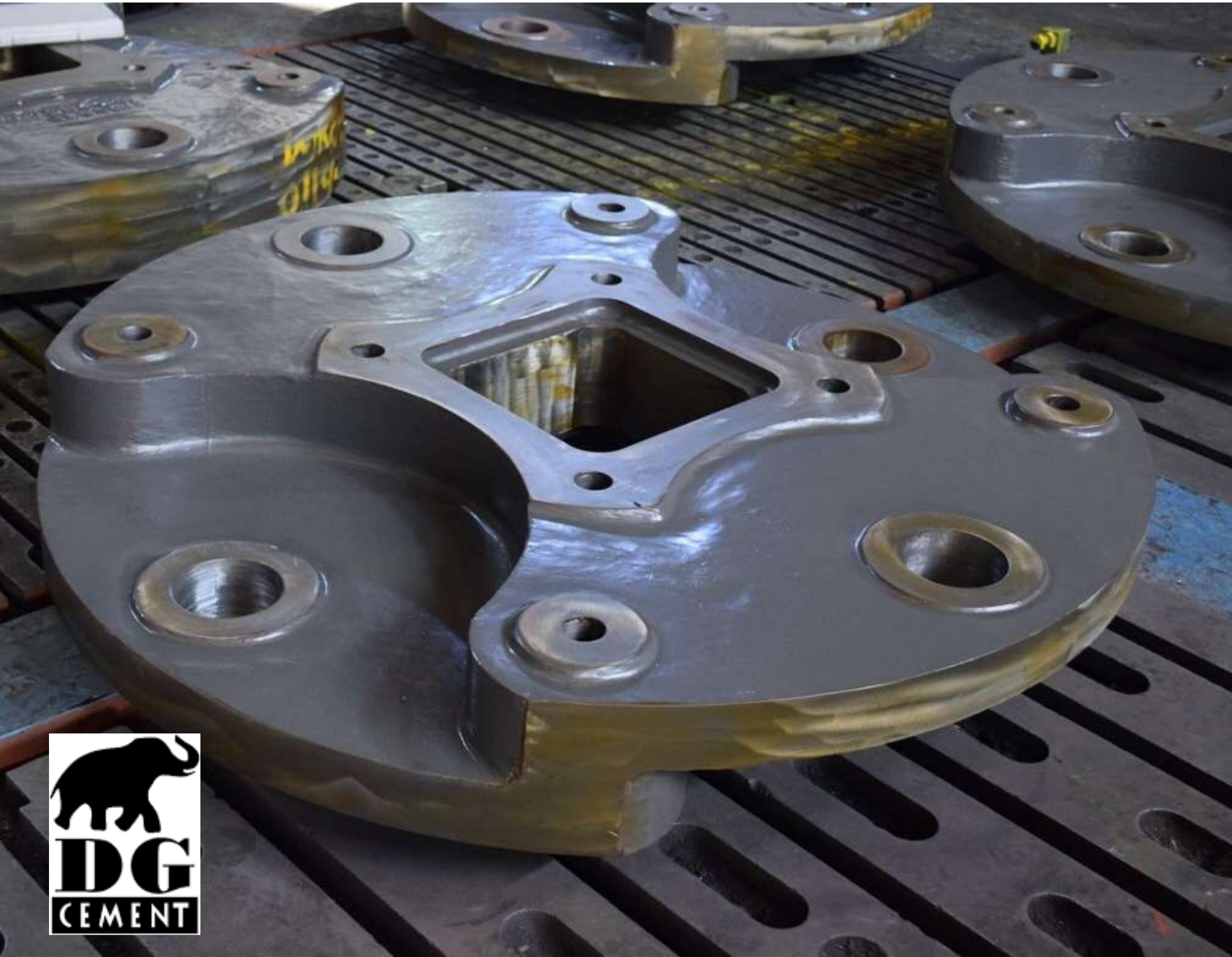
- **Foundry process automation**

Automation at each stage; from casting virtual simulation and pattern production till the heat treatment and final finishing operations



Rotor Discs

For Limestone Crusher



Segments & Tires for Vertical Roller Mills



■ Grinding Tires

Coal Mill Loesche
Tire Ø 2200 mm
3,700 kg

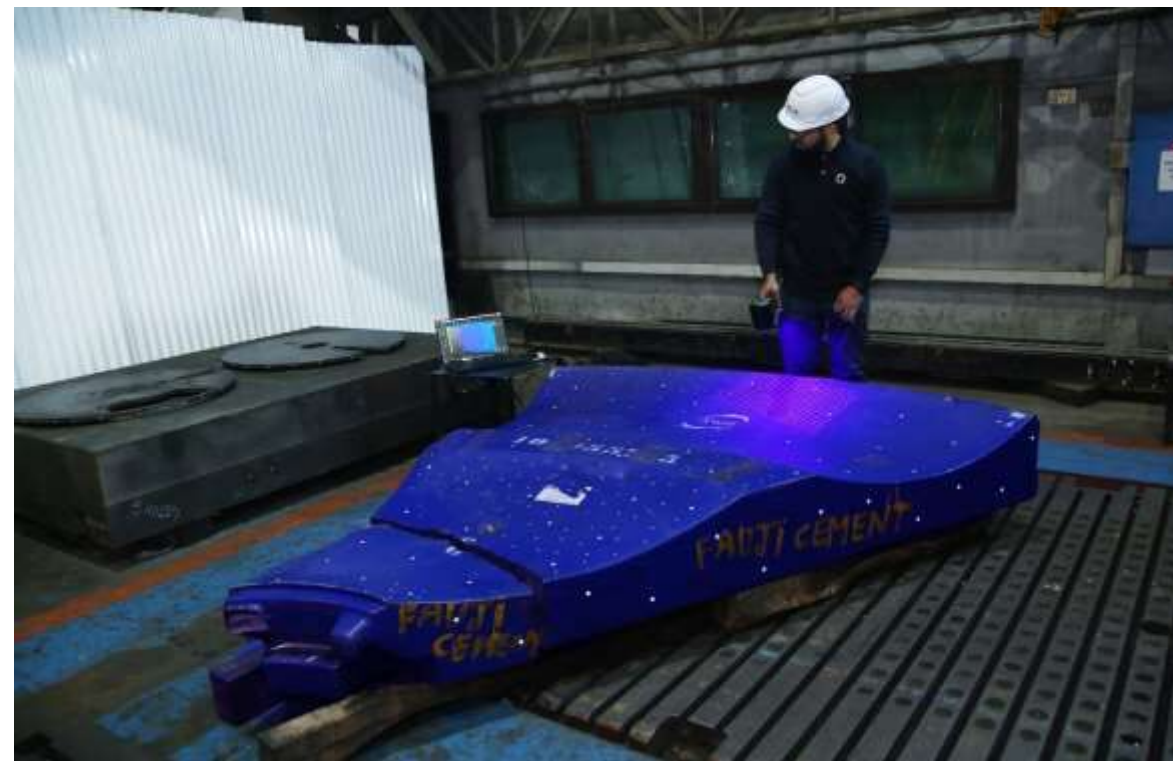


Cement Mill Fuller FRM 2430
Tire Ø 1634 mm
2,353 kg
Order in production



■ Roller & Table Segments

Coal Mill Tires & Table Segments
Tire Ø 2200 mm
3,700 kg



■ Tools for Reverse Engineering

3D scanning services for development of part drawings

Crushing Segments

Clinker Crusher



- Compliance with dimensional requirements

Stringent internal testing with inspection fixture

- Extensive quality testing

Chemical, Mechanical, Ultrasonic and Magnetic Particle Testing to ensure enhanced product life



Roller for Roller Press



- **An all-inclusive repairing solution**

Covering aspects of initial dimensional inspection, installation of sleeve and final machining

- **Extensive quality testing**

Achieving service reliability through ultrasonic and dye penetrant testing of shaft and sleeve



KOHAT CEMENT
COMPANY LIMITED

White Metal Bearings

Remetalling Excellence



■ Focus on metallurgy

Compliance to ASTM B23 material standard for White Metal Bearings

Material testing through high accuracy spectrometry equipment

■ Extensive NDT testing

Bearings undergo internal Ultrasonic Bond Testing to ISO 4386-1 standard

Total bonded area exceeding 85%

Case Study — Bestway Cement

FLSmidth, Ball Mill

Ø5.4m x 14m

4 nos of Slide Shoe Bearings supplied

Performance: Operational since 2019



Case Study — Flying Cement

IHI Japan, Ball Mill

Ø3.7m x 12m

4 nos of Slide Shoe Bearings supplied

Performance: Operational since 2021



Impeller



Rotary Feeder

For Raw Mill



Refurbishment of Roller Hub

Loesche LM32.4 & 56.6

- Initial quality inspection of the hub to evaluate worn out surface
- Worn out sizes rebuilt through weld repairing and then machined as per original dimensions
- Complete in-house assembly of bearings and Tire onto the hub, under customer supervision



Refurbishment of Kiln Thrust Roller

Rebuilding and machining of outer diameter

- Initial dimensional inspection to ascertain wear on outer diameter
- Weld build up on outer diameter
- Ultrasonic and Dye Penetrant Testing of Weld Area
- Machining to achieve final dimensions



Misc. Refurbishment Services



PRODUCTS – MINING



Blow Bars

Titanium Carbide delivering exceptional wear performance

■ Specifications

Material : Manganese Steel with TiC Inserts

Dimensions : 120 mm x 500 mm x 3000 mm

Weight: 1500 kg

■ Delivered to customers in Saudi Arabia, Congo and Colombia



Wear Parts for Ball Mills

Step Liners and Intermediate Diaphragm Plates



- **Extensive quality testing**

Chemical, Microstructural and Dye Penetrant Testing to ensure enhanced product life

- **Foundry process automation**

Automation at each stage; from casting virtual simulation and pattern production till the heat treatment and final finishing operations



Girth Gear

- **Specifications**

- Helical Spur Gear Dia 4080
 - Material **BS 970**
 - Induction Hardened Teeth

- **Manufactured for customer in South Africa**



PRODUCTS – GENERAL INDUSTRY



MANGLA DAM UPGRADATION PROJECT

REFURBISHMENT OF 100MW TURBINE HOUSINGS



Project under supervision from General Electric

- Ultrasonic and Magnetic Particle Testing for Identification of defects
- Weld repairing of defects in compliance to referred standards
- Machining to achieve original dimensions



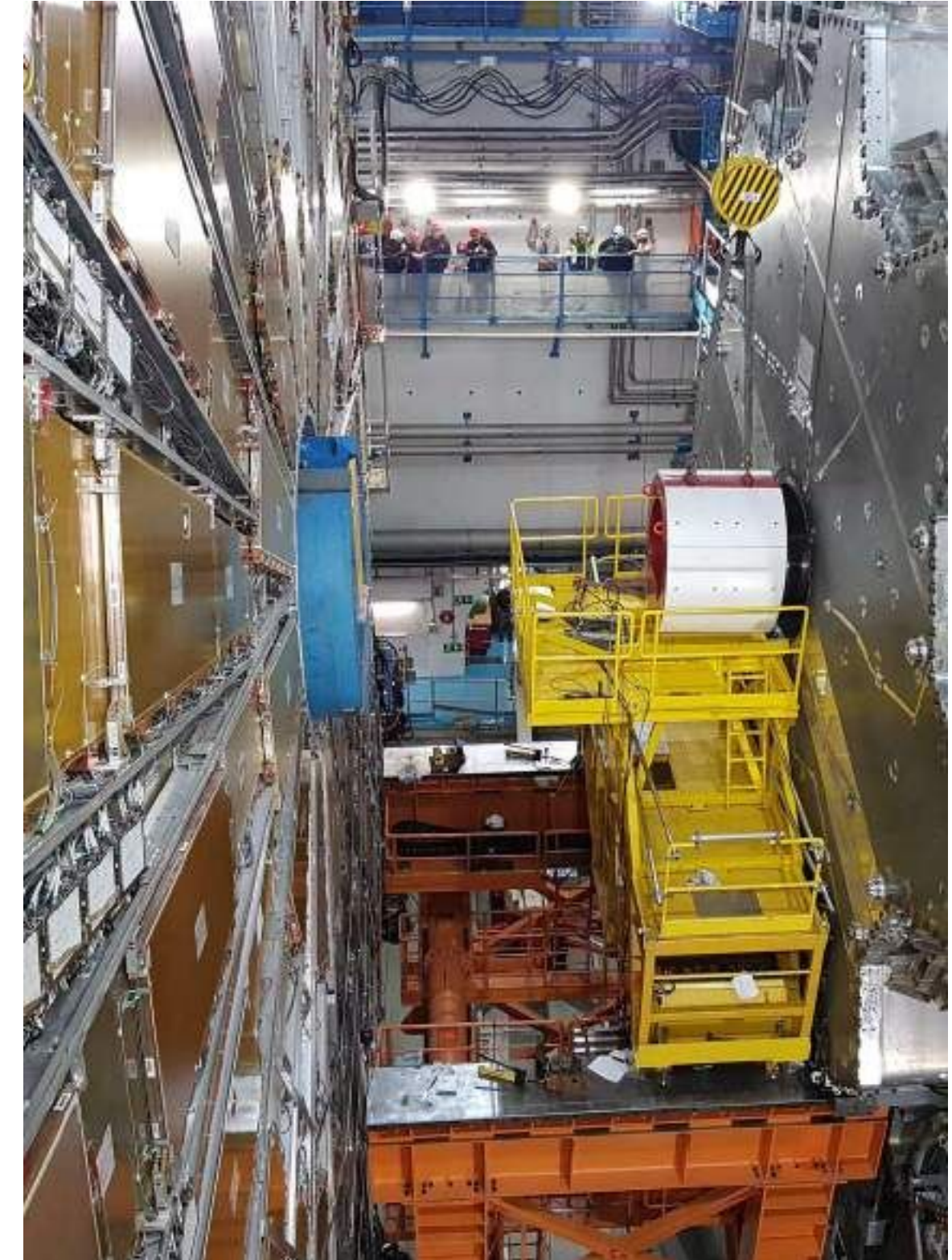
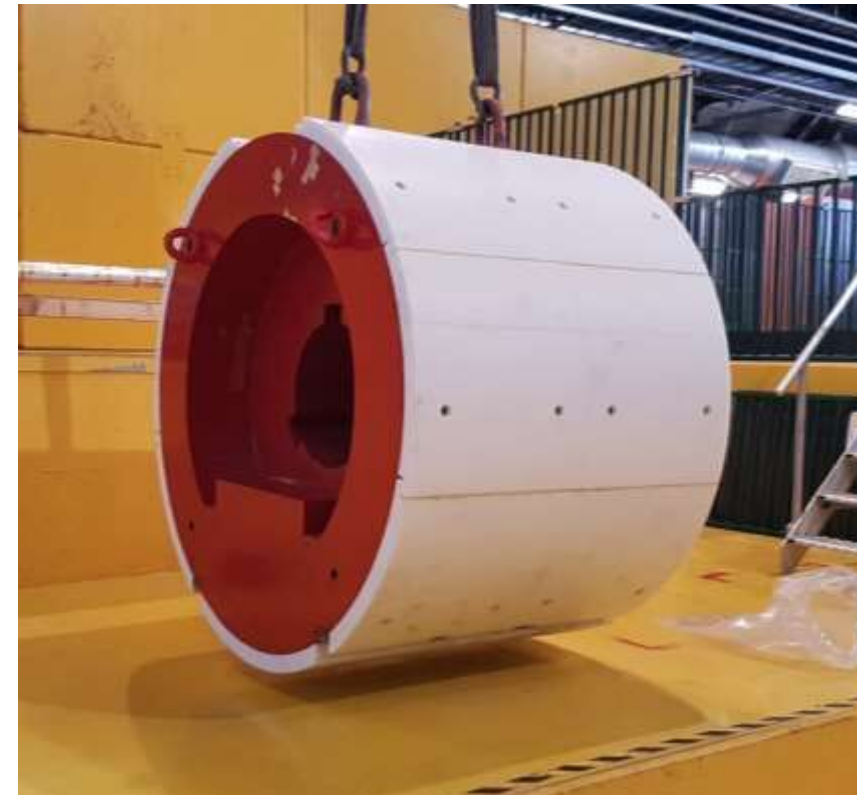
MANUFACTURING OF JTT PLUG FOR CERN

CASTING AND MACHINING OF OPEN GRAIN CAST IRON



Project supervision by CERN, Switzerland

- Casting and machining in compliance with defined standards
- Pre-delivery inspection by CERN Team



GATING SYSTEM FOR GUDDU BARRAGE

CANAL GATES HOISTING MACHINES



Project undertaken in partnership with **DESCON** Engineering

Drawing generation, manufacturing and assembly

In-house Factory Acceptance Test (FAT) ; UT, DPT, Dimensional, Mechanical and Load Test



PAPER & BOARD

FEED SCREW, THROAT CONE & FIBRE DISTRIBUTION RINGS



- Reverse engineering through drawing development and material testing
- Ability to cast in a range of Steel Grades: AISI 1045, SS 410, SS 304



IMPELLER

FABRICATION, WELDING & DYNAMIC BALANCING



Hot air impeller for ZRK, Mardan

- Fabricated in Carbon Steel, Stress Relieved and Machined for the right airflow profiles
- Dynamic balancing carried out @ 1350 RPM



CHEMICAL PLANTS

CARBONATING TOWER, OVER FLOW BRACKET, BOWL HEAD SHAFT



- Casting and machining operations
- Extensive quality testing to ensure compliance to material grade
- Pressure test of castings to ensure reliable operation



GEAR MANUFACTURING

DRAWING GENERATION UP TO FINAL ASSEMBLY

Manufacturing, Assembly and Installation

- Induction hardening of gear teeth for superior performance
- In-house assembly and operation to improve surface contact

MUGHAL
STEEL



STEEL

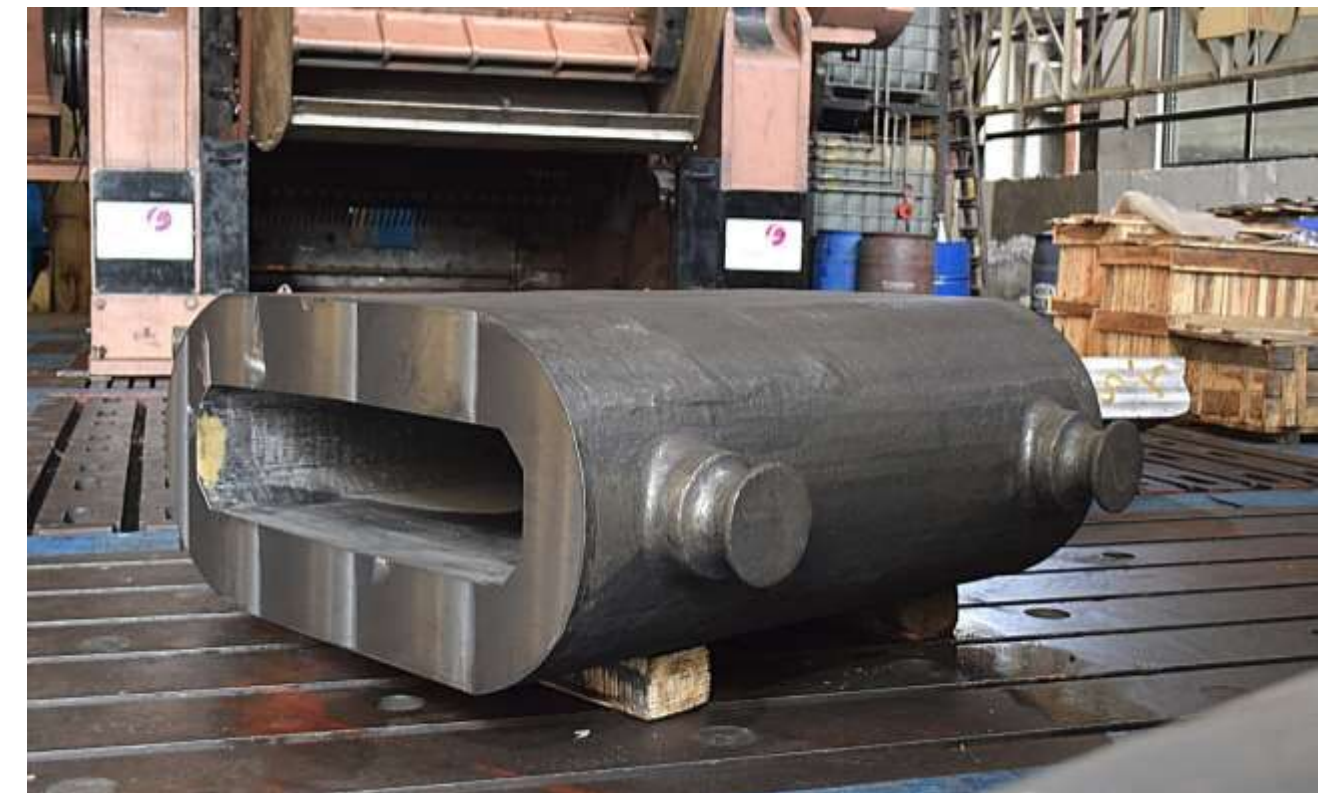
INGOT MOULDS, SLAG POTS

- Slag Pot manufactured in Cast Iron, supplied as-cast
- Ingot mould manufactured in Nodular Cast Iron
- Exporting to N. America

 **TenarisTamsa**



MUGHAL
STEEL



STEEL

PINION SHAFTS & FLY WHEELS

- Pinion shafts machined from forged shafts
- Teeth are induction hardened for better life
- Flywheels made in cast steel grades to store energy
- Supplying to 100+ Steel Mills across Pakistan



STEEL PULLEYS



- Pulleys are supplied in Cast Iron, Nodular Cast Iron and Cast Steel Grades
- Pulleys are machined and supplied after dynamic balancing
- Supplying to 100+ Steel Mills across Pakistan



FERTILIZER

CRUSHER & KILN ROLLERS, GRINDING RINGS



- Manganese steel roller for Limestone crushing
- Forged steel Kiln Supporting Rollers



AUTOMOTIVE PRESS DIES

- Cutting and creasing dies, supplied in FC30, FCD and FCG grades
- Polystyrene patterns for casting



MARINE

DELTA FLIPPER ANCHORS

- Reverse Engineering through Drawing development & Material Testing
- Material
 - Shank: Cast Steel to AISI 1045
 - Shackle: Forged Steel to AISI 1045
 - Head & Angular Plates: Fabrication ASTM A36
- Machined in-house according to requirement
- Manufacturing Anchors of 2500 Kg & 3000 Kg with facility to produce castings up to 40 tons
- Compliant with required Quality Standards



MARINE

P-BRACKET FOR PROPULSION SYSTEM

FABRICATION – COMPLETE WITH ARM & STRUT BEARING



MARINE

BUCKET LADDER TACKLE PULLEYS



FLOUR MILLS

SCOURER PLATES



HYDEL

WICKET GATES

Manufactured in Cast Stainless Steel CA-6Nm



METAL RECYCLING

HAMMERS

Manufactured in S2 Tool Steel



Crankshafts for Tractors

Covering All Tractor Models in Pakistan



- Manufactured in Nodular Cast Iron
- Production Capacity: 1500 Pcs / month
- Breakage Warranty of 6 months
- Models include:
 - ✓ Massey Ferguson 240 , 265 & 375
 - ✓ Mazda T-3500
 - ✓ Fiat 480 & 640
 - ✓ Belarus & Bedford
 - ✓ Ford 4600/4000 & 3600/3000



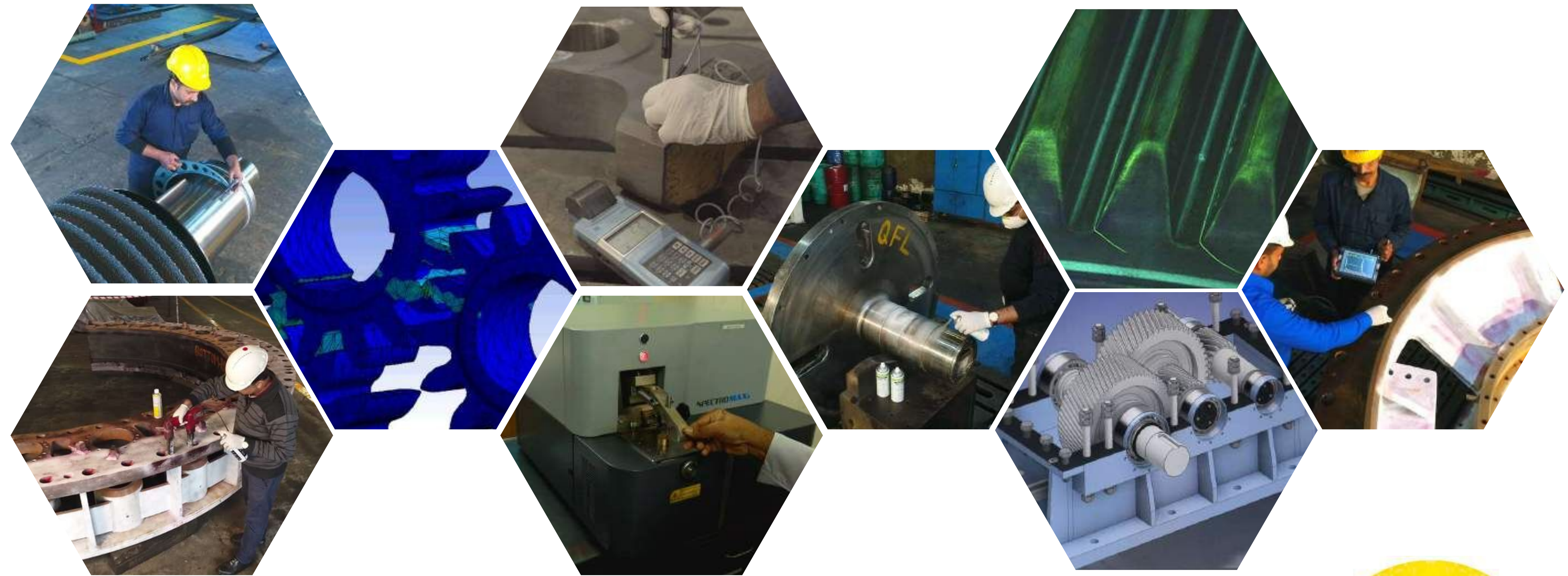
Reducer Rolls for Pipe Mills

Supplying to all Pipe Mills in Pakistan



- Manufactured in Nodular Cast Iron
- Through-hardened material
- Barrel Size Range: 6" to 12"
- Barrel Hardness: 52~56 HRC
- Hardness increases to 60 HRC after multiple grindings
- All Sleeve sizes can be made
- Sleeve Hardness: 42~46 HRC
- Can be used up to minimum diameter setting of machine





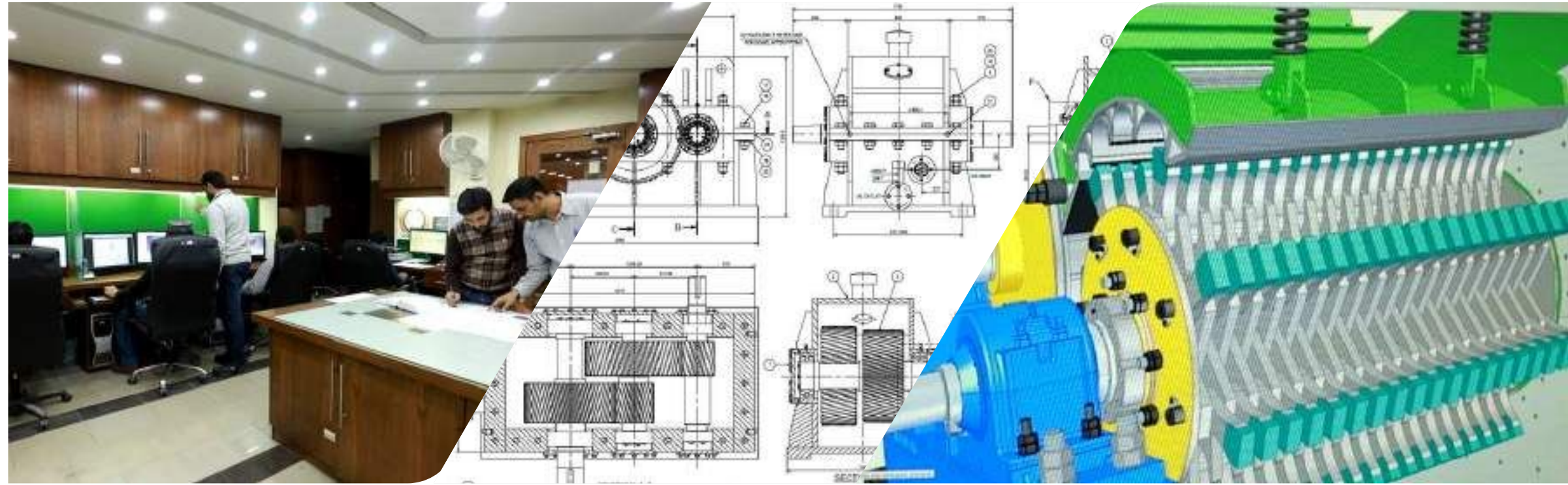
Engineering & Testing Services

Reverse Engineering, Design, NDT & PMI



Design Services

- Dedicated team of design engineers
- Engineering drawings, 3-D Modelling and Finite Element Analysis
- Providing design services to European partners

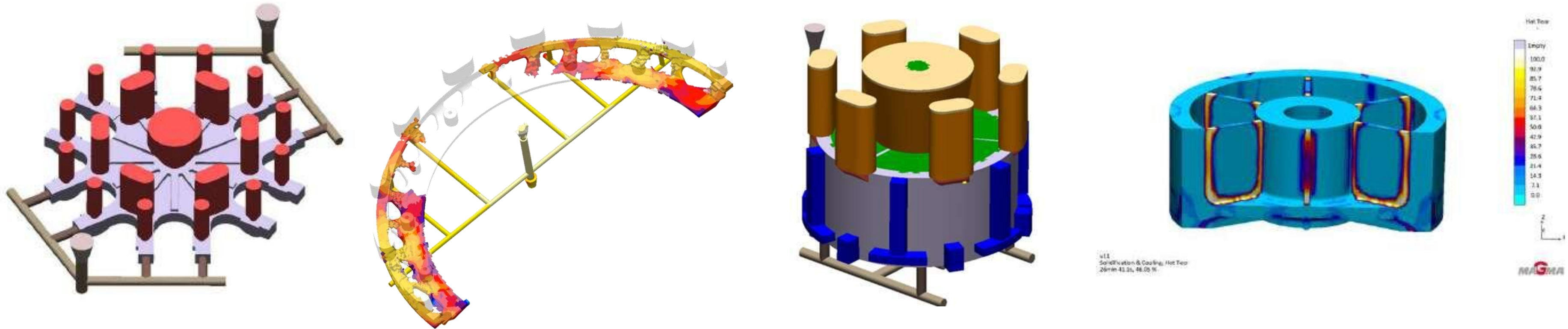


Reverse Engineering

- Product development through Faro ScanArm and 3-D scanners
- Providing on-site services for drawing generation



Casting Simulation



- State of the art casting simulation software — Magmasoft
- Simulation of metal temperature, velocity and numerous other parameters
- Assessment of potential casting defects and high-stress points
- Offering services to other foundries to simulate their casting technology





Material Testing

- Comprehensive analysis of material chemical composition through state of the art spectrometry equipment
- Services for onsite material testing through portable XRF material analyzers
- Mechanical Testing (Tensile, Yield, Elongation, Toughness & Hardness)
- Microstructural analysis of the material
- Testing and analysis can be followed by recommendation by Qadbros R&D team on alternate materials to improve performance



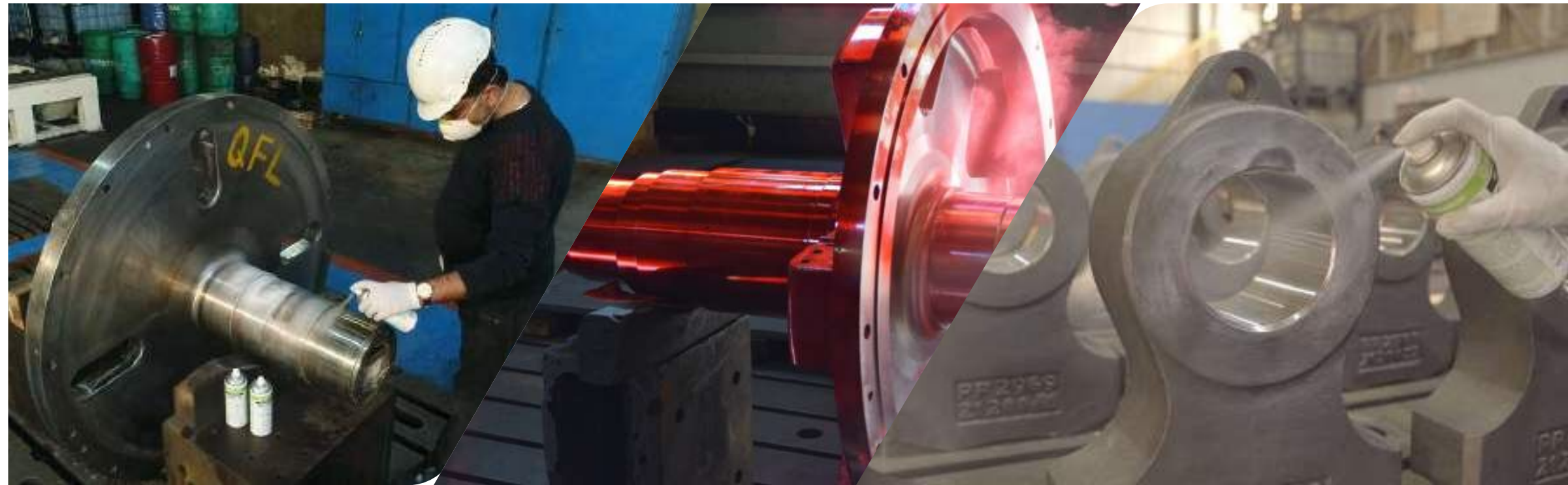
Dimensional & Geometrical Inspection

- High-accuracy measurement tools
- On-site dimensional inspection
- Portable equipment for testing of surface hardness and roughness
- In-house facility for machine assembly
- Services for levelling & alignment of machine parts
- Services to check part mating in assembly
- In-house test rig for inspection of gear teeth contact
- Scratch testing & inspection of paint coat thickness



Dye Penetrant Testing

- Detection of surface defects such as pitting and cracks (Fluorescent & Visible Light)
- Defect evaluation and reporting by Level I & II NDT certified inspectors



Magnetic Particle Testing

- Detection of sub-surface micro defects (Fluorescent & Visible Light)
- MPT is classified as a more reliable defect detection technique compared to DPT





Ultrasonic Testing

- State of the art ultrasonic flaw detectors from Krautkramer, Germany
- Team of Level II certified ultrasonic testing inspectors
- Evaluation as per ASME (welding joints), ASTM and ISO standards
- Capability to measure thickness of piping and pressure vessels
- Offering on-site services for ultrasonic testing





Engineering Consultancy

With extensive production facilities, design team, quality testing equipment, high skilled manpower and partnerships with world leading technology companies, Qadbros offers the complete scope of engineering consultancy services and solutions

