Corporate Presentation

Turnkey Process Plant Solutions

FURNACE FABRICA
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Internationally operating India-based provider of EPC services

Industry leadership in India for EPC services for:
- Ore processing solutions for the Non-Ferrous metal processing industry
- Sulphuric Acid Plants
  - Sulphur burning
  - Smelter off-gas

Headquartered in Mumbai and supported by regional offices in Delhi, Kochi and Bhubaneswar, and international offices in Zambia, Morocco and the UAE.

Captive fabrication facilities in Navi Mumbai (Maharashtra) and Kandla (Gujarat) in India, and at Chingola in Zambia.

Head office strength of 250+ heads in engineering, project management and other corporate departments, supported by 300+ heads in the field overseeing construction management and project execution. Field technicians / workmen are typically engaged on project specific contracts or through sub contracting.

Expertise in sophisticated engineering solutions and specialised construction services.

Strong delivery credentials for EPC projects in the USD 5-50mn ticket size.
Introduction

- Promoted in 1973 by Technocrats A. Basheeruddin & Dr. B Prasad as a Partnership firm – later converted into a limited company in 1985
- Primarily engaged in providing **Engineering, Procurement and Construction (EPC)** services on a turnkey basis
  - End markets include Non Ferrous Metals, Fertilizer, Petrochemicals, Oil and Gas, Cement, Power, and Iron/Steel.
  - Projects involve Detailed Engineering, Procurement, Fabrication/Erection and Commissioning
  - Covering all engineering disciplines like Mechanical, Civil, Process, Piping, Electrical and Instrumentation
  - Company endeavors to work with most advanced process technologies as licensee or in collaboration with leading international technology suppliers
- Execution experience in Fertiliser, Iron & steel, Zinc, Copper, Alumina, Sulphuric Acid, Power, Chemicals, Cement, Petroleum & Petrochemicals and Tankage solutions
Strategic Alliances

Access to best-in-class technologies

◆ Working with Outotec GmbH (formerly Lurgi Metallurgie GmbH) since 1982 on their proprietary technologies for Non Ferrous Metal Processing, including stand alone Sulphuric Acid Plants.

◆ Entered into technical and process collaboration in the year 1994 with Outotec GmbH (formerly Lurgi Metallurgie GmbH).
  – Exclusive licensing arrangement for building Sulphuric Acid Plants on a turn-key basis in Indian Sub-continent.
  – Alliance with Outotec, positions the company to take up single line responsibility, from concept to commissioning, for Sulphuric Acid plants (upto 1500tpd under license) with best-in-class know-how.

◆ Non recovery coke making technologies with proprietary know-how gained from working on the Sesa Kembla coke plant

◆ Agreed to collaborate with Alstom Energy Recovery Systems of Germany (formerly SHG Schack GmbH, now part of the Alstom Group of France) on waste heat recovery boiler systems and other thermal engineering solutions.
Associate Companies (Controlled Subsidiaries)

Captive refractory / acid resistant product manufacturing units

- Pacific Refractories Ltd
  - Established in 1994 with works in Bhilwara (Rajasthan, India) with technical collaboration from Premier Refractories Inc., USA
  - Has full fledged production, testing and R&D facilities for various grades of Insulation Bricks, High Alumina Castables, Low Cement Castables, Ramming Masses and High Strength Mortars among other products
  - Acquired another refractory unit in Wakaner (Gujarat), India with the view to expanding its production base for Fire bricks to cater to the demand in the market
  - Developed/produced several indigenous refractory products which were being imported into India
  - Application in industries like Cement, Iron & steel, Petrochemicals, Fertilizers, Refineries etc..

- Polyceramic Industries Pvt. Ltd.
  - Established in 1986 with works in Panvel (Maharashtra), India
  - Manufacturer of complete range of chemical resistant cements and refractory products
  - Offers corrosion protection solutions to core industries in India and abroad
  - Key supplier to our turnkey Sulphuric Acid Plant offerings
Associate Companies (Wholly Owned Subsidiary)

**Proprietary Solutions for Pollution Control**

- **Begg, Cousland & Co., Glasgow (UK)**
  - Established in 1854 with works in Schio, Italy
  - Has full fledged production, testing and R&D facilities for various pollution control equipment like Candle Filters, Demisters, Gas Cleaning Scrubbers, etc..
  - Produce & Market several related Pollution Control products/solutions worldwide
  - Application in industries like Non-Ferrous Metallurgy, Petrochemicals, Fertilizers, Refineries, Power, Desalination plants etc..

- **Begg Cousland Private Limited, India**
  - Established in 2010 with works in Taloja, India (under construction)
Delivery Track Record in MENASA and SSA

Implementation partner of choice, with a long history of repeat orders from clients

- In addition to India, significant experience in executing projects overseas
  - include Thailand, Qatar, Kuwait, Saudi Arabia, U.A.E., Zambia, Madagascar, Congo, Turkey, Morocco and Sudan
  - Established delivery model in executing projects for countries in MENASA (Middle East, North Africa and South Asia) and recent success in SSA (Sub Saharan Africa)
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EPC Service Capabilities
EPC Delivery Model

Experienced team with a global reach and local knowledge

**Furnace Fabrica’s EPC Delivery Model**

**Key Strengths**
- Experienced senior management team (20 years+ average experience in the business)
- Considerable expertise in turnkey execution of production plants and associated infrastructure for Sulphuric Acid, Non-Ferrous metals, Petrochemicals, Chemicals, Fertilizers

**Engineering**
- Access to world class process technology
- Long history of working as an implementation partner with western process licensors
- Low cost / high value engineering capability located at Design Office in Mumbai, EPC Center Navi Mumbai and in Kochi, Kerala
- 200,000 engineering man-hours/year in house across all disciplines

**Procurement**
- Captive export oriented fabrication facilities and refractory / acid resistant material manufacturing units in India and Saudi Arabia
- Global reach – sourcing high technology equipment from Europe & North America to high value products from China with strong local procurement capabilities in India
- In house inspection and expediting teams
- Capable foreign trade and logistics personnel

**Construction**
- Captive construction assets with mobile cranes up to 500 MT’s
- Experience working in difficult environments – Greenfield mining project sites in India, Oilfields of Sudan to landlocked Zambia

**Value Added at Each Stage of the Process**

- Proposal Making
- Engineering
- Procurement
- Construction
- Commissioning
Our Offering

Range of Services

For Turnkey Projects
- Design & Engineering
- Procurement
- Inspection
- Logistics
- Construction
- Installation
- Testing
- Trial Runs
- Commissioning

Construction Services
- Civil & Structural
- Mechanical
- Electrical
- Instrumentation
- Refractory Installation & Internal Linings
- Surface treatment & Insulation works

Sulphuric Acid & Related Technology
- Total Turnkey Installation
- Revamping & Relocation
- Basic and Detailed Engineering
- Equipment Supply
- Linings Supply
- Installation Services

EPC Service Capabilities

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Project Management

Experienced team with a global reach and local knowledge

- Methodical and a very organized Project Execution Strategy with well prioritized steps and order of execution
  - Method statement
  - Organization & Task force
  - Main work packages
  - Kick off meeting
  - Design Reviews and Approvals
  - Project Control
  - Construction
  - Training
  - Commissioning
  - Preparation of documentation

- Engineering & procurement expertise combined with well equipped production facility enables FFIL to mobilise any project within a minimum time frame.
Engineering

Meeting client demands through latest technology & experience

◆ Furnace Fabrica (FF) provides proven plant engineering and construction solutions for petrochemical, chemical and fertilizer industries.

◆ Through these years FF has amassed considerable expertise in
  - Production of sulphuric acid
  - Processing of metal ores
  - Fertilizer manufacturing and
  - Downstream hydrocarbon processing and Storage

◆ The engineering services FF offers are:
  - Basic engineering for sulphuric acid plants – gas & sulphur based.
  - Detailed engineering services covering all disciplines - civil, structural, equipment design, piping, electrical, instrumentation, fire fighting and waste disposal.
  - Residual engineering services for plant revamps, turn-arounds.
  - De-bottlenecking, retro-fitting and capacity enhancement of existing facilities.

◆ Through use of appropriate technology and experience in engineering & construction FF aims to optimize its customers initial investment and operational costs
Engineering

Meeting client demands through latest technology & experience

- Various activities covered are
  - Preparation of process and instrumentation Diagram, Detailed fabrication drawings, Plot plan, Piping drawings, isometric drawings, As Built drawings.
  - Specifications of stationary and rotating equipment, valves, piping materials, electrical and instrumentation items.
  - Bill of Material and other drawings and documents necessary for the fabrication of equipments.

- Exclusive licensee of Outotec for their Sulphuric acid technology.

- Developed systems for providing sulphur dioxide from existing acid plants.

- Personnel
  - Design man hours available: ~200,000/annum (FTE) + additional hours available (Part time / Sub-contracted)

<table>
<thead>
<tr>
<th>Personnel by discipline (FTE)</th>
<th>Principals</th>
<th>Engineers</th>
<th>Draftsman</th>
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<tr>
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<tr>
<td>Total</td>
<td>18</td>
<td>64</td>
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## Engineering

### Meeting client demands through latest technology & experience

#### Process
- Sulphuric Acid Assistant
- Heat Exchanger Design [in - house], HTRI
- Boiler Design [in house], IBM ProBAD,
- Steam – Turbine Calculation [in - house]

#### Civil & Structural
- Staad Pro, X-steel, Autocad, PDS

#### Mechanical
- Equipment: PV Elite, PDS, Solid Edge, Autocad
- Piping & Ducting: Caeser II, PDS, Autocad
- Tankages: In – House Software, X-Steel, Autocad

#### Electrical
- Earthing Calculation [in – house]
- Lighting Calculation [in – house]
- PDS, Autocad, Microstation

#### Instrumentation
- PDS, Autocad, Microstation
Procurement

Global Sourcing Capabilities

- Years of experience and use of latest technology has helped us to optimize our procurement system.
- Tie-up with procurement partners in China, Dubai, South Africa & Europe helps FF in acquiring materials under best possible terms and conditions and delivered promptly at sites.
- An advanced data-bank facilitates speedy resourcing and mobilization thus minimizing the risk of cost overrun.
- Use of ERP systems helps in tracking the materials from procurement upto their utilization on site thus reducing pilferage and wastages.
Construction

**Construction - our core competence**

- Processes for resource planning & mobilization, construction planning, high regard for job quality and stringent safety practices help FFIL achieve excellence in this field.
- Network of construction resources, knowledge of local regulations and construction codes allows FFIL to mobilize equipment and construction teams around the world efficiently.
- FFIL has highly skilled and experienced teams capable of organizing, scheduling and integrating all the individual elements of a project.
- A task-force based approach helps FFIL in establishing priorities, taking full advantage of available resources and identifying issues thereby enabling the client to maintain steady control of various elements of the contract.
- FFIL has been successful in employing and training local labor thus adding value to each project further nourishing the region's economy.

**FFIL provides services:**
- as a direct-hire contractor
- as a construction manager

**Client can contract services on a:**
- cost plus basis
- unit price basis
- fixed price basis
- lump sum basis
- Turnkey basis

<table>
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<tr>
<th>Crane Capacity (MT)</th>
<th>Make</th>
<th>Year</th>
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<tbody>
<tr>
<td>400 Crawler (with Lift enhancer)</td>
<td>Liebherr</td>
<td>2011</td>
</tr>
<tr>
<td>300</td>
<td>Liebherr</td>
<td>2001</td>
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<tr>
<td>200</td>
<td>Liebherr</td>
<td>2010</td>
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<td>120</td>
<td>Kato</td>
<td>2000</td>
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<td>100</td>
<td>Liebherr</td>
<td>2004</td>
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<td>100</td>
<td>Lokomo</td>
<td>1998</td>
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<td>75 Crawler</td>
<td>P&amp;H</td>
<td>1990</td>
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<td>70</td>
<td>Lokomo</td>
<td>1998</td>
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<td>70</td>
<td>Liebherr</td>
<td>2004</td>
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<td>50</td>
<td>Demag</td>
<td>1996</td>
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</table>
Fabrication Infrastructure

Captive Fabrication facilities

- Workshop adjoining the EPC center established in 1994, with State-of-the-art new fabrication facility established in Kandla in 2009 and Chingola (Zambia) in 2010
- The workshop has established an internationally accepted Quality control system (ISO 9001:2000) verified by DNV of Netherlands.
- The workshop has been accredited with a ‘U’ Stamp Certificate by ASME
- The workshop has also been approved by:
  - Chief Controller of Explosives (CCoE), Government of India for fabrication of unfired pressure vessels as per code of practice under purview of SMP (U) Rules.
  - Indian Boiler Regulations (IBR) Act for Boilers and associated High Pressure Equipments and Piping.
Fabrication Infrastructure

Navi Mumbai (EPC centre & Taloja)

◆ Site Area:
◆ Shop floor Area: 25,000 sq ft
◆ Key Equipments:
  - Crane
    - Crawler (75 tonne) – 1 no.
    - EOT crane (10 tonne) – 1 no.
    - Hydraulic crane – 3 nos.
    - Truck mounted crane – 2 nos.
  - Rolling Machine (50mm thk, 28mm thk) – 2 nos
  - Lathe (1000 C Ht/ 10” lg) – 1 no.
  - Hydraulic Power Press (250 Te, 1000Te) – 2 nos
  - Radial Drilling Machine (125, 75, 60, 50 mm Dia resp) 4 nos.
  - Magnetic Drilling machine (25 mm Dia) – 4 nos.
  - Shearing machine (8mm CS) – 3 no.
  - Plasma cutting machine – 7 nos.
  - Welding machines
Fabrication

Captive Fabrication facilities

- The shop has facilities to design and fabricate various types of Pressure vessels, Columns, Heat-Exchangers, Reactors, Cooler-Bundles, ESP casings, Tanks and Bins among others. To fabricate such equipments, the shop maintains skilled workmen who are certified by various third party inspection agencies and consultants.

- The workshop has manufactured equipment like pressure vessels, heat exchangers, waste heat recovery boilers, towers, columns, stacks, proprietary oil field equipments and other process equipment of low and high pressure ratings.
KASEZ Export Facility Infrastructure

Kandla Fabrication Facility (KASEZ)

- State-of-the-art workshop established in 2010 with the intention of fabricating high pressure vessels and boilers adhering to stringent quality control procedures.
- The workshop has been accredited with a ‘U’, ‘U2’, ‘S’ and ‘R’ Stamp certificate by ASME
- The workshop has also been approved by:
  - Chief Controller of Explosives (CCoE), Government of India for fabrication of unfired pressure vessels.
  - Indian Boiler Regulation (IBR)
KASEZ Export Facility Profile

Kandla Fabrication Facility (KASEZ)

- Site Area: 18,000 sq.m
- Shop floor Area: 12000 sq.m.
- Dedicated Stainless Steel fabrication bay
- Power Supply: 1000 kVA
- Key equipment:
  - Rolling machine (100mm, 40 mm) – 2 nos.
  - Membrane welding machine (2.5m wide)
  - Stress Relieving Furnace (10 x 5 x 5m)
  - Automatic welding machine
  - Radial drilling machine (80mm, 50mm)
  - EOT crane (50 Te, 30 Te, 20 Te) – 4 nos.
  - Lathe machine
KASEZ Export Facility Profile

- **Rolling Machine:**
  - Plate width: 3000 mm
  - Plate Thickness: 100 mm on SA516
  - Pre-Pinching Facility
  - 30T overhead crane facility

- **Hydraulic Press:**
  - Column Width: 5500 mm
  - Press capacity: 2000T
  - 30T overhead crane facility

- **Membrane Welding Machine:**
  - Single panel length: 12000 mm
  - Panel Width: 2600 mm
  - Top & Bottom simultaneous welding
  - 12 MIG torches.

- **Heat Treatment Furnace:**
  - Size: 10 L x 5 W x 5m H
  - Capacity: 100T
  - Gas & Diesel Fired, PLC Controlled.
KASEZ Export Facility Profile

Kandla Fabrication Facility (KASEZ)

- Currently the work load at the workshop is majority being boilers, steam drums for 4 upcoming sulphuric acid plants in India, Qatar, Tunisia.

Steam Drum for 950 TPD SAP

Shell: 45 Thk; Dishend: 55 Thk
Length: 9000mm, Dia: 2000mm
Weight: 35 T
KASEZ Export Facility Profile

Overseas orders executed at Kandla Fabrication Facility (KASEZ)

- The workshop is currently executing WHRB systems and High Pressure Components for overseas projects (KSA, Qatar, Morocco, Zambia and Tunisia)

Superheater Bundles for 950 TPD SAP

Economiser for SAP, Qatar
Facility profile

Overseas orders executed at Kandla Fabrication Facility (KASEZ)

- Equipment shipped to Qatar
- Reactor coil being manufactured.
Chingola Fabrication Facility (Zambia)

- Site Area: 40,000 sq.m
- Shop floor Area: 2500 sq.m.
- Power Supply:
- Captive Oxygen and Acetylene plant
- Key equipments:
  - Crane:
    - Hydraulic crane: 50 Ton
  - Rolling machine (20 mm) – 1 no.
  - Radial drilling machine (70mm)
  - Gas Cutters
  - Welding Machines – 50 nos.
Refactory Services

**Project Support Services**

- In technical collaboration and licensing collaboration with Premier Refractories, USA.
- Enlisted with organizations like Engineer’s India Ltd, Mecon Ltd, UHDE India and also worked with various third party inspection agencies.
- PRL manufactures various grades of Insulation Bricks, High Alumina Castables, Low Cement Castables, Ramming Masses and High Strength Mortars among other products.
- Products from PRL are:
  - Low Cement Castables – PACMON
  - Ultra low cement castables – PACMON ULC
  - Self flow castables – PACFLOW LC
  - High purity castables – PACTAB
  - Conventional castables – PACRETE
  - Insulating castables (Medium Iron) – PROLITE
  - Non-Wetting Castables for Aluminium Industry – ALUPAC
  - Mortars – CERABOND
  - Insulating Bricks (Low Density) – HYPOR
  - Insulating Bricks (Reformer Grade) – PACELL
  - Acid Resistant Mortars – POLYSIL –K, FURALSET
  - Acid Resistant Castables – PACAST-AR
  - Plastic and Ramming masses (45 % to 90 %Al2O3) – PACPLAST & PACRAM
Acid Resistant Linings

Project Support Services

- Products from Polyceramic Industries:
  - Silicate type Acid Proof Mortar – Polysil – K
  - Silicate type Acid Proof Mortar – Polybond
  - Phenolic resin cement – Phenolset
  - Furane resin based cement – Furalset
  - Tower dome bricks
  - AP lining bricks
  - Partition rings
Proprietary Equipment for SAP & Pollution Control

**Project Support Services**

- Products from Begg Cousland & Co.:
  - Vanes / Chevrons
  - Demisters / Mesh Pads
  - Coalescer / L-L Coalescer
  - Candle Filter
  - Becoflex Scrubber
  - Packing
  - Acid Distributors
  - Replacement equipment for SAP
**Proprietary Equipments Mfg.. Infrastructure**

**Polyceramic Industries Pvt. Ltd. & Begg Cousland Pvt. Ltd.**

- Site Area: 2500 sq.m.
- Shop floor Area: 2000 sq. m.
- Key equipments:
  - Reaction Vessel (800 kg, 1750 kg) – 2 nos.
  - Ribbon blender(250 kg, 500 kg, 1500 kg) – 3 nos
  - Thermo pack heater (300 C)
  - Pulveriser
  - Universal Hydraulic Testing machine
  - Compression Test Cube moulds – 9 nos.
  - Flexural Test Cube moulds – 2 nos
  - Bagvich Furnace.
  - Ford Cup Viscometer B4 – 2 nos.
  - Hydrometer – 2 nos.
  - Pilot Plant – 5 kg capacity
  - Vibrating machines
Quality, Health, Safety & Environment

Responsibility towards our people & planet

◆ The company’s quality edifice stands on the following 5 pillars:
  - Total commitment for customer satisfaction.
  - Protection and Advancement of Environment
  - Market Leadership
  - Strive for Quality Excellence
  - Sustainable Development of Stakeholders

◆ Furnace Fabrica is determined to improve productivity and focus continuously on innovation and up-gradation of its products and people

◆ Furnace Fabrica is committed to the following principles:-
  - Providing appropriate information, instruction, training and supervision to enable our people to work safely and efficiently.
  - Promoting co-operation between management and workforce as an essential element in maintaining a safe and healthy workplace.
  - Setting targets and objectives to ensure a continual improvement in quality, health and safety performance and monitoring this performance improvement.
  - Providing appropriate resources, both financial and physical, to support our quality and HSE policy.
Quality, Health, Safety & Environment

Responsibility towards our people & planet

◆ Effective management of health and safety is a sound business principle that makes a significant contribution to the company's profitability. The company believes that:

- All incidents are preventable and that all risks can be safeguarded
- All incidents demand prompt investigation and timely remedial actions

◆ The Executive team must show leadership by ensuring the organization, management and conduct of operations is in line with HSE Standards and ensuring this is supported by adequate resource allocation to implement this policy across the business.

◆ Quality and HSE strategy and governance is managed and monitored by the Quality / Health, Safety and Environment Teams, with the heads of Quality / Health, Safety and Environment directly reporting to the Managing Director.
Domestic Clientele

Atul Products
BASF (India) Ltd.
Binani Zinc Ltd.
Binani Cement Ltd.
Bridge & Roof Co. India Ltd.
Cabot India Ltd.
Chemplast Sanmar Ltd.
Chennai Petroleum Corporation Ltd.
EBG India Pvt. Ltd.
Fertilizers and Chemicals Travancore Ltd.
Gas Authority of India Ltd (GAIL)
Goa Glass Fibre Ltd.
Hindustan Zinc Ltd (HZL)
Hindustan Petroleum Corp. Ltd. (HPCL)
Hindustan Lever Ltd.
Hindustan Copper Ltd.
India Glycol Ltd.
Indian Farmers Fertilizers Co-op Ltd.
Indian Oil Corp. Ltd. (IOCL)
Indian Petrochemical Corp. Ltd. (IPCL)
Jhagadia Copper Ltd.
Kochi Refinery Ltd.
Larsen & Toubro Ltd.
Mangalore Refinery & Petrochemicals Ltd.
National Aluminium Company Ltd.
NIKO Resources Ltd.
Oil & Natural Gas Corporation (ONGC)
Oil Palm India Ltd.
Paradeep Phosphates Ltd.
Pyrites Phosphates & Chemicals Ltd.
Rashtriya Chemicals & Fertilizers Ltd.
Reliance Industries Ltd.
Schenectady Herdillia Ltd.
Sterlite Industries (India) Ltd.
Tata Electric Co.
Tata Consultancy Services Ltd.
Travancore Cochin Chemicals Ltd.
Vam Organic chemicals Ltd.
Vedanta Aluminium Ltd.
Zuari Industries Ltd.
International Clientele

- Alunorte, Brazil
- Bagfas, Turkey
- Etibank, Turkey
- Galana Raffinerie Terminal, Madagascar
- ICS, Senegal
- Kuwait Chemical Company, Kuwait
- Kuwait Oil Company, Kuwait
- Kuwait Sulphuric Acid Company, Kuwait
- Konkola Copper Mines, Zambia
- MKE, Turkey
- Nabalco, Australia
- Xstrata

- Newmont Gold, USA
- Padaeng Industries, Thailand
- Penoles, Mexico
- Petrochemical Industries Company, Kuwait
- Qatar Industrial Manufacturing Company, Qatar
- Sable Zinc Kabwe Ltd, Zambia
- Raez Sulphate Factory, KSA
- Ruashi Holdings, Democratic Republic of Congo
- LG Chemicals, South Korea
- Yemen Gulf Oil Company
- Groupe OCP, Morocco
- Groupe Chimique Tunisien, Tunisia
Sectors of Operation

Thrust Areas of Focus

Ore processing plants
- Non-Ferrous
  - Zinc
  - Copper
  - Lead
  - Aluminium

Sulphuric Acid Plants
- Off-Gas Based
- Sulphur Based

Fertilizers & Petrochemicals
- Phosphoric Acid
- Phosphatic Fertilisers
- Ammonia
- Urea
- Complex Fertilisers
- Speciality Petrochemicals

Hydrocarbons
- Upstream Oil & Gas
- Refining
- Petrochemical
- Tankages
### Dominant position in India – involved in every Primary Zinc Project in India since 1975

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>PROCESS LICENSOR</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc Roaster, WHRB, GCP &amp; SAP with RMH</td>
<td>210 KTPA</td>
<td>HZL - Dariba</td>
<td>India</td>
<td>Outotec</td>
<td>2013</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>2 x Hg Removal Units</td>
<td>210 KTPA</td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2011</td>
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<tr>
<td>Zinc Roaster, GCP &amp; SAP</td>
<td>210 KTPA</td>
<td>HZL - Dariba</td>
<td>India</td>
<td>Outotec</td>
<td>2009</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Zinc Roaster, GCP &amp; SAP</td>
<td>210 KTPA</td>
<td>HZL - Debari</td>
<td>India</td>
<td>Outotec</td>
<td>2008</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Zn Melting &amp; Casting Unit</td>
<td></td>
<td>HZL - Haridwar</td>
<td>India</td>
<td>Outotec</td>
<td>2007</td>
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<tr>
<td>Zinc Roaster, GCP &amp; SAP – Hydro 2</td>
<td>170 KTPA</td>
<td>HZL - Chanderiya</td>
<td>India</td>
<td>Outotec</td>
<td>2006</td>
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<tr>
<td>Jarofix Plant</td>
<td>170 KTPA</td>
<td>HZL - Chanderiya</td>
<td>India</td>
<td>Boliden</td>
<td>2004</td>
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<tr>
<td>Zinc Roaster, GCP &amp; SAP – Hydro 1</td>
<td>170 KTPA</td>
<td>HZL - Chanderiya</td>
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<td>Outotec</td>
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<tr>
<td>Revamping of zinc plants</td>
<td>2 x 30 KTPA</td>
<td>HZL – Debari &amp; Vizag</td>
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<td>Outotec</td>
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<td>Modernisation of Zinc Roaster &amp; SAP</td>
<td>40 KTPA</td>
<td>Binani Zinc Ltd.</td>
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<td>1997</td>
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<tr>
<td>ISI furnace &amp; SAP</td>
<td>70 KTPA</td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>Davy</td>
<td>1990</td>
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<tr>
<td>Zinc Roaster, GCP &amp; SAP</td>
<td>30 KTPA</td>
<td>Binani Zinc Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>1985</td>
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</tbody>
</table>

**Key:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C - Construction

**NOTE:** Projects under execution are projected in bold
Zinc

Post 2000, 4 Repeat orders from Hindustan Zinc for 210 ktpa Roaster, GCP & SAP

Construction of Zinc Roaster, Gas Cleaning plant and Sulphuric acid plant for Hindustan Zinc Ltd, Debari, Rajasthan, India

Client: Hindustan Zinc Ltd., Debari, Rajasthan, India

Process Licensor: Outotec

Consultant: Mecon

Scope Highlights:
• Complete fabrication and erection of Mechanical, Electrical and Instrumentation including piping, ducting and technological structures.
• Structural: 80 MT
• Equipment fabrication and erection: 2000MT
• All electrical and instrumentation erection and commissioning.
• Refractory supply and Application: 1200 MT
• External Insulation: 1000 sq.m

Year of Completion: 4th Stream Commissioned in 2010

FFIL bagged 4 projects consecutively from Hindustan Zinc Ltd. for excellence in project execution
Zinc

Design, Engineering, Fabrication and Construction of Roaster for Zinc Smelter Plant, Vishakapatnam, India

Client: Hindustan Zinc Ltd., Debari and Vizag, India

Process Licensor: Outotec

Consultant: Furnace Fabrica

Scope Highlights:
• Complete fabrication and erection of Mechanical, Electrical and Instrumentation including piping, ducting, and technological structural for Zinc Smelter
• Structural: 50 MT
• Equipment fabrication and erection: 500MT
• All electrical and instrumentation erection and commissioning
• Refractory supply and application: 700MT.
• External Insulation: 400 sq. m.

Year of Completion: 1998 - 1999
Copper & Lead

Strong position in India for other Non Ferrous Metal production plants

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>PROCESS LICENSOR</th>
<th>YEAR</th>
<th>SCOPE</th>
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<tbody>
<tr>
<td>Waste Heat Boiler for 400ktpa ISASMELT Smelter</td>
<td></td>
<td>Sterlite Industries Ltd.</td>
<td>India</td>
<td>Alstom</td>
<td>2013</td>
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<tr>
<td>Copper Smelter plant</td>
<td>150 KTPA</td>
<td>Konkola Copper Mines</td>
<td>Zambia</td>
<td>Outotec</td>
<td>2009</td>
<td>✓</td>
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<tr>
<td>Copper Recovery Units</td>
<td></td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>Furnace Fabrica</td>
<td>2003</td>
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<tr>
<td>Kaldo furnace</td>
<td>50 KTPA</td>
<td>Jhagadia Copper Ltd.</td>
<td>India</td>
<td>Outotec / Boliden</td>
<td>2002</td>
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<tr>
<td>Copper Smelter plant</td>
<td>50 KTPA</td>
<td>Jhagadia Copper Ltd.</td>
<td>India</td>
<td>Outotec / Boliden</td>
<td>2001</td>
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<tr>
<td>Copper Recovery and Hg Removal Units</td>
<td></td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>Furnace Fabrica</td>
<td>1990</td>
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</table>

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
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<th>PROCESS LICENSOR</th>
<th>YEAR</th>
<th>SCOPE</th>
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<tbody>
<tr>
<td>Lead Purification Works</td>
<td></td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>FF</td>
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<tr>
<td>Expansion of Lead Smelter at Vizag</td>
<td></td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>FF</td>
<td></td>
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</tr>
</tbody>
</table>

Key: B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C - Construction

NOTE: Projects under execution are projected in bold
Copper & Lead

Smelter construction services contract alone worth USD 20 Million

150,000 TPA Copper Smelter at Konkola Copper Mines, Chingola, Zambia

Client: Konkola Copper Mines, Chingola, Zambia

Process Licensor: Outotec

Consultant: Aker Powergas

Scope Highlights:
- Complete Mechanical Erection of Smelter and allied equipments including piping, ducting and structurals.
- Tanks and Vessels: 100 MT
- Structural: 800 MT
- Ducting: 500 MT
- Piping: 120,000 Inch Metre
- Equipments: 900 MT
- Furnace: 2100 MT
- Castwheel: 70 MT

Year of Completion: 2009
Copper & Lead

Kaldo furnace relocated from Sweden to Gujarat

50,000 TPA Copper Smelter plant producing LME Grade A cathode copper

Client: Jhagadia Copper (formerly SWIL), Gujarat, India

Process Licensor: Boliden Contech AG, Sweden

Consultant: Engineers India Ltd.

Scope Highlights:
- Erection of Kaldo Furnace: 230 MT.
- Civil: 3000 Cu.m RCC
- Structural: 350 MT
- Equipment Erection: 350 MT
- Structural (fabrication & erection): 1465 MT
- Electrical and Instrumentation
- Rail Track

Year of Completion: 1998 - 1999
# Aluminium

Undergoing project for Vedanta touted to be the world’s largest Alumina refining complex

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>PROCESS LICENSOR</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrate filtration &amp; calcination plants</td>
<td>3 MMTPA</td>
<td>Vedanta Aluminium Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2012</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Hydrate filtration &amp; calcination plant</td>
<td>1300 TPD</td>
<td>Hindalco Industries Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2008</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Evaporation Plant (Indigenous Project)</td>
<td>140TPH</td>
<td>Hindalco Industries Ltd.</td>
<td>India</td>
<td>Messo</td>
<td>2008</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>Alumina Refinery Settler Tanks &amp; Debottlenecking</td>
<td>1.4 MMTPA</td>
<td>Vedanta Aluminium Ltd.</td>
<td>India</td>
<td>HDO</td>
<td>2007</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
<tr>
<td>Debottlenecking project (New calciner)</td>
<td>2400 TPD</td>
<td>NALCO Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2001</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Alumina Refinery, Damanjodi</td>
<td>2000 TPD</td>
<td>NALCO Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2000</td>
<td>☐ ☐ ☐ ☐</td>
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<tr>
<td>Debottlenecking project (Calciner Modification)</td>
<td>1400-1700 TPD</td>
<td>NALCO Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2000</td>
<td>☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

Key: B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction

Note: Projects under execution are projected in bold.
Delivered Greenfield Alumina Calcination plant in record time in adverse site conditions

1,300 TPD Alumina Calcination Plant and 140 TPH Evaporation Plant at Hindalco, Muri, India

Client: Hindalco (AV Birla Group), Muri, India

Process Licensor: Outotec (Calcination) & Messo (Evaporation)

Consultant: Engineers India Ltd.

Scope Highlights:
• Complete Mechanical, Electrical and Instrumentation including piping, ducting, civil and structurals.
• Mechanical Fabrication & Erection: 4000 MT
• Complete calcination plant erection and commissioning
• All electrical and instrumentation erection and commissioning
• Total Refractory supply and application

Year of Completion: 2006 - 2007
Aluminium

Largest Alumina Calciner in operation in India

Construction of 2000 TPD Alumina Calcination Plant at NALCO, Damanjodi, India

Client: National Aluminium Company (NALCO), Damanjodi, India

Process Licensor: Outotec

Consultant: Engineers India Ltd.

Scope Highlights:
- Complete Mechanical, Electrical and Instrumentation including piping, ducting, civil and structural.
- Civil: 650 cubic m RCC
- Structural: 350 MT
- Fabrication and Erection of 90 mtrs Stack: 205 MT
- Equipment fabrication and erection including ducting:350 MT
- All electrical and instrumentation erection and commissioning
- Refractory supply and application

Year of Completion: 1998 -1999
### Off Gas based Sulphuric Acid Plants

#### Leadership position for delivery of large Sulphuric Acid plants in India

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY (MTPD)</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>PROCESS LICENSOR</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual turn around jobs with new equipment supply</td>
<td>1850</td>
<td>Konkola Copper Mines</td>
<td>Zambia</td>
<td>Chemetics</td>
<td>2014</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Annual turn around jobs with new equipment supply</td>
<td>1,600</td>
<td>Sterlite Industries Ltd.</td>
<td>India</td>
<td>Chemetics</td>
<td>2013</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>SA Plant Equipments</td>
<td>2300</td>
<td>Mopani Copper Mines</td>
<td>Zambia</td>
<td>MECS</td>
<td>2013</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>Zinc roaster based SA plant</td>
<td>950</td>
<td>HZL - Dariba</td>
<td>India</td>
<td>Outotec</td>
<td>2012</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td><strong>Copper Smelter based SA plant</strong></td>
<td><strong>5,900</strong></td>
<td>Sterlite Industries Ltd.</td>
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<td>MECS</td>
<td>2013</td>
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<tr>
<td>Zinc roaster based SA plant</td>
<td>950</td>
<td>HZL - Dariba</td>
<td>India</td>
<td>Outotec</td>
<td>2009</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Zinc roaster based SA plant</td>
<td>950</td>
<td>HZL - Debari</td>
<td>India</td>
<td>Outotec</td>
<td>2008</td>
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<tr>
<td>Annual turn around jobs with new equipment supply</td>
<td>1,600</td>
<td>Sterlite Industries Ltd.</td>
<td>India</td>
<td>Chemetics</td>
<td>2008</td>
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<tr>
<td>Revamp / equipment supply</td>
<td>240</td>
<td>HZL - Debari</td>
<td>India</td>
<td>Outotec</td>
<td>2008</td>
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<tr>
<td>Revamp job with equipment</td>
<td>240</td>
<td>HZL - Vizag</td>
<td>India</td>
<td>Outotec</td>
<td>2008</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
</tbody>
</table>

**KEY:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction

**NOTE:** Projects under execution are projected in bold
# Off Gas based Sulphuric Acid Plants

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY (MTPD)</th>
<th>CLIENT</th>
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<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cu Smelter based SA plant</td>
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<td>Konkola Copper Mines</td>
<td>Zambia</td>
<td>Chemetics</td>
<td>2007</td>
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</tr>
<tr>
<td>Zinc Roaster based SA plant (Hydro 2)</td>
<td>950</td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2006</td>
<td>√</td>
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<tr>
<td>Zinc Roaster based SA plant (Hydro 1)</td>
<td>950</td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2005</td>
<td>√</td>
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<td>Copper Smelter gas based SA plant</td>
<td>1800</td>
<td>Sterlite Industries Ltd.</td>
<td>India</td>
<td>Chemetics</td>
<td>2005</td>
<td>√</td>
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<tr>
<td>Revamp and capacity enhancement of Smelter based SA plant</td>
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<td>Sterlite Industries Ltd.</td>
<td>India</td>
<td>Chemetics</td>
<td>2004</td>
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<td>Zinc Roaster based SA plant</td>
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<td>Padaeng Industries</td>
<td>Thailand</td>
<td>Outotec</td>
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<td>√</td>
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<td>Copper Smelter gas based SA plant</td>
<td>1600</td>
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<td>India</td>
<td>Chemetics</td>
<td>1995</td>
<td>√</td>
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<tr>
<td>Lead / Zinc Sinter based SA plant</td>
<td>600</td>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>Davy Mckee</td>
<td>1990</td>
<td>√</td>
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</tbody>
</table>

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**NOTE**: Projects under execution are projected in bold
Off Gas based Sulphuric Acid Plants

15 month delivery record on SAP despite logistical challenges in Central Africa

Construction of 1850 TPD Sulphuric Acid plant for Konkola Copper Mines, Chingola, Zambia

Client: Konkola Copper Mines, Chingola, Zambia

Process Licensor: Aker Chemetics

Consultant: Aker Powergas

Scope Highlights:
• Complete fabrication and erection of Mechanical, Electrical and Instrumentation including piping, ducting, and structures.
• Structural: 450 MT
• Equipment fabrication and erection: 2000MT
• All electrical and instrumentation erection and commissioning
• Refractory supply and application: 1400MT.

Year of Completion: 2007
Off Gas based Sulphuric Acid Plants

12 month delivery record on SAP – from contract to commissioning

Construction of 950 TPD Sulphuric Acid plant for Hindustan Zinc Ltd, Debari, Rajasthan, India

Client: Hindustan Zinc Ltd (HZL), Debari, Rajasthan, India

Process Licensor: Outotec

Consultant: Mecon

Scope Highlights:
• Complete fabrication and erection of Mechanical, Electrical and Instrumentation including piping, ducting and technological structures.
• Structural: 80 MT
• Equipment fabrication and erection: 800MT
• All electrical and instrumentation erection and commissioning.
• Refractory supply and Application: 200 MT
• External Insulation: 1000 sq.m

Year of Completion: 2009
Elemental Sulphur based Sulphuric Acid Plants

In house basic engineering capability for Sulphur burning SA production plants

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY (MTPD)</th>
<th>CLIENT</th>
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<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revamp Of SA Plant</td>
<td>500</td>
<td>Konkola Copper Mines</td>
<td>Zambia</td>
<td>Outotec</td>
<td>2013</td>
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<tr>
<td>Oleum/SA plant</td>
<td>300</td>
<td>Industrie Chimique du Fluor</td>
<td>Tunisia</td>
<td>Outotec</td>
<td>2013</td>
<td>✓</td>
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<tr>
<td>Oleum/SA plant</td>
<td>350</td>
<td>Grasim Industries</td>
<td>India</td>
<td>Outotec</td>
<td>2013</td>
<td>✓</td>
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<tr>
<td>SA plant</td>
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<td>Grasim Industries</td>
<td>India</td>
<td>Outotec</td>
<td>2012</td>
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<td>SA plant</td>
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<td>Qatar</td>
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<td>2012</td>
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<tr>
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<td>1,700</td>
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<td>Russia</td>
<td>FF</td>
<td>2012</td>
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<td>Revamp of Oleum/SA Plant</td>
<td>2,000</td>
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<td>Russia</td>
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<td>FF</td>
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<td>MECS</td>
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<td>SA / Oleum production Plant</td>
<td>34</td>
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<td>Turkey</td>
<td>Outotec</td>
<td>2011</td>
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<tr>
<td>SA plant</td>
<td>500</td>
<td>Konkola Copper Mines</td>
<td>Zambia</td>
<td>Outotec</td>
<td>2009</td>
<td>✓</td>
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# Elemental Sulphur based Sulphuric Acid Plants

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<th>YEAR</th>
<th>SCOPE</th>
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</thead>
<tbody>
<tr>
<td>SA plant</td>
<td>100</td>
<td>Mangalore Chemical &amp; Fertilizers Ltd</td>
<td>India</td>
<td>Outotec</td>
<td>2008</td>
<td>√</td>
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<tr>
<td>Revamp of SA plant with new melter section</td>
<td>2 X 3500</td>
<td>IFFCO Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2006</td>
<td>√</td>
</tr>
<tr>
<td>SA Plant</td>
<td>3500</td>
<td>IFFCO Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2007</td>
<td>√</td>
</tr>
<tr>
<td>SA plant</td>
<td>100</td>
<td>Sable Zinc Kabwe Ltd.</td>
<td>Zambia</td>
<td>Outotec</td>
<td>2006</td>
<td>√</td>
</tr>
<tr>
<td>SA plant</td>
<td>30</td>
<td>Qatar Acids Co.</td>
<td>Qatar</td>
<td>Outotec</td>
<td>2002</td>
<td>√</td>
</tr>
<tr>
<td>SA plant</td>
<td>36</td>
<td>Kuwait Sulphuric Acid Company</td>
<td>Kuwait</td>
<td>Outotec</td>
<td>2002</td>
<td>√</td>
</tr>
<tr>
<td>Revamp of SA plant</td>
<td>2,000</td>
<td>Industrie Chimique du Senegal</td>
<td>Senegal</td>
<td>FF</td>
<td>2001</td>
<td>√</td>
</tr>
<tr>
<td>SA plant</td>
<td>100</td>
<td>VAM Organics Ltd.</td>
<td>India</td>
<td>Outotec</td>
<td>2000</td>
<td>√</td>
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<tr>
<td>SA plant</td>
<td>1650</td>
<td>Bagfas Industries</td>
<td>Turkey</td>
<td>Outotec</td>
<td>1999</td>
<td>√</td>
</tr>
<tr>
<td>Revamp of SA plant</td>
<td>420</td>
<td>Rashtriya Chemicals &amp; Fertilisers Ltd.</td>
<td>India</td>
<td>Chemiebau</td>
<td>1992</td>
<td>√</td>
</tr>
</tbody>
</table>

**KEY:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction
Elemental Sulphur based Sulphuric Acid Plants

14 month delivery record on SAP despite logistical challenges in Central Africa

Construction of 500 TPD Sulphuric Acid plant for Konkola Copper Mines, Chingola, Zambia

Client: Konkola Copper Mines, Chingola, Zambia

Process Licensor: Outotec

Consultant: NA

Scope Highlights:
- Complete fabrication and erection of Mechanical, Electrical and Instrumentation including piping, ducting, and structures.
- Structural: 65 MT
- Equipment fabrication and erection: 750MT
- All electrical and instrumentation erection and commissioning
- Refractory supply and application: 150MT.
- External Insulation: 760 sq. m.

Year of Completion: 2007
Elemental Sulphur based Sulphuric Acid Plants

Testing the waters with our first project in Central Africa

Construction of 100 TPD Sulphuric Acid plant and 6 TPD Sulphur Dioxide plant for Sable Zinc at Kabwe, Zambia.

Client: Sable Zinc (Metorex Group), Kabwe, Zambia

Process Licensor: Outotec

Consultant: Furnace Fabrica

Scope Highlights:
• Complete fabrication and erection of Mechanical, electrical and instrumentation including piping, ducting, and structures.
• Structural: 50 MT
• Equipment fabrication and erection: 500MT
• All electrical and instrumentation erection and commissioning
• Refractory supply and application: 400MT.
• External Insulation: 450 sq. m.

Year of Completion: 2006
### Fertilizer

**Well positioned to contribute to the next Global Fertilizer cycle**

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>PROCESS SUPPLIER</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur Processing Unit</td>
<td>6,000 TPD</td>
<td>Maroc Phosphore SA</td>
<td>Morocco</td>
<td>FF</td>
<td>2013</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Ph Scrubbing system with regeneration</td>
<td></td>
<td>Rashtriya Chemicals&amp; Fertilizers Ltd.</td>
<td>India</td>
<td>FF</td>
<td>2005</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Urea hydrolyser unit</td>
<td></td>
<td>PIC</td>
<td>Kuwait</td>
<td>2001</td>
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<td></td>
</tr>
<tr>
<td>Formic Acid plant</td>
<td></td>
<td>Rashtriya Chemicals&amp; Fertilizers Ltd.</td>
<td>India</td>
<td>1997</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Formic Acid tanks</td>
<td></td>
<td>Rashtriya Chemicals&amp; Fertilizers Ltd.</td>
<td>India</td>
<td>1997</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Kandla Phase II DAP/ NPK</td>
<td></td>
<td>IFFCO</td>
<td>India</td>
<td>Incro</td>
<td>1997</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Ammonium Sulphate unit and Ammonia barge unloading</td>
<td></td>
<td>FACT</td>
<td>India</td>
<td>1996</td>
<td>✓ ✓</td>
<td></td>
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<tr>
<td>Selas Reformer revamp</td>
<td></td>
<td>FACT</td>
<td>India</td>
<td>1995</td>
<td>✓ ✓</td>
<td></td>
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<tr>
<td>Fertiliser silo</td>
<td></td>
<td>Paradeep Phosphates Ltd.</td>
<td>India</td>
<td>1994</td>
<td>✓ ✓ ✓ ✓</td>
<td></td>
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<tr>
<td>Pyrite roasters with gas cleaning units</td>
<td></td>
<td>PPCL</td>
<td>India</td>
<td>Outotec</td>
<td>1987</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>SO2 scrubbing system with regeneration</td>
<td></td>
<td>Rashtriya Chemicals&amp; Fertilizers Ltd</td>
<td>India</td>
<td>FF</td>
<td>1985</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
</tbody>
</table>

**KEY:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction
Fertilizer

**Participated in the construction of India’s largest complex fertilizer facility**

**Construction of DAP / NPK plant for IFFCO Ltd, Kandla, India**

**Client:** IFFCO Ltd. Kandla, Gujarat, India

**Process Licensor:** Incro

**Consultant:** FEDO

**Scope Highlights:** Complete Mechanical fabrication and erection

**Year of Completion:** 1998
Fertilizer

Experience in structural design, fabrication and erection

Construction of Fertilizer Silo for Paradip Phosphates Ltd, Orissa, India

Client: Paradip Phosphates Ltd, Orissa, India

Process Licensor: NA

Consultant: Jacobs H&G

Scope Highlights:
• Design, engineering and construction of fertilizer silo
• Weight: 400 T

Year of Completion: 1994
Oil & Gas

Mechanical fabrication / erection and ceramics a natural fit for Hydrocarbons processing

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>CONSULTANT</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misc. Civil &amp; Structural works-II</td>
<td>BPCL, Kochi Refinery</td>
<td>India</td>
<td>EIL</td>
<td>2014</td>
<td></td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Composite Works</td>
<td>Oil India Limited</td>
<td>India</td>
<td>EIL</td>
<td>2014</td>
<td></td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Combine station works</td>
<td>IOCL – Paradip &amp; Haldia</td>
<td>India</td>
<td>EIL</td>
<td>2014</td>
<td></td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Civil and Structural Works</td>
<td>Oil India Limited</td>
<td>India</td>
<td>EIL</td>
<td>2014</td>
<td></td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Combine station works</td>
<td>IOCL – Khunti</td>
<td>India</td>
<td>EIL</td>
<td>2014</td>
<td></td>
<td>✓ ✓ ✓</td>
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<tr>
<td>Combine station works</td>
<td>IOCL – Korba</td>
<td>India</td>
<td>EIL</td>
<td>2014</td>
<td></td>
<td>✓ ✓ ✓</td>
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<tr>
<td>Combine station works</td>
<td>IOCL – Haldia</td>
<td>India</td>
<td>EIL</td>
<td>2013</td>
<td></td>
<td>✓ ✓ ✓</td>
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<tr>
<td>Sulphur Recovery Unit – Mechanical</td>
<td>HPCL/Linde</td>
<td>India</td>
<td>Linde</td>
<td>2012</td>
<td></td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>CISF Unit</td>
<td>BPCL – Kochi</td>
<td>India</td>
<td>EIL</td>
<td>2012</td>
<td></td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Supply of 3 X AP Coolers</td>
<td>IOCL – Paradeep</td>
<td>India</td>
<td>Foster Wheeler</td>
<td>2012</td>
<td>✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Field Surface Facilities Phase-5</td>
<td>Greater Nile Petroleum Operating Company Ltd.</td>
<td>Sudan</td>
<td></td>
<td>2012</td>
<td></td>
<td>✓ ✓ ✓</td>
</tr>
</tbody>
</table>

KEY: B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction
NOTE: Projects under execution are projected in bold.
# Mechanical fabrication / erection and ceramics a natural fit for Hydrocarbons processing

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>CONSULTANT</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caustic Scrubbing Unit – Composite Work</td>
<td></td>
<td>HPCL</td>
<td>India</td>
<td>EIL</td>
<td>2011</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Trim crude heater / APH system</td>
<td></td>
<td>IOCL – Haldia</td>
<td>India</td>
<td>Enereff</td>
<td>2010</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Equipment for Expansion Phase III</td>
<td></td>
<td>MRPL</td>
<td>India</td>
<td>EIL</td>
<td>2010</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Propylene Recovery Unit – Composite Work</td>
<td></td>
<td>BPCL – Kochi</td>
<td>India</td>
<td>EIL</td>
<td>2009</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Heaters</td>
<td>2X17.22 MMKcsl/Hr</td>
<td>Bharat Oman Refinery Ltd.</td>
<td>India</td>
<td>EIL</td>
<td>2009</td>
<td>✓ ✓ ✓</td>
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<tr>
<td>SPM Project</td>
<td></td>
<td>BPCL - Kochi</td>
<td>India</td>
<td>FEDO</td>
<td>2006</td>
<td>✓ ✓ ✓</td>
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<td>Field Surface Facilities Phase-4</td>
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<td>GNOPC</td>
<td>Sudan</td>
<td></td>
<td>2006</td>
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<tr>
<td>Off-site And Utilities (OSBL) MSQ Upgradation Project</td>
<td></td>
<td>IOCL – Baroda</td>
<td>India</td>
<td>UHDE</td>
<td>2005</td>
<td>✓ ✓</td>
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<tr>
<td>Relocation of Al – Khafji Refinery</td>
<td>45000 BPD</td>
<td>Al – Essi Group</td>
<td>KSA</td>
<td>PII</td>
<td>2005</td>
<td>✓ ✓ ✓</td>
</tr>
</tbody>
</table>

**KEY:** B – Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction

**NOTE:** Projects under execution are projected in bold.
## Oil & Gas

**Mechanical fabrication / erection and ceramics a natural fit for Hydrocarbons processing**

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>CONSULTANT</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite works for LPG-ATU/FCCU</td>
<td></td>
<td>BPCL</td>
<td>India</td>
<td>EIL</td>
<td>2004</td>
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<tr>
<td>NG3 Project</td>
<td></td>
<td>Reliance Industries Ltd.</td>
<td>India</td>
<td></td>
<td>2003</td>
<td>✓ ✓</td>
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<tr>
<td>Hydrocyclone packages at SHG Platform</td>
<td></td>
<td>VECO / GESCO for ONGC</td>
<td>India</td>
<td>EIL</td>
<td>2003</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Supply of equipments Bhandut field</td>
<td></td>
<td>Gujarat Petroleum Corporation Ltd.</td>
<td>India</td>
<td>Aker</td>
<td>2003</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Fabrication &amp; Supply of Inter Coolers</td>
<td></td>
<td>Assam Petrochemicals Ltd.</td>
<td>India</td>
<td>EIL</td>
<td>2003</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Bulk Fuel Oil Storage Tanks &amp; Fuel Oil Piping</td>
<td></td>
<td>NPCIL</td>
<td>India</td>
<td></td>
<td>2002</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Mumbai - Manmad Pipeline Expansion</td>
<td></td>
<td>Bridge and Roof (for BPCL)</td>
<td>India</td>
<td>EIL</td>
<td>2002</td>
<td>✓ ✓</td>
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<tr>
<td>Hydrocyclone Project</td>
<td></td>
<td>ONGC</td>
<td>India</td>
<td>EIL</td>
<td>2001</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Turnaround of Galana Raffinerie Terminal</td>
<td></td>
<td>Galana Raffineries Terminal</td>
<td>Madagascar</td>
<td>PII</td>
<td>2001</td>
<td>✓ ✓</td>
</tr>
</tbody>
</table>

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## Oil & Gas

**Mechanical fabrication / erection and ceramics a natural fit for Hydrocarbons processing**

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>CONSULTANT</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen Reformer &amp; Waste Recovery System</td>
<td>IOCL - Panipat</td>
<td>India</td>
<td>BHPV Ltd.</td>
<td>2000</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Refinery Units (OHCU Heaters)</td>
<td>IOCL - Panipat</td>
<td>India</td>
<td>BHPV Ltd.</td>
<td>1999</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Dehydrogenation catalyst plant</td>
<td>IPCL</td>
<td>India</td>
<td></td>
<td>1997</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Fabrication &amp; Supply of Fractionator Tower</td>
<td>HPCL</td>
<td>India</td>
<td></td>
<td>1997</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>HCGO Stripper Tower</td>
<td>HPCL</td>
<td>India</td>
<td></td>
<td>1996</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Supply of Hot &amp; Cold Catalyst Hooper</td>
<td>HPCL</td>
<td>India</td>
<td></td>
<td>1995</td>
<td>✓ ✓</td>
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<tr>
<td>Supply of Waste Heat Boiler</td>
<td>HPCL</td>
<td>India</td>
<td></td>
<td>1995</td>
<td>✓ ✓</td>
</tr>
</tbody>
</table>

**KEY:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction
Strong refractory execution capabilities gives us an edge in heaters

Construction of Fired Heaters (2X17.22 MM Kcal / Hr) for Bharat Oman Refinery, Madhya Pradesh

Client: Bharat Oman Refinery, Madhya Pradesh

Technology Licensor: Foster Wheeler

Consultant: EIL

Scope Highlights:
Fabrication / Erection of Technological Equipment & Steel Structure, erection of Equipment, Laying of Pipe Lines And Testing, Trial Run & Commissioning of Machinery & Equipment
Total Refractory application

Year of Completion: 2008
Oil & Gas

Adding value in the Sudanese upstream industry

Field Surface Facilities spread over the existing fields in Muglad Basin, Sudan

Client: Greater Nile Petroleum Operating Company Ltd., Sudan

Process Licensor: NA

Consultant: NA

Scope Highlights:
Complete fabrication and erection of Mechanical, Electrical and Instrumentation for producing wells, oil gathering manifolds, flow lines, trunk lines, supply wells and water injectors.

Year of Completion: 2005 – 2009
Oil & Gas

At date, constructed the largest hydrogen reformer built in India

Construction of Fired Heaters (16 million BTU) and Hydrogen Reformer for Indian Oil Corporation, Panipat, India

Client: Indian Oil Corporation – Panipat, India

Process Licensor: Haldor Topsoe

Consultant: EIL / BHPV

Scope Highlights:
Fabrication / Erection of Technological Equipment & Steel Structure, erection of Equipment, Laying of Pipe Lines And Testing, Trial Run & Commissioning of Machinery & Equipment
Total Refractory application

Year of Completion: 2000
# Tankage

## Long track record in provision of industrial storage solutions

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>NUMBER</th>
<th>WEIGHT</th>
<th>CONSULTANT</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrity Environmental Solutions (Pty) Ltd.</td>
<td>South Africa</td>
<td>4</td>
<td>1398MT</td>
<td></td>
<td>2015</td>
<td>✓</td>
</tr>
<tr>
<td>Godrej Industries Limited</td>
<td>India</td>
<td>37</td>
<td>650 MT</td>
<td>Mott Mac</td>
<td>2015</td>
<td>✓</td>
</tr>
<tr>
<td>Hindustan Petroleum Corporation Ltd., Mumbai</td>
<td>India</td>
<td></td>
<td></td>
<td>EIL</td>
<td>2010</td>
<td>✓</td>
</tr>
<tr>
<td>Vedanta Aluminium Ltd.</td>
<td>India</td>
<td>37</td>
<td>650 MT</td>
<td>Nil</td>
<td>2008</td>
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<tr>
<td>Mangalore Chemicals &amp; Fertilizers Ltd.</td>
<td>India</td>
<td>1</td>
<td>3465 MT</td>
<td>Nil</td>
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<td>Mangalore Chemicals &amp; Fertilizers Ltd.</td>
<td>India</td>
<td>2</td>
<td>Nil</td>
<td>EIL/KPG</td>
<td>2005</td>
<td>✓</td>
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<tr>
<td>Vedanta Aluminium Ltd.</td>
<td>India</td>
<td>6</td>
<td>Nil</td>
<td>EIL/KPG</td>
<td>2005</td>
<td>✓</td>
</tr>
<tr>
<td>Cargill India Pvt. Ltd.</td>
<td>India</td>
<td>30</td>
<td>Nil</td>
<td>Aker Powergas</td>
<td>2005</td>
<td>✓</td>
</tr>
<tr>
<td>Maldives Airport Authority, Gan Island</td>
<td>Maldives</td>
<td>2</td>
<td>Nil</td>
<td>PII</td>
<td>2005</td>
<td>✓</td>
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<tr>
<td>Chennai Petroleum Corporation Ltd.</td>
<td>India</td>
<td>1</td>
<td>Nil</td>
<td></td>
<td>2005</td>
<td>✓</td>
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<tr>
<td>Rashtriya Chemical &amp; Fertilisers Ltd.</td>
<td>India</td>
<td>1</td>
<td>Nil</td>
<td></td>
<td>2004</td>
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</tr>
</tbody>
</table>

**KEY:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction

**NOTE:** Projects under execution are projected in bold

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## Tankage

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>QUANTITY</th>
<th>WEIGHT</th>
<th>CONSULTANT</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Oil Corpn Ltd., Haldia Refinery</td>
<td>India</td>
<td>6</td>
<td>Nil</td>
<td></td>
<td>2004</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>Chennai Petroleum Corporation Ltd.</td>
<td>India</td>
<td>5</td>
<td>Nil</td>
<td></td>
<td>2004</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Cargill India Pvt. Ltd.</td>
<td>India</td>
<td>33</td>
<td></td>
<td>Aker Powergas</td>
<td>2004</td>
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<tr>
<td>Niko Resources Ltd.</td>
<td>India</td>
<td>2</td>
<td>45 MT</td>
<td></td>
<td>2003</td>
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<tr>
<td>Galana Raffinerie Terminal</td>
<td>Madagascar</td>
<td>2</td>
<td></td>
<td>PII</td>
<td>2002</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>Galana Raffinerie Terminal</td>
<td>Madagascar</td>
<td>12</td>
<td></td>
<td>PII</td>
<td>2002</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>National Aluminium Company</td>
<td>India</td>
<td>1</td>
<td></td>
<td>EIL</td>
<td>2002</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>Qatar Acid Company</td>
<td>Qatar</td>
<td>2</td>
<td></td>
<td></td>
<td>2002</td>
<td>✓ ✓ ✓ ✓</td>
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<tr>
<td>Kuwait Sulphuric Acid Co.</td>
<td>Kuwait</td>
<td>2</td>
<td></td>
<td></td>
<td>2002</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Kuwait Chemical Manufacturing Co.</td>
<td>Kuwait</td>
<td>7</td>
<td></td>
<td>SNC Lavalin &amp; Synthesia Espanola</td>
<td>2001</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Rashtriya Chemical &amp; Fertilisers Ltd.</td>
<td>India</td>
<td>2</td>
<td></td>
<td>FEDO</td>
<td>1999</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>Unilever</td>
<td>India</td>
<td>240 MT</td>
<td></td>
<td>Aker Powergas</td>
<td>1998</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
</tbody>
</table>

**KEY:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction
## Tankage

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>QUANTITY</th>
<th>WEIGHT</th>
<th>CONSULTANT</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterlite Industries (India) Ltd.</td>
<td>India</td>
<td>4</td>
<td></td>
<td>Aker Powergas</td>
<td>1995</td>
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<tr>
<td>Hindustan Zinc Ltd.</td>
<td>India</td>
<td>3</td>
<td></td>
<td></td>
<td>1991</td>
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</tr>
</tbody>
</table>

**KEY:**  
- **B** - Basic Engineering  
- **D** – Detailed Engineering  
- **P** – Procurement  
- **CM** – Construction Management  
- **C** – Construction
Construction of fixed roof ATF storage tanks for Maldives Airport Authority, Maldives

Client: Maldives Airport Authority, Maldives

Process Licensor: NA

Consultant: Petroleum India International, India

Quantity: 2 nos.

Scope Highlights:
• Detailed engineering and construction of 2 nos. ATF tanks including piping, electrical and instrumentation.
• Max tank diameter: 15 mtrs.
• Max tank height: 10 mtrs.

Year of Completion: 2005
Tankage

Including greenfield projects...

Construction of Vegetable Oil storage tanks for Cargill India Pvt. Ltd. at Kandla, Gujarat and Paradip, Orissa

Client: Cargill India Pvt. Ltd.

Process Licensor: NA

Consultant: Aker Powergas

Quantity: 30 + 30 nos.

Scope Highlights:
• Detailed engineering and construction of 60 tanks
• Max tank diameter: 28 mtrs.
• Max tank height: 13 mtrs.

Year of Completion: 2004 / 2005
Tankage

And brownfield expansion / revamps

Construction of floating roof tank and fixed roof tank for Galana Raffinerie Terminal, Madagascar

Client: Galana Raffinerie Terminal, Madagascar

Process Licensor: NA

Consultant: Petroleum India International, India

Quantity: 2 nos.

Scope Highlights:
• Detailed engineering and construction of floating and fixed roof tank
• Max tank diameter: 16 mtrs.
• Max tank height: 14.4 mtrs.

Year of Completion: 2001
## Also adding in value in general construction services..

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>PROCESS SUPPLIER</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blast Furnace, Sinter Plant and Coke Battery</td>
<td>1mtpa</td>
<td>Sesa Goa</td>
<td>India</td>
<td>FMCC</td>
<td>2012</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>2x9km long distance Bauxiter Pipe Conveyor</td>
<td>3000tph</td>
<td>Vedanta Alumina Ltd.</td>
<td>India</td>
<td>FLS</td>
<td>2013</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Refractory Ore Shed</td>
<td></td>
<td>KCM, Zambia</td>
<td>Zambia</td>
<td>FF</td>
<td>2011</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Relocation of refinery from Saudi Arabia to Yemen</td>
<td>45000 BBLSDay</td>
<td>Alessi Corp for Trading Development &amp; Investment</td>
<td>Yemen</td>
<td></td>
<td>2009</td>
<td>✓</td>
</tr>
<tr>
<td>Clinker Grinding Unit</td>
<td>1.4 MTPA</td>
<td>Binani Cement Ltd.</td>
<td>India</td>
<td>N/A</td>
<td>2007</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Caustic Soda plant</td>
<td>30 TPD</td>
<td>Atul Products</td>
<td>India</td>
<td></td>
<td>2007</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>Revamp of sulphur based acid plant</td>
<td>3500 TPD x 2 stream</td>
<td>IFFCO Ltd</td>
<td>India</td>
<td>Outotec</td>
<td>2006</td>
<td>✓ ✓ ✓</td>
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<tr>
<td>Sinter plant at Raigarh</td>
<td>120 sq.m</td>
<td>Jindal Steel &amp; Power Ltd.</td>
<td>India</td>
<td>Outotec / Messo</td>
<td>2005</td>
<td>✓ ✓ ✓</td>
</tr>
</tbody>
</table>

**KEY:** B - Basic Engineering, D – Detailed Engineering, P – Procurement, CM – Construction Management, C – Construction

**NOTE:** Projects under execution are projected in bold
## Miscellaneous

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PLANT CAPACITY</th>
<th>CLIENT</th>
<th>COUNTRY</th>
<th>PROCESS SUPPLIER</th>
<th>YEAR</th>
<th>SCOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel plant</td>
<td>2 X 60 mVA</td>
<td>Jindal Stainless Steel Ltd</td>
<td>India</td>
<td>Demag</td>
<td>2005</td>
<td>√</td>
</tr>
<tr>
<td>Alkyd &amp; Urea Resin plant</td>
<td></td>
<td>Kuwait Chemical Manufacturing Co.</td>
<td>Kuwait</td>
<td></td>
<td>2000</td>
<td>√</td>
</tr>
<tr>
<td>Caprolactum plant</td>
<td></td>
<td>GSFC</td>
<td>India</td>
<td></td>
<td>2000</td>
<td>√</td>
</tr>
<tr>
<td>Palm Oil Mill</td>
<td>20 FFB/Hr</td>
<td>Oil Palm India Ltd.</td>
<td>India</td>
<td>Furnace Fabrica</td>
<td>1998</td>
<td>√</td>
</tr>
<tr>
<td>Non-Recovery Coke Oven Battery at Gujarat</td>
<td>72 KTPA</td>
<td>Arihant Trade Links Pvt. Ltd.</td>
<td>India</td>
<td>Nugen Cokeoven</td>
<td>1995</td>
<td>√</td>
</tr>
<tr>
<td>Non-Recovery Coke Oven Battery at Goa</td>
<td>200 KTPA</td>
<td>Sesa Steel Ltd.</td>
<td>India</td>
<td>Sesa Kembla</td>
<td>1995</td>
<td>√</td>
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<tr>
<td>Caustic Soda plant</td>
<td></td>
<td>Travancore Cochin Chemicals</td>
<td>India</td>
<td>Uhdenora</td>
<td>1993</td>
<td>√</td>
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<tr>
<td>DECOFOL project</td>
<td></td>
<td>HIL</td>
<td>India</td>
<td></td>
<td>1992</td>
<td>√</td>
</tr>
<tr>
<td>Toilet Soap plant</td>
<td></td>
<td>HLL</td>
<td>India</td>
<td></td>
<td>1991</td>
<td>√</td>
</tr>
</tbody>
</table>
Preferred construction partner for the Binani group since 1980

Construction of 1.4 MTPA Clinker Grinding Unit for Binani Cement Ltd. at Sirohi, India

Client: Binani Cement Ltd., Bagega-Sirohi, India

Process Licensor: FL Smidth

Consultant: Holcim

Scope Highlights:
Fabrication / Erection of Technological Equipment & Steel Structure, erection of Equipment, Laying of Pipe Lines And Testing, Trial Run & Commissioning of Machinery & Equipment

Year of Completion: 2007
Miscellaneous

Experience in handling the challenges of a major Brownfield expansion

Construction of Sinter plant for Jindal Steel & Power Ltd. at Raigarh, India

Client: Jindal Steel & Power Ltd., Raigarh, India

Process Licensor: Outotec

Consultant: Mecon

Scope Highlights:
• Sinter machine 204 sq.m.
• Circular Sinter Cooler 22 m dia.
• Mixing and nodulizing drum
• All related fans with associated ducting
• Stack 85m height
• All associated ducting

Year of Completion: 2005
Miscellaneous

**First of its kind specialty steel project in India**

*Construction of Steel plant for Jindal Stainless Steel Ltd., India*

**Client:** Jindal Stainless Steel Ltd.

**Process Licensor:** Outotec / Demag

**Consultant:** NA

**Scope Highlights:**
Supply, Manufacturing including Site Fabrication, Erection & commissioning of Mechanical Equipments

**Year of Completion:** 2005
Reconstruction of a Gulf war affected plant

Construction of Alkyd Resin & Urea Resin plant for Kuwait Chemical Manufacturing Co., Kuwait

Client: Kuwait Chemical Manufacturing, Kuwait

Process Licensor: Synthesia

Consultant: SNC Lavalin

Scope Highlights:
Residual Engineering, Procurement, Construction, Installation, testing & commissioning

Year of Completion: 2000
Significant contribution in commercializing SK’s coking technology

Construction of 280,000 TPA Non-Recovery Coke Oven Battery for Sesa Steel Ltd, Goa

Client: Sesa Steel Ltd, Goa

Process Licensor: Sesa Kembla, Australia

Consultant: Sesa Kembla, Australia

Scope Highlights:
Design and construction of 280,000 TPA Non-Recovery Coke Oven Battery.

Year of Completion: 1994 - 1995
Miscellaneous

**Proven indigenous technology**

Construction of 72,000 TPA Non-Recovery Coke Oven Battery for Arihant Industries, Gujarat

**Client:** Arihant Industries, Gujarat

**Process Licensor:** Furnace Fabrica

**Consultant:** NA

**Scope Highlights:**
Design and construction of 72,000TPA Non-Recovery Coke Oven Battery and supply of total refractory material for the coke ovens.

**Year of Completion:** 2004 - 2005
Specialty Services

Technical expertise and planning sets us up for delivering project execution

- Also FF can assist the client with Feasibility Analysis on the revamp / modernization project
  - Feasibility study
  - Plant Health Study Services
  - Revamping
  - Relocation
  - De-bottlenecking

- FF does the following to evaluate the health of the plant
  - Study of Physical Health of the Plant – Integrity of Equipments and Structures.
  - Study of Heating Equipments – Preheaters, Heaters, Boilers etc.
  - Study of Rotating Equipments – Drives, pumps, blowers etc.
  - Study of Electrical and Instrumentation Systems.
  - Study of other parts of the Plant including filtration & evaporation systems, material handling systems etc.
Specialty Services: Revamping

**Increasing productivity with available resources**

- Process plants are subject to permanent adjustment pressure for optimization in the areas of
  - new or changing feed materials
  - products and product specifications
  - environmental regulations
  - demands on energy savings

- Major optimization targets are, in addition to cost cutting, plant quality and capacity improvements

- Through a revamp FFIL promises its customers
  - Capacity and revenue increases
  - Improvement of product quality
  - Reduction of operating costs
  - Process optimization
  - Adaptation of plants to new products as demanded by the market
Specialty Services: Revamping

Transformational revamp of 2x3500 tpd SAP’s at IFFCO Paradeep

Before

After

Before

After
Specialty Services: Debottlenecking

Experience in debottlenecking

Debottlenecking and Revamp of Two Calciners for NALCO, Damanjodi, India

Client: National Aluminium Company (NALCO), Damanjodi, India

Process Licensor: Outotec

Consultant: Engineers India Ltd.

Scope Highlights:
• Complete Mechanical, Electrical and Instrumentation including piping, ducting, civil & structural.
• Civil: 1200 cu. m. RCC
• Structural: 260 MT
• Equipment fabrication and erection: 210 MT
• All electrical and instrumentation erection and commissioning.
• Refractory supply and Application: 146 MT
• External Insulation: 4700 sq.m

Year of Completion: 1999 - 2000
Specialty Services: Turnaround Maintenance

Experience in turnaround maintenance

Revamp and Re-construction of floating roof tanks and fixed roof tanks for Galana Raffinerie Terminal, Madagascar

Client: Galana Raffinerie Terminal, Madagascar

Process Licensor: NA

Consultant: Petroleum India International

Quantity: 6 nos. (floating roof tanks) & 2 nos. (fixed roof tank)

Scope Highlights:
- Detailed engineering and re-construction of floating and fixed roof tank for crude oil storage
- Max tank diameter: 47 mtrs.
- Max tank height: 15.5 mtrs.

Year of Completion: 2001
Specialty Services: Relocation

Experience in plant relocation

Relocation of POM plant, South Korea for Tasnee Petrochemical & Industrial Co.

Client: Tasnee Petrochemical & Industrial Co., Qatar

Process Licensor: NA

Consultant: LG, South Korea

Scope Highlights:
- Preparation of Inspection methodology for various equipments
- Inspection of dismantled items
- Preparation of inspection report
- Preparation of testing methodology
- Preparation of procedure for identifying the items for repair / refurbishment / replacement
- Advice eTech on preparation of tender document & technical offers

Year of Completion: 2009
THANK YOU FOR YOUR ATTENTION

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