FOURESS Product Range.....
For Steel and Metallurgical Industries
.....going beyond boundaries

FOURESS ENGINEERING (INDIA) LIMITED
In the business of flow
India has a century old iron and steel industry with Tata Iron and Steel Company Ltd., affectionately known as TISCO in India having set up the first integrated steel plant in 1907. From this small beginning, finished steel production in India has grown from a meager 1.10 million tonnes per annum in 1951 to about 34 million tonnes currently. With abundance of iron ore, coal and lime deposits, India is poised to become a major production centre for steel in the years to come as the production and consumption of steel is an indicator of the country's economic progress and development.

Process of steel making involves handling large volumes of hot, dusty gases of a variety of combinations and complexities. Isolation and controls of these gases is as critical as melting the metal and its subsequent processing. Safety, integrity, reliability and now, higher productivity by automation of process control, are essential ingredients of an efficient steel and metallurgical plant.

Being in the 'Business of Flow' for over four decades, Foureess identified its role in iron and steel plants in the early 80's. There was a gaping need for reliable products not made in the country. Growth of steel industry in this sphere heavily depended on imports. Foureess responded to the clarion call of the steel industry and successfully embarked upon organised manufacture of a whole range of valves and flow control equipments for blast furnace, coke ovens, steel melting and refining, by-product plants and created a "One of it's kind" facility at Aurangabad in Western India.

For over decades now, Foureess having met the need of the steel industry at home and currently participating in it's unprecedented growth, is taking on the overseas market. With the benefit of economic production techniques, trained manpower, technology based on that of world renowned German principals, M/s. Hermann Rappold and credible export performance of Foureess products growing at 30% per annum, we are all set to deliver valves for the metallurgical industry, in general and the iron and steel industry, in particular, all over the world.

This brochure specially prepared to address our capability, strength and potential in this field, will take you through our product range, experience, technology base and manufacturing facilities and quality systems and commitments. We have served the Indian steel industry to a level of satisfaction by volume, variety and customer delight and we are confident that our forays into the export market in the steel industry, will bring in the needed products in highly competitive and quality conscious global market place.

Sadanand A. Shetty
Chairman
FOURESS made a humble beginning with the manufacture of carbon steel industrial valves, four decades ago. Today, Fouress Group in India has developed its capabilities in the diverse field of Fluid Engineering to position ourselves in the “Business of Flow”.

Fouress Engineering (India) Ltd. (FEIL) contributes its major strength in the field of Industrial Valves of various types and sizes; all the way from plain fresh water service at low pressure to extreme duties of hydro-carbon processing, from superheated steam and hot blast gases at 1300°C in steel plants to cryogenic temperatures, in the size range of a 3mm needle valve to mammoth 4000mm hydro-electric turbine inlet valves and even larger gas line valves up to 6 mtr., square duct dimensions; from plain hand lever drive to operation by complex electro-hydraulic multi point control drives or state of the art profibus communication protocol through electric and pneumatic actuators and PLC based computer commands. In short, Fouress Industrial Valves range covers every conceivable duty of fluid isolation, regulation and control.

For over 15 years now, FEIL in association with En-Fab, Inc., of Houston undertakes design, supply, erection & commissioning of Oil & Gas Metering Skids for custody transfer. These metering systems meet international standards of accuracy.

Technology Partners (erstwhile & current)
Today, Fouress is a confluence of specialist technologies in the field of flow. It has developed diversified technical strengths in the vast arena of flow sciences. It is believed that no other company has such comprehensive and heterogeneous range of custom designed product capabilities. Consequently the multi-disciplinary engineering capability is an invaluable asset of Fouress group. Intertwining the technologies of global leaders, many license agreements have resulted into joint ventures, co-production agreements for global markets and joint marketing agreements with erstwhile and current overseas technology partners.

**Engineering & Technology:**
- Assimilation of technology through innovative marketing, engineering developments and unique manufacturing processes.
- 40 years of experience has resulted in independent development of custom engineered products in the field of Fluid Isolation, Control, Regulation, Propulsion, Power Generation and lately the Noise Abatement and Heat Retention in flow path.
- Flow model testing and simulation techniques using advance design tools, are routinely applied for product development and proof of design.

- Use of hydraulic research laboratory, life cycle testing, finite element analysis, modeling techniques et al., are the means to validate basic design

**Comprehensive Production Facilities:**
- Manufactured in 7 manufacturing plants owned by the Group in the country.
- Modern manufacturing equipments supported with 1000 men for production activities.

**Manufacturing Capabilities:**
- Better control on quality and delivery emphasizing on substantial manufacture in-house.
- All the 7 plants in the Group are equipped with extensive manufacturing, material handling, super finishing equipment for cylindrical and flat surfaces, CNC Gas & Plasma cutting, CNC drilling, surface treatment capabilities and full back-up DG captive power to create a high end but complimentary production infrastructure.

**Quality Assurance and Management:**
- ISO 9001 accredited quality management systems with dedicated teams in each plant who are equipped with state-of-the-art facilities.

- Traceability of materials used in every product backed by documentation control to provide comprehensive product guarantee matching in the needs of international

**Field Services and Spares Support / Refurbishment / Reconstruction/ Reclamation:**
- Product support, right from delivery and commissioning up to guarantee and beyond, by timely and reliable spares and service backup for custom made / engineered products.
- Dedicated team in each product centre for erection and commissioning services.

- Qualified and trained engineers specialised in electro-mechanical systems, drives, controls, communication protocol software and interfacing our equipment with rest of the plant by offering our services, world over.

- Building on our experience in reducing replacement costs of new acquisition, specialised capabilities are developed by offering refurbishment, renovation and reclamation of our range of products of any origin, adding contemporary design inputs for life extension services and enhanced performance through our unit at Vadodara (FMIPL).

- Automation of existing facilities and drives, incorporating modern electro-hydraulic systems for existing blast furnaces and other process plants in major integrated steel mills.
What we do.... in Metallurgical industries...

High temperature gas flow isolation and control equipments

Fouress-Aurangabad Plant

Fouress-Aurangabad was established in 1983 with a Technical license from M/s Hermann Rappold and Co. GmbH (RACO), Germany with the sole objective of design and manufacture of valves and equipments for metallurgical industries viz.

- Blast Furnace and stoves in steel making
- Coke oven and by-product plants
- Mini steel plants
- Aluminium, Zinc and Copper industry
- Petrochemical and refining industry encountering high temperature dusty gases.

With a total area of 40,000 sq. Metre and built-up area of 4,000 sq. metre under crane with the work force of over 200 men, Fouress-Aurangabad facilities are one of its kind in the country where marketing, proposal management, design, engineering, manufacture, order management, supply and after sales support are all under one roof as a Strategic Business Unit.

Over 20 years of association with the globally recognized technology of RACO has resulted in Fouress installation base of over 3000 valves of fabricated design and other equipments used in metallurgical industries. These are primarily used in blast furnace stoves, furnace tops, dust catcher system, gas cleaning plants, gas holders and flare stacks, reheating furnaces and interplant overhead pipelines.

Dedicated R & D efforts building on the basic technological strengths acquired from RACO has helped us in developing fabricated special purpose high temperature service valves with water cooled refractory lined designs for cement plants, refineries, fertilizer and petrochemical plants.

Currently FEIL is equipped to develop and manufacture valves for various critical applications and severe duties. The products thus manufactured are the large critical equipments installed in capital intensive plants. Necessarily therefore, high degree of safety, integrity and performance reliabilities are addressed at design stage. ISO 9001-2000 certification and API 6D accreditation are testimonies of our strength in the field and an assurance to customers of everything we do, to ensure total satisfaction.

In the following pages, we have listed the array of products Fouress-Aurangabad plant has delivered over the years since early 80s. For detailed reference list, please visit our website www.fouressindia.com
**What we have to offer...**

**Hot Blast Valves**

Effectively used to isolate the blast furnace from hot blast stove in integrated steel plants and pig iron making facilities using stoves. Also used as a stove shut-off valve and back draughting valve. For a burner shut-off valve the same design is adopted with wedge arrangements to achieve isolation of gas lines from stoves.

Sizes: 500mm up to 3000mm
Temperature: Up to 1550°C
Pressure: Up to 600 Kpa
Media: Hot air

**Single Disc Gate Valves**

Isolation of gas / air pipelines. Used in steel plants as cold blast valves and chimney valve in the stove areas.

Sizes: 300mm up to 2500mm
Temperature: Up to 400°C
Pressure: Up to 600 Kpa
Media: Air / Flue gas

**Double Disc Gate Valves**

Isolation of gas / air pipelines. Used in steel plants for isolation of gas / air for coke oven by-product plants like Benzol, H₂SO₄ plants, nitrates fertilizer, naptha, tar, ammonia liquor lines, reheating furnaces, power plants and inter plant pipelines.

Sizes: 300mm up to 2500mm
Temperature: Up to 400°C
Pressure: Up to 600 Kpa
Media: Air / Flue gas / B.F. Gas / Co gas / Mixed gas etc.

**Goggle Valves**

Used for 100% isolation of highly toxic gas lines, where periodic maintenance work is carried out. Goggle valves are offered in non encased type for out door and encased type for indoor applications.

Type: Encased & Non encased types
Sizes: 350mm up to 3000mm
Temperature: Up to 225°C
Pressure: Up to 250Kpa
Media: Toxic gases

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Non encased type

Encased type
What we have to offer...

The following products are used for isolation of mains carrying gaseous media such as combustion air, cold blast, flue gas, B.F. gas, nitrogen etc. Used in metallurgical, chemical and power plants.

**Double Eccentric Butterfly Valves**
- Sizes: 200mm up to 4000mm
- Temperature: Up to 400°C
- Pressure: Up to 600 Kpa
- Media: Air / Gas

**Two Lever Valves**
- Sizes: 500mm up to 4000mm
- Temperature: Up to 600°C
- Pressure: Up to 600 Kpa
- Media: Air / Gas

**Three Lever Valves**
- Sizes: 250mm up to 4000mm
- Temperature: Up to 600°C
- Pressure: Up to 600 Kpa
- Media: Air / Gas

**Push Lever Valves**
- Sizes: 500mm up to 4000mm
- Temperature: Up to 600°C
- Pressure: Up to 600 Kpa
- Media: Air / Gas

**Snoat Valves**
Installed in the cold blast line of the stove in the steel plants. The valve has a blow off device. This valve is used to regulate the cold blast quantity which is being supplied to stoves, without creating the back pressure on the blower, as the excess air is blown away through a blow off device which is mechanically interlinked with the main valve for proportionate opening / closing.
- Sizes: 500mm and above
- Temperature: Up to 300°C
- Pressure: Up to 600 Kpa
- Media: Air
**What we have to offer...**

**Contacting type Butterfly Valves**

Widely used in the process industries for flow isolation, where minor leakages within the process are permissible.

Sizes: 200mm up to 4000mm  
Temperature: Up to 900°C  
Pressure: Up to 600 Kpa  
Media: Air / Gas

**Non contacting type Butterfly Valves**

Widely used in the process industries for flow and pressure regulation applications. These valves can also be offered with special drive arrangements for continuous regulation duties.

Sizes: 200mm up to 4000mm  
Temperature: Up to 900°C  
Pressure: Up to 600 Kpa  
Media: Air / Gas

**Triple Eccentric Butterfly Valves**

Used in gas lines of stoves, gas cleaning plants, flare stacks etc. Features laminated seal to handle high temperature and dusty medium.

Sizes: 200mm up to 2000mm  
Temperature: Up to 900°C  
Pressure: Up to 600 Kpa  
Media: Air / Gas

**High Temperature Damper**

Special design for high temperature applications. Water cooled / air cooled disc and shaft.

Sizes: 200mm up to 4000mm  
Temperature: Up to 1600°C  
Pressure: Up to 6000 Kpa  
Media: Air / Gas
Pressure Relief & Equalising Valves

Used for bleeding gas to the atmosphere in steel plants at the locations like furnace bleeder valves and dust catcher bleeder valves.

Sizes: 250mm and above
Temperature: Up to 600°C
Pressure: Up to 2 Kpa
Media: Gas

Septum Valves

This valve is an assembly of several butterfly valves within one body. It effectively controls the top pressure of the blast furnace for a wide range of flows at differential pressure. This valve is generally located after the gas cleaning plant. In case the valve is installed before GCP, water spraying arrangement can be provided.

Sizes: 1200mm upto 3000mm
Temperature: Up to 200°C
Pressure: Up to 250 Kpa
Media: B.F.Gas

Coffee Pot Valves

Used for gas venting and pressure releasing applications in steel plants. It is also used for back drafting, bringing down the hanging burdens and for furnace bleeding application.

Sizes: 400mm and above
Temperature: Up to 900°C
Pressure: Up to 600 Kpa
Media: Hot Air

Bleeder Valves (Cap type)

Used for bleeding gas to the atmosphere in steel plants at the locations like furnace bleeder valves and dust catcher bleeder valves.

Sizes: 150mm and above
Temperature: Up to 600°C
Pressure: Up to 200 Kpa
Media: Gas
What We have to offer......

**Dust Catcher Cut-off valves**

Used for the isolation of dust catcher from the blast furnace located in the down-comer, on the top of the dust catcher.

- **Sizes**: Up to 3000mm
- **Temperature**: Up to 400°C
- **Pressure**: Up to 150 Kpa
- **Media**: Gas

**Rubber Ring type Valves**

Used on the dredgers for sea water containing sand.

- **Sizes**: Up to 850mm
- **Temperature**: Up to 40-50°C
- **Pressure**: Up to 600 Kpa
- **Media**: Sea Water

**Dust Extraction Valves**

Used for isolation of screw conveyors from the dust catcher, located above the screw conveyor.

- **Sizes**: 250mm and above
- **Temperature**: Up to 400°C
- **Pressure**: Up to 150 Kpa
- **Media**: B.F.Dust

**Special Equipments**

**Pressure Equalising Valves**

Other than valves, Fouress Aurangabad plant also manufactures various fabricated equipments as needed by the steel industry. The same is tailor made as per the needs and requirements of the customer. Our marketing, R&D and Design Departments backed with strong technical experience work in close Co-ordination with our customers in order to design the equipment as per the customers need and industry standards.
Our Credentials

Testimony of our dozens of satisfied customers all across...

Major Integrated Steel Plants - Our Top Drawer Clientele

- Steel Authority of India
  - Bhilai Steel Plant
  - Bokaro Steel Plant
  - Durgapur Steel Plant
  - Rourkela Steel Plant
- Tata Iron & Steel Co. Ltd. (TISCO), Jamshedpur

Other Steel Plants

- Egyptian Iron & Steel Co., Egypt
- Electrosteel Castings Ltd.
- Euro Ikon Iron & Steel Pvt Ltd.
- Essar Steel Co. Ltd.
- Jindal Steel and Power Ltd.
- Jindal Vijaynagar Steel Plant
- Kudremukh Iron Ore Co., Ltd.
- Konark Met Coke Ltd.
- Neelachal Ispat Nigam Ltd.
- Nagpur Alloys Castings Ltd.
- Saw Pipes Ltd.
- Southern Iron & steel Co., Ltd.
- SJK Steel Corporation Ltd.
- Sathavana Ispat Ltd.
- Tata Metalliks Ltd.
- Usha Ispat Ltd.
- Vizag Steel Plant
- VISL, Bhadravati

Certificate of Authority to Use the Official API Monogram

Certificate Number: OA-AD06

The American Petroleum Institute hereby certifies to

FOURESS ENGINEERING (INDIA) LTD.

The right to use the Official API Monogram on manufactured products under the conditions in the official publications of the American Petroleum Institute API Spec 600 and API Spec 604.

The above named company is certified in accordance with the API Monogram procedure for the manufacture and supply of valves, gate valves, check valves, globe valves, and other related products.

For further information, please contact our office.

Other products manufactured at this plant:

Fouress Forged Steel & Cast Steel Gate, Globe and Check Valves have set their own standards in many industries, much like our super speciality valves. Our range includes:

- Forged Steel gate, globe and check valves in sizes 1/4" to 2" for pressure # 800 & # 1500.
- Cast Steel gate, globe and check valves in sizes 1 1/2" to 32" for pressure # 150, # 300 & # 600.
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Note: Fouress reserves the right to change / modify specifications without prior notice.