



PPMAI



PROCESS PLANT & MACHINERY
ASSOCIATION OF INDIA

ACHEMA2022

22 - 26 August 2022
Frankfurt am Main, Germany



**LEADING THE PROCESS
INDUSTRY WITH NEW
OPPORTUNITIES**



**TRAINING TRAINING
INNOVATION INNOVATION
GLOBAL GLOBAL
EXPOSURE EXPOSURE
HUMAN CAPITAL
PERFORMANCE**

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I am very happy and pleased to present this booklet to the industries on behalf of Process Plant and Machinery Association of India (PPMAI).

PPMAI as the Pioneer Association for Process plant industries with over 58 years of expertise represents a World Class pool of talent in engineering and management skills, having proven track record in basic design, multidisciplinary detailed engineering, manufacturing of plants & machineries, transportation, installation, construction at sites, erection and commissioning of process plants. PPMAI has immensely contributed to the growth of the process plant & relevant industry segments in India and World over.

PPMAI is proud to be part of ACHEMA 2022 exhibition with leading Process Plant Machinery manufactures / EPC companies from India showcasing their advanced capabilities and Global skills. **It is with pleasure I Invite you to visit our stall at Hall-9.1, Stand: B76a.**

The rapid industrialization, mega size and scale of the projects have helped the Indian Process Industries to further modernise the operations, develop large capacities with state-of-the-art facilities, World class EPC/Manufacturing capabilities setting bench marks by practicing highest Quality International Standards and Codes.

The Indian process Industry with full support from Government of India & Global outlook in sectors from Oil & Gas, Petroleum Refinery, Petrochemical, Fertilizer, Caustic to Soda, Pulp & Paper, Chemicals to pharmaceutical and with large technical capability, World class skills at competitive pricing are keen to be a reliable partner for all your sourcing requirements.

I as Chairman of PPMAI invite you to visit India and have first hand experience of these World class facilities. PPMAI will be very happy to facilitate your visits and plan to ensure that the time spent in India is very fruitful.

With Best Wishes!

Yours Sincerely,

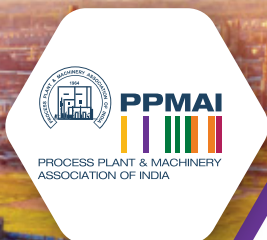


Manish Bhuptani
Chairman-PPMAI



PPMAI HAS IMMENSELY CONTRIBUTED TO THE GROWTH OF THE PROCESS PLANT & RELEVANT INDUSTRY SEGMENTS IN INDIA AND WORLD OVER.

INDUSTRY INNOVATIVE LEADERS



EMBRACING CHANGE AND INNOVATION

PPMAI is an association of highly qualified and experienced companies in India associated with various process industries right from "concept to commissioning", providing entire gambit of engineering and project management services covering all disciplines of engineering as well as complete range of supplies including fabricated equipment / pipes & fittings / instrumentation / utility packages etc.

PPMAI was established on 31st March 1964.

MISSION

To work towards realizing the growth of the Indian Process Plant & Machinery Industry to becoming a preferred supplier of systems, equipment and services to the global process industry.

VISION

- ▶ Speaking with one strong, credible voice on behalf of the Process Plant and Machinery Industry
- ▶ Leading the industry and focusing its energies on issues and opportunities
- ▶ Having a sense of urgency in responding to members' needs and requirements, thus providing them with a significant competitive advantage
- ▶ Ensuring value through quality, performance, achievement of results and enhancements of the industry's image
- ▶ Providing an environment which encourages staff development, team spirit and mutual respect

VALUE

- ▶ Interface with Government and media in order to present the perspective of the engineering and process plant manufacturing services offered by its members
- ▶ Promote and encourage members through presentation and awards for their achievements
- ▶ Networking with international bodies with a view to gain better visibility for members in overseas market / industries
- ▶ Convene meeting and discussions to evaluate policies having direct or indirect bearing on the business of members. Make suggestions/ communications to the Government / policy makers on issues and concerns
- ▶ Sponsor and participate in events, workshop/seminars, exhibition, delegation and promotional activities related to members business

The Process Plant and Machinery Association of India (PPMAI) was established on 31 March 1964. (It was initially named Chemical Plant Manufacturers' Association of India (CPMAI), And the name was subsequently changed in the year 1982.)

It is a '**not for profit**' organization incorporated under the relevant Indian laws.

Process Plant and Machinery Association of India (PPMAI) is managed by a Board of Directors, which is elected by its members during the Annual General Meeting of the Association. The Board then elects a Chairman and two Deputy Chairmen from amongst the elected Directors. The term of the Board is for a period of 1 year.



ENSURING VALUE THROUGH QUALITY PERFORMANCE, ACHIEVEMENT OF RESULTS AND ENHANCEMENTS OF THE INDUSTRY'S IMAGE.

PPMAI SERVICES

Services Provided to Members

- ▶ Conduct training programs to enable members to update and improve technical and managerial skills
- ▶ Providing a platform for members to interact closely with each other to arrive at solutions to common problems and to make a joint effort to benefit from emerging opportunities
- ▶ Contributing to member's efforts in self-improvement by organizing and promoting seminars, workshops and training
- ▶ Administer special projects towards capability building, capacity building and business development for small- and medium-scale members with the support Government and other Developmental Funding Agencies
- ▶ Collecting and providing information to the members about various developments taking place within India and abroad in the fields of Technology, Management, Commerce and other related areas
- ▶ Providing exposure to members for business development by promoting, sponsoring and participating in exhibitions and trade events relevant to the industry
- ▶ Publishing PPMAI Bulletin (soft copy) monthly, with Tender enquiries, Project Information, intimating new projects and business opportunities to members to further develop their business.
- ▶ Providing information to members on areas of interest, such as new projects in India and abroad, country information, changes in statutory regulations, taxation, logistics, raw material, national and international exhibitions, important seminars and meets and so on by periodic communication over e-mail
- ▶ Providing information on codes and standards and

assisting members in funding accrediting efforts through Government and developmental agencies

Services Provided to Non-Member

- ▶ Providing member capability and interest information
- ▶ Providing a platform to promote products and services through 'Meet the Vendor' programmes and through advertisements in the Bulletin
- ▶ Providing information and facilitating discussions for joint venture and other partnership proposals
- ▶ Organizing network and buyer-seller meeting

Activities of PPMAI

- ▶ Organizing networking meetings amongst the members and with other interested parties.
- ▶ Organizing and promoting seminars, workshops and training for members' self-improvement and for providing information.
- ▶ Creating awareness about the capabilities and strengths of the Indian process plant and machinery industry globally, to enhance its export potential by buyer-seller meetings.
- ▶ Promoting, sponsoring and participating in exhibitions and trade shows relevant to the industry.
- ▶ Making representations to various Government, Taxation Authorities and other statutory bodies to resolve the common problems faced by the members.
- ▶ Providing relevant information about the process plant and machinery sector to foreign organizations wanting to form joint ventures with similar Indian companies; also acting as a facilitator between the two organizations.

- ▶ Holding events like 'Meet the Vendor' program to strengthen the supply chain of the members.
- ▶ Establishing liaison with various industrial and trade organizations for promoting the interests of the process plant and machinery industries.
- ▶ Establishing liaison with associations of customers of process plant and machinery and providing information to members on marketing opportunities in those sectors. Liaison with national and international government and non-government agencies such as CBI Netherlands, CII, FICCI, ITPO, EEPC, Exim Bank, Development Bankers of various regions, Commercial Attaches of Indian Missions abroad and Foreign Missions in India.
- ▶ Establishing liaison with codes and standards organization and organizing relevant programmes on the subject.
- ▶ Publishing PPMI Bulletin (soft copy) monthly, with Tender enquiries, Project Information, intimating new projects and business opportunities to members to further develop their business.

Member Profile

PPMAI draws its membership from the following types of companies, all serving the process industry:

▶ Process Equipment Manufacturing Companies and Fabricators

- These companies manufacture plant equipment and machinery like heat exchangers, pressure vessels, towers, tanks, reactors, pumps, valves and centrifuges.

▶ Manufactures of Components for Process Equipment

- These companies produce components like pipe, pipe fittings, flanges, tower internals, tower packing and fasteners.

▶ Turnkey Process Packages and Utility Packages Suppliers

- These companies provide process packages including utility packages like steam generation, waste water treatment, sulfuric acid plant and granular making plant.

▶ Design, Engineering and Project Management Consultants

- These companies do the basic engineering and provide project management and construction supervision.

▶ Engineering, Procurement and Construction (EPC) Contractors

- These companies offer turnkey services, with or without process technology, for the whole or a part of the plant.



▶ Inspection and Quality Assurance Agencies

- These companies offer quality assurance services and inspection during manufacturing, construction and commissioning stages.

▶ NDT, Heat Treatment and Other Service Providers

- These companies provide allied services for production of process plants.

INDIAN PROCESS PLANT AND MACHINERY INDUSTRY

Indian Process Plant and Machinery (PPM) industry, which has an estimated capacity of US\$ 7 billion per annum, has made significant contribution in establishing the Indian process industry. The association represents a world-class pool of talent in engineering and management skills, having proven track record in basic design, multi-disciplinary detailed engineering, manufacturing of plant and equipment, transportation, installation, construction at sites, and erection and commissioning of process plants.

India, having 3.28 million square kilometres of land mass and over a 1.41-billion-strong population, is one of the fastest growing economies in the world. It has a very large and well-developed process industry. India has a petroleum-refining capacity of over 160 million tonnes per annum (MTPA). The world's largest grassroots refinery with a 32-MTPA capacity is located in India. It has a number of gas/cracker complexes with downstream facility producing 5-MTPA plastics and polymers. India produces



15 MTPA of fertilizers and has the widest range of chemicals and petrochemicals to offer. It includes heavy chemicals such as caustic (2.4 MTPA), soda ash (2.7 MTPA) and sulfuric acid, dyes and dye intermediates and fine chemicals. India also has a fast growing pharmaceutical industry with well-developed drug intermediate manufacturing facilities.

PPMAI members provide products and services to a diverse range of industries in India and abroad. These include oil and gas, hydrocarbon refining and processing, fertilizer, chemical, paper and pulp, synthetic fibre, food and dairy and environment control. The members also participate in infrastructure projects like power generation, ports, water and effluent management and airports. The PPM industry, which has developed 360-degree skills with ingenuity in the former closed economy, has now become globally competitive in the new liberalized environment in India. It has exported its systems, equipment and services to almost every part of the globe. Its contribution to process industry in the Middle East, South East Asia and Africa is significant.

Each sector of PPM industry has special features and attributes. These are described here. Process equipment manufacturing companies and fabricators and manufacturers of components for process equipment.

The Indian process equipment and fabrication sector has a solid foundation of over 50 years of experience and has contributed significantly to the development of the Indian process industry. The sector has large companies having over 2000 employees. It also has vibrant SMEs specializing in specific equipment or providing support

products to the larger companies.

It designs and manufactures a wide variety of equipment like regenerator, hydro-treaters, hydro-crackers, tabular reactors, towers, columns, shell and tube heat exchangers, pressure vessels, centrifuges, furnaces, boilers and so on. It is capable of manufacturing very large equipment such as a regenerator 1200 tonnes in weight or a tower over 100-meter long. It can shape plates over 225 mm thick and supplies skid mounted systems and modular plants. It uses all kinds of materials of construction like alloy steel, aluminium, other non-ferrous metals, plastics, FRP and so on. Lined equipment and piping (rubber, polymer and thermoplastics) are also manufactured in India.

The industry is supported by competent component suppliers that manufacture pipes, pipe fittings, fasteners, tower internals and so on.

Engineering, Procurement and Construction (EPC) Sector

The Indian EPC and LSTK contractors offer very wide range of EPC services at a very competitive cost. Many companies from the aforementioned EPCM sector also offer EPC contracts. On the other hand, several Indian companies with large manufacturing facilities also offer such services.

The EPC services offered cover processes for industries such as oil and gas, refining, chemical and petrochemical, polymer and synthetics, rubber, fertilizer, bulk drug and pharmaceuticals. Many companies specialize in associated areas like environment protection, steam generation, water treatment, effluent treatment, waste heat recovery captive power plants, co-generation power plants, heating and cooling solutions and so on.

Most India-based companies also export EPC services to the Middle East, to South East Asia and to African countries.

Inspection and Quality Assurance Sector

This service sector of the industry ensures quality of the products as well as the services being delivered from the country meets the national, international and/or customer specifications. India has subsidiaries or representatives of the world-renowned certification and inspection agencies. These companies provide certification as per the norms globally followed by their counterparts all over the world. There are reputed local Indian companies that also offer similar services.

All the agencies, with local resources, provide quality assurance services, including design appraisal, in the



workshops as well as in construction sites. The companies have rich experience and expertise, which they have acquired in the last four decades in the Indian environment as well as in other countries.

Design, Engineering and Project Management (EPCM) Sector

This sector of industry consists of large consultancy firms employing between 500 and over 2000 people and capable of managing mega projects such as refineries and petrochemical complexes. It also has smaller companies focused on specialized areas like specific product range, environment control and protection, sub-systems and plant utilities.

THE SECTOR HAS INTERNATIONAL AS WELL AS INDIAN COMPANIES CAPABLE OF PROVIDING OVER 30 MILLION ENGINEERING MAN-HOURS PER YEAR.

Indian strength in software needs no introduction. The Indian companies use the latest internationally known design software as well as 3D plant engineering tools. The companies also use indigenously developed software modules for specific applications. They have effective communication apparatus for data transfers.

The companies offer services for: pre-investment and feasibility studies, environmental impact studies, basic engineering and design, detailed engineering, in process, mechanical, piping, electrical, instrumentation, architectural & civil works, procurement services, construction management, & project management and commissioning assistance.

PUBLICATIONS

PPMAI Speak: The bi-monthly bulletin (hard copy publication).

A mouthpiece of PPMAI, it carries both technical and commercial articles to update members with intimation and latest techniques, commercial changes happening from time to time by government notifications.

AFFILIATIONS

- Confederation of Indian Industry (CII), New Delhi
- Federation of Indian Chambers of Commerce & Industry (FICCI), New Delhi
- Engineering Export Promotion Council (EEPC), Mumbai
- Indian Chemical Council (ICC), Mumbai
- Technology Export Development Organization (TEDO), Gurgaon
- Indo German Chamber of Commerce, Kolkata / Mumbai

EXHIBITIONS PROMOTED BY PPMAI



International exhibition on chemical processing, technology, equipment and supplies.



International exhibition Congress on chemical engineering, environmental protection and biotechnology.



An international track event serving the chemical, petrochemical and other related Industries.



It is one of the largest composite events of the industry in the Asia-Pacific region and comprises of an International Conference and Exhibition.

BOARD OF DIRECTORS (2021-2022)

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MR. K. NANDAKUMAR (DY. CHAIRMAN)

Chemtrols Industries Pvt. Ltd.

MR. ABHIJIT DANI (DY. CHAIRMAN)

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Chemical Process Piping. Pvt. Ltd.

MR. AJAY POPAT

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Positive Metering Pumps (I) Pvt. Ltd.

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MR. RAJEEV MOHAN SHERRY

Outokumpu India Private Limited

MR SHARAD SHARMA

thyssenkrupp Industrial Solutions (India) Pvt. Ltd.

MR. PRABHU BALASUBRAMANIAN

Precision Equipments (Chennai) Pvt. Ltd.

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New Multifab Engineers Pvt. Ltd.

MR. KEVIN M. SHAH (INDEPENDENT DIRECTOR)

SECRETARY GENERAL (2021-2022)

MR. RAJAN NAIR

LEADERS
GOALS

HART-IP : NEXTGEN PROTOCOL IN FIELD DEVICES FOR PROCESS CONTROL APPLICATIONS

The landscape for digitalisation of field devices and Control Systems used in Process Control has changed tremendously over the years, more so due to the developments in the IT industry. In the meantime, the industry's expectations grew too, and it demands today functionality beyond the conventional usage of the HART communication protocol of device installation, commissioning or calibration. The growing importance of predictive maintenance to ensure higher uptime of Plant and Machinery, higher reliability, increased cybersecurity, usage of HART signal for fast closed loop control applications and IP based addressing possibilities led to the developments of next level generation of HART devices.

HART Communication protocol, which is by far the largest used protocol of Process Control globally, with over 30 million HART devices approximately installed and in service worldwide, has also kept pace to meet the challenges of the Process Plant industry.

Besides being the most widely used field communication protocol for intelligent process instrumentation, it evolved much more with the additional capability of HART Wireless communication. The legacy of benefits of this powerful technology is being used across the process

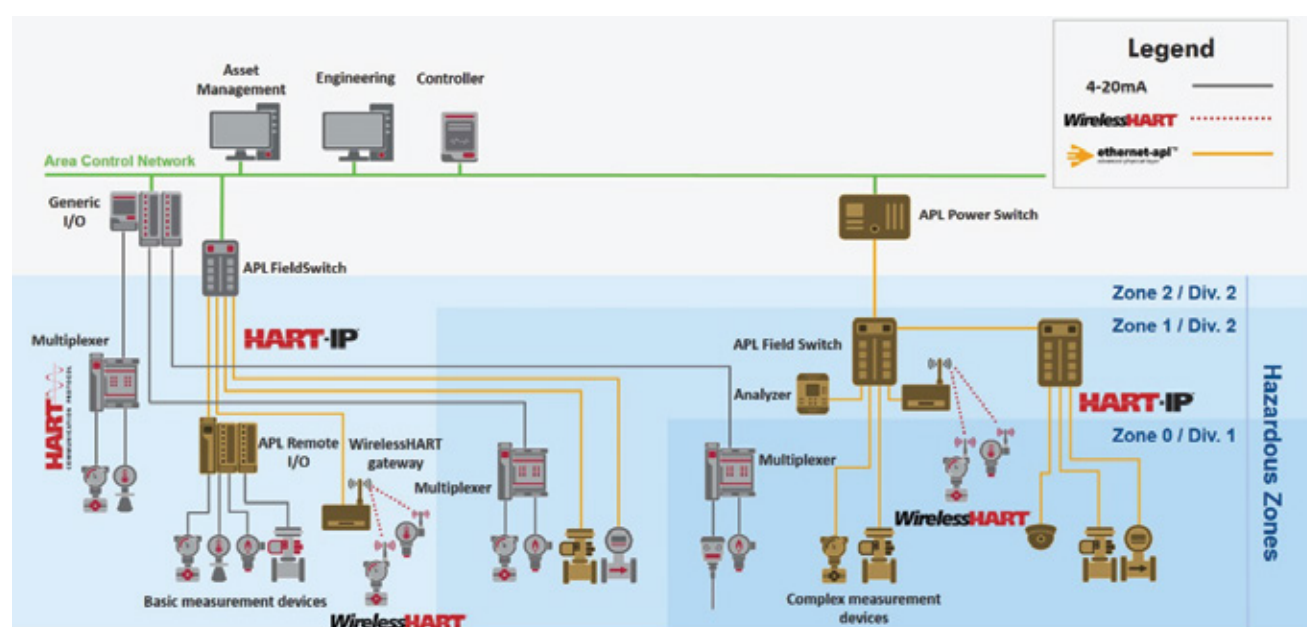
industry today, with many proven successful applications, and which continue to deliver operational insights to users in their quest to remain competitive.

The increasing possibilities of centralized field device configuration, multivariable process values and their integration into a modern asset management, using digital communication protocols like Foundation Fieldbus and HART is on the rise. The benefits have been tangible and there are numerous examples today both mid-size and in large scale usage, to prove the point.

The introduction of Ethernet-APL technology supplemented by growing usage of IP based devices in the IT world, are important technological milestones, which catapulted the development need of HART to the next generation of HART over the Ethernet. Hence HART-IP.

Development of HART-IP based devices will not just enable a high-performance paradigm of digital field communication devices for the process industry, but also promises benefits beyond PV utilisation into the world of IIOT, the much needed feature of Industry Standard 4.0. Its dramatically higher bandwidth (10Mb/Sec) transforms the 4-20mA analog signal into a secure, high-speed digital transmission of process variables and control instructions.

It further establishes the cybersecurity posture on the next generation of Ethernet-based field devices, the much needed feature in the world of Internet of Things i.e. IIOT.



Courtesy : FieldComm Group

HART-IP has always required security, but with the 2020 release of the HART specifications, the specific types of security features that must be implemented are now specified. Support for TLS, DTLS, syslog and audit logs are now all required for conformance in HART-IP devices.

Further, its flexibility & scalability promises to enable a new generation of more secure and capable field devices in building intelligent devices for drive control, Analyser systems, and data transmission of multi-variable process values to the control systems. Since Ethernet-APL does not rely on application layer specific protocols, any instrument that supports the Ethernet-APL physical layer may be connected to Ethernet-APL switches. This includes other process automation protocols, as well as new IP enabled devices - Process Analysers, Thermal imagers, profilers and multivariable devices for example.

IS HART-IP NEW ?



Not really. It was first introduced in 2007 as a high-speed Ethernet protocol to communicate HART data collected from Wireless-HART® gateways. The roots go back to the times, when HART Communication Foundation (HCF) first released the HART-IP Ethernet protocol specifications.

Today, it the backhaul of many wireless systems and Safety Control Systems, already in use. WirelessHART with backhaul of HART-IP for most manufacturers, established itself thoroughly across the globe, as the leading wireless protocol for process applications. It is proven today with thousands of devices communicating through multiple gateways into the control system giving data not just of the PVs, but on diagnostics, health and predictive maintenance to the asset management systems.

It has seamlessly & efficiently integrated into the existing installation base, wherever plants needed to go in for expansion. Thanks to the excellent available feature of scalability.

What is certainly new, are the field devices which will now communicate over HART-IP at 10Mb/Sec baud, directly into the control systems over Ethernet and other similar physical layers. The protocol works over Ethernet, Ethernet-APL, Wi-Fi, or other network media without

sacrificing the detailed device setup or diagnostics information of existing networks. It allows vertical data integration from the field device through to the control room.

Adding HART-IP instruments to an existing HART installation is also seamless. Existing software, existing work practices and existing configuration tools will be the same familiar HART tools that are already commonplace in facilities.

Further, It is suitable for physical media that can support Ethernet, such as copper cable, fiber-optic, Power over Ethernet (PoE) and wireless links using Wi-Fi and other media supporting UDP/ TCP/ IP like mobile/ cellular (3G/4G/LTE/5G), microwave or satellite communications, thus giving it a much appreciated universal feature for use and ease in transmission.

Brief glance over the key features of future proof HART-IP technology:

Ease of implementation through use of existing Ethernet infrastructure

Embedded Cybersecurity to ensure information safety and protection in critical industrial plant applications.

Standardized use throughout the process plant

IIOT and Cloud Ready without conversion to other messaging protocols thus avoiding loss of semantics associated with data mapping.

Intelligent device management via Ethernet or Wi-Fi

Company-wide access to device data and condition-based diagnostics information for predictive maintenance.

Support of proactive maintenance strategy through fast access to diagnostics data

Compatible with standardized encryption protocols for data transport

In summary one can say that using HART-IP with Ethernet-APL is leveraging the existing HART command set that provides uniform and consistent communication for all HART Registered field devices, regardless of the device vendor and is already supported by major process automation systems today.



Harish Wadhwa,
Vice President Terminal Automation
at Chemtrols Industries Pvt. Ltd.
Active Member (Secretary) of the
FieldComm Group India Committee

SHIFT TO PRODUCTION OF CHEMICALS FROM CRUDE OIL

MEGATRENDS IN PETROLEUM REFINING SECTOR

To address the challenge of global warming, nations around the world have announced plans to reduce their dependence on fossil fuels as the primary energy source. Accordingly, the demand for automotive fuels such as petrol and diesel is expected to drastically reduce in the coming years. At the same time, there is a growing demand for petrochemicals globally. In line with this megatrend, several petroleum refiners have announced plans to build integrated petrochemical complexes by revamping their existing refineries / setting up new downstream petrochemical units. Refineries already produce some petrochemical feedstocks, but typically at rates no higher than 10 percent of total output.

Some of the oil majors are already implementing modifications in their production modes to increase their output of naphtha. Some refiners are setting up residue upgradation units to convert vacuum residue to naphtha. Other refiners are setting up hydrocracker units to convert diesel into naphtha. The increased production of naphtha can be utilized for production of petrochemical building blocks like ethylene & propylene via steam cracking route. Naphtha can also be utilized for production of aromatics (benzene, toluene and xylene) via catalytic reforming route. Research is going on to develop technologies to convert crude oil directly to petrochemical building blocks without using traditional refining technologies.

ENVIRONMENTALLY FRIENDLY PLASTICS / PRODUCTION PROCESSES

At the same time, there is a growing focus on producing environmentally friendly plastics. One such fast-emerging environmentally friendly plastic is Poly Butylene Adipate Terephthalate (PBAT). It naturally decomposes by more than 90% in just six months. Regular plastic takes more than a century to disintegrate in the natural environment. The global market for PBAT is expected to grow at a CAGR of 8.7% till 2031. The feedstocks for production of PBAT are 1,4-Butanediol and Purified Terephthalic Acid (PTA). 1,4-Butanediol is produced from Maleic Anhydride, which in turn, is produced from n-butane in Molten Salt Bath Reactors (MSBR). Similarly, propylene oxide can be produced through an environmentally friendly and more efficient Hydrogen Peroxide to Propylene oxide (HPPO) process in multi-tubular reactors.

As the demand for plastics is expected to grow, the environmental hazards are likely to increase. To overcome this, many companies are investing in innovating means to convert waste plastics to fuels / petrochemical building blocks, thereby achieving circular economy.

INDIAN SCENARIO

India's per capita polymer consumption is very low at ~12 kg (about one-third of the world average, one-seventh of US consumption and about one-fifth of China's consumption). Hence, there is a huge potential for growth of the petrochemical industry. It has been observed that consumption of petrochemical products grows at 1.3 to 1.5 times the Gross Domestic Product (GDP). With India's GDP growing year-on-year, coupled with rapidly changing consumer lifestyles, it is projected that the Indian petrochemical industry would grow at a rate of about 6-8 % CAGR in the coming years. Evolution of new crude-to-chemicals technologies will spur the growth in India's petrochemical demand in the next two decades.

Currently, a large part of the demand for petrochemicals is being met through imports. With the projected growth in domestic demand, India could potentially need more than 15 world-scale petrochemicals plants.

Plans have been announced by Indian companies to set up plants to produce speciality petrochemicals like acrylic acid, maleic anhydride, phthalic anhydride etc. These petrochemicals are produced in Molten Salt Bath Reactors (MSBR). Government of India has announced a roadmap with detailed pathway for achieving 20% ethanol blending in petrol, thereby reducing dependency on imported crude oil. Niti Aayog is planning for implementing methanol economy in India utilizing its huge coal reserves through gasification. However, the coal reserves have a high ash content—up to 40 to 45 percent. Utilization of this high ash Indian coal is a big challenge.

Anticipating these megatrends, we at Larsen & Toubro have positioned ourselves to deliver world class equipment such as titanium clad vessels, heat exchangers, MSBR, multi-tubular Reactors, coal gasifiers, methanol converters etc. to the growing petrochemical sector through our state-of-the art, digitally enabled workshops in Hazira, India.



Venkatesh M, GM & Head,
Product Development & Process Technology
L & T Heavy Engineering

GROWING TREND: MODULARIZATION IN CHEMICAL INDUSTRY

The modularization concept in chemical industry is getting wide acceptance in Chemical industry, and many progressive corporations have started evaluating benefits of modularization over conventional stick-built configuration. This article provides valuable insights on this growing trend and an overview how the Indian industry is geared-up as a global supply hub for modular plants.

CHANGING PARADIGM IN CHEMICAL INDUSTRY

The paradigm of project execution has been rapidly changing due to the change in market and economic scenario in the Chemical Industry. Today, the expectation is to complete the project in shortest time possible to improve the payback period as well as the return on investment (ROI). Concurrently, safety norms and labour regulations at site are getting more stringent. In view of achieving the above, the industry has been trying to innovate the way in which projects are being conceptualized and implemented.

MODULARIZATION:

One of the new trends in project conceptualization in chemical industry is modularization. Modularization is known well in the Oil & Gas industry, particularly in offshore applications as well as remote Oil & Gas processing plants in the upstream and midstream sector. However, in the chemical industry, the concept of modularization is relatively new because most chemical plants are in industrial areas where labour availability, transportation, etc have been favourable compared to remote locations.

WHAT IS "MODULARIZATION"

Simply put, a modular plant can be defined as a 'process system contained within a frame' that allows the complete system to be transported. Thus, a module is an alternative to traditional stick-built construction where a process system is

shipped from the fabrication yard and installed at the site. Interestingly, there is always confusion about what exactly modularization means in process plants because module is a very generic term. Often, a module is imagined as a very large system which is generally transported on a barge or a ship. And as such, the modularization concept is often considered impractical because chemical plants are located in areas where such huge equipment cannot be transported.

To simplify the understanding of the modular plant and its configurations, Praj's Centre of Excellence for Modularization has defined modular plants in 3 different ways:

TYPE	UNITS	GENERAL SIZE	IN SHOP/YARD	TRANSPORTATION	AT SITE
TYPE-1	Single Process Unit	Containerised / Truckable	Complete assembly and pre-commissioning	As a single unit	Plug and Play
TYPE-2	Process Package	Scalable and Flexible Transportable by road (Containerised / Truckable)	Complete assembly, pre-commissioning and dismantling of individual units	In multiple units and spools of inter-connecting piping	Assembly of units + Spools (Lego)
TYPE-3	Process Package	Very large, difficult to transport by road	Complete assembly and pre-commissioning	As a single unit – Generally by barge / ship	Very large cranes

Size does not matter – SIZING matters:

Irrespective of the size of the plant, modularization is possible provided the sizing of individual sub-modules is done thoughtfully. While conceptualizing the sizing, the following aspects are considered:

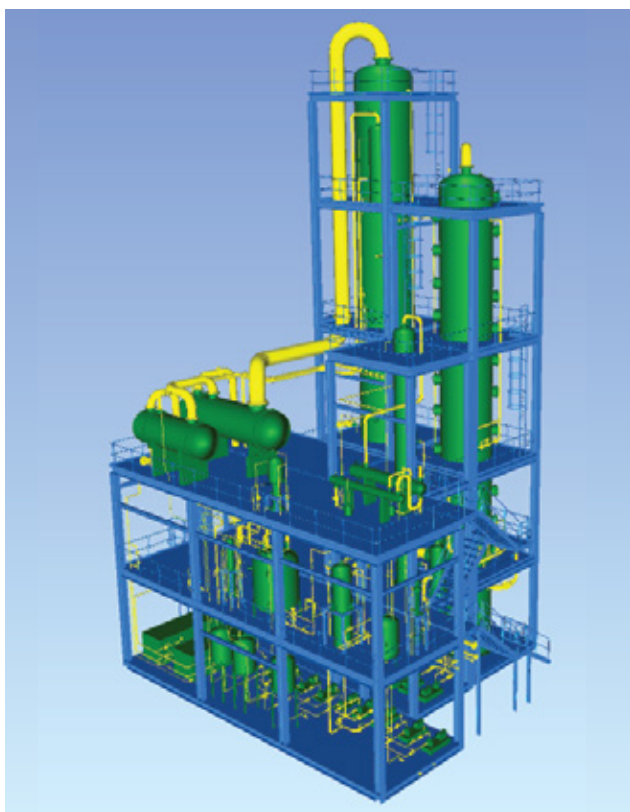
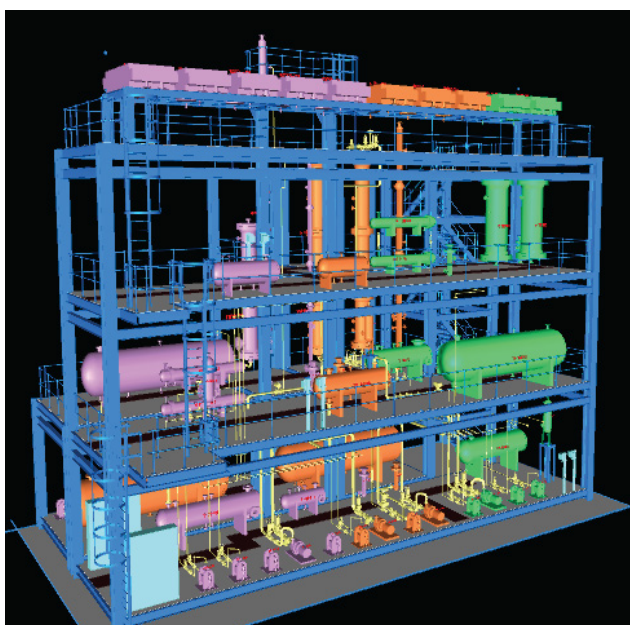
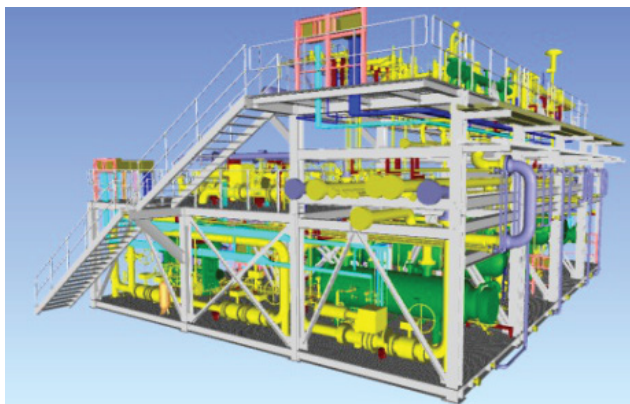
Location of site

Safety norms

Transportation Limits – From Shop / To site

Availability of Cranes

Thus, Type 2 Modularization configuration perfectly suits requirements of Chemical Industry.



ADVANTAGE IN INDIA:

India is emerging as a global hub for Engineering and Manufacturing of Process Plant Equipment.

MULTI-DISCIPLINARY ENGINEERING:

Indian industry has a very highly educated and skilled pool of multi-disciplinary engineering talent and is experienced in working on various international codes and standards.

ROBUST SUPPLY CHAIN:

Indian industry is self-sufficient in terms of availability of raw material, components as well as engineered products.

SKILLED MANPOWER:

Indian industry has an abundance of highly skilled manpower catering to various requirements.

INFRASTRUCTURE:

Indian industry has rapidly invested in world-class manufacturing infrastructure and machinery.

TRANSPORTATION:

India has large rail and road network well connected with all-weather ports for transportation to various international destinations.

Taking into account the aforementioned capabilities, the Indian industry is well poised to engineer and manufacture modular plants of various sizes for the global customers.

PRAJ'S CENTRE OF EXCELLENCE FOR MODULARIZATION:

To leverage its multi-disciplinary engineering strength and the manufacturing facilities, Praj has set-up a dedicated Centre of Excellence for Modularization. Currently, Praj's CoE is partnering with its customers to conceptualise and design the modular plants for new technologies as well as converting conventional stick-built configuration.



Abhijit Dani,
BU Head - Critical Process Equipment
& Modularization, Praj Industries Ltd.
Mentoring - The CoE-Modularization

WORLD CLASS PRODUCTS FOR REFINERY AND OIL & GAS SECTOR



AIR COOLED HEAT EXCHANGER



CPU & DEAERATOR



OIL & GAS PROCESS PACKAGE



COLUMNS

Product Business Division:

Design, Engineering, Procurement,
Fabrication & Supply of the following:

- Air Fin Coolers / Compressor Coolers / Finned Tubes / Tube Bundles
- Gas conditioning system, regulating & metering skids
- Two / three phase / test separator skids
- Pressure Vessels / columns with tray packing / Shell and Tube Heat Exchangers
- Indirect water bath heaters / Scrubbers
- Emulsion / heater treater
- Lug+ h2s adsorber skids
- Gas dehydration unit
- Liquid / oil dryer
- Pig launchers / receivers
- Oil Storage Tanks & Deaerators

Quality certifications and Accreditations



Codes & Standards Adopted

IS	BS	DIN	ASME
ASTM	ANSI	API	AWWA
VGB	IBR	HIS	HEI
IEC	IEEE	TEMA	CTI
NFPA	ASHRAE	ACI	OISD



HEAD OFFICE:
BGR Energy Systems Limited, Guna Complex, 2nd Floor,
443, Anna Salai, Teynampet, Chennai- 600018, INDIA.
Email: afc@bgrenergy.com | Website: www.bgrcorp.com



FOR PRODUCT BUSINESS ENQUIRIES:
S.SANKAR
GM - MARKETING PH: +91 8946050370
EMAIL- SANKAR.S@PBD.BGREENERGY.COM

WORLD CLASS PRODUCTS FOR REFINERY AND OIL & GAS SECTOR



AIR COOLED HEAT EXCHANGER



OIL & GAS PROCESS PACKAGE



CPU & DEAERATOR



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Quality certifications and Accreditations



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WORLD CLASS PRODUCTS FOR REFINERY AND OIL & GAS SECTOR

About The Company

The Company was originally incorporated in 1985, as a joint venture between GEA Energietechnik GmbH, Germany and the Promoter, Mr. B. G. Raghupathy, to manufacture and sell On-line Condenser Tube Cleaning Systems, Debris Filters and Rubber Cleaning Balls used in Thermal and Nuclear Power Plants. In 1993 Mr. B. G. Raghupathy and members of his family became the sole shareholders of the Company and began to expand the range of product and services range in the Power and Oil & Gas industries. On June 28, 2007 the Company name was changed from GEA Energy System (India) Limited, to BGR Energy Systems Limited. The Company consists of 2 complementary businesses, including: EPC & PRODUCTS Manufacturing..

EPC Division:

POWER PROJECTS BUSINESS, which provides turnkey EPC and BOP services for coal-based Thermal Power Plants and Gas-based Combined Cycle Power Plants typically over 100 megawatts ("MW"), and which completed its first contract in 2002.

ELECTRICAL PROJECTS BUSINESS, which designs supplies Electrical systems and equipment such as Gas Insulated Switchgear (GIS) substations, Optical Fiber Power Ground Wires (OPGW), Extra High Voltage substations and Transmission Lines to Power Stations, Refineries and Petrochemical plants, and which began operating in 2003

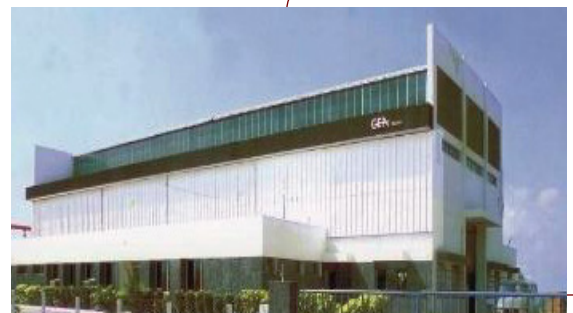
Key Clients – India & International



AIR FIN COOLERS



PROCESS EQUIPMENTS



GEA BGR



PARTNERING WITH CUSTOMERS TO ENGINEER SOLUTIONS IN ENERGY TRANSITION AND CLIMATE ACTION FOR A SUSTAINABLE WORLD

Specialized in Design, Manufacturing and supplying Modularized process packages and critical static process equipment

Praj has been creating innovative technology platforms to make biofuel a sustainable and attractive choice across the globe from last 38 years.

An ISO 9000:2008 Company, Praj is listed on the Bombay and National Stock Exchanges of India. Praj has been a founding member of Global Growth Companies, a World Economic Forum initiative.

Today, PRAJ is working in various sectors:

- ▶ Technology and EPC for Bio-Ethanol Plants
- ▶ EPC Supplier for Brewery Plants
- ▶ Water & Wastewater Treatment Plants - ZLD Offerings
- ▶ Critical Process Equipment & Skids
- ▶ High Purity Systems for Pharma / Biotech applications



Praj has more than 1000 references, in 100 countries, across 5 continents

ABOUT PRAJ'S CRITICAL PROCESS EQUIPMENT & MODULARIZATION BUSINESS LINE:

India is emerging as a hub for Engineering and sourcing of engineered products and systems, especially those which have a level of integration requirement across various disciplines and also complexity of manufacturing.

Over the years, Praj has demonstrated capabilities in terms of Engineering integration, complex Manufacturing for various domestic and global clients. To leverage the expertise across multiple engineering disciplines and state-of-the-art manufacturing capabilities, Praj has been focusing on Modular Process packages and critical Static process equipment.

Our capability is substantiated by a dedicated **multi-disciplinary engineering** teams & **four** well equipped **manufacturing facilities** with excellent connectivity to Ports and Highways.

OFFERINGS

We offer a wide range of Modularized Process packages & Critical Static Process Equipment

Modularization of Process Packages / Skid Mounted Units / Modular Plants

- Modularization of process packages (Conceptualization to Installation)
- Industrial Gas Modules
- Oil & Gas : Separation / Gas Sweetening / Dehydration / Gas Conditioning
- Modularisation of chemical plant

Critical Static Process Equipment

- Reactor
- S&T Heat Exchangers
- Pressure Vessels
- Process Column
- Proprietary Equipment

ABOUT ENGINEERING AND MANUFACTURING CAPABILITY:

Over the Years Praj has substantial experience in conceptualization and Manufacturing of Modular Process packages and manufacturing of critical static process equipment. A Dedicated Centre of Excellence of Modularization team is created to partner with our customers to conceptualizes Modular process plants for their new technologies or to convert traditional stick built configuration to Modular configuration.

A few of the salient points are:

- ▶ Transportable Design & Smaller Footprint
- ▶ Reduction of procurement items and subsequent logistics for EPC / End-client hence Savings in co-ordination efforts and consequently man-hours
- ▶ Faster Installation at Site
- ▶ Minimizing and controlling risk during construction
- ▶ Accelerated project schedule
- ▶ Faster start of production
- ▶ Safer conditions than site
- ▶ Controlled assembly and QA
- ▶ FAT before installation

ENGINEERING CAPABILITIES

ACTIVITY	SOFTWARE
Basic Engineering / Extended basic Engineering / Process Validation	Hysis, Chemcad, HTRI
Skid Engineering	Navisworks, PDMS
Piping Engineering, Modeling & Stress Analysis	PDMS, Plant 4D, Ceaser
Static Engineering	PV, Elite, Compress, Ansys
Structural	Tekla
Electrical & Instrumentation	In-house software
Bought out package integration Engineering	
Procurement	SAP
Project Management + Documentation control	Prima Vera, MS Projects

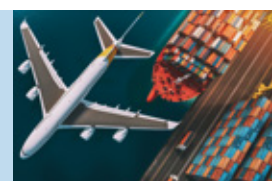
MANUFACTURING CAPABILITIES

PARTICULARS	Kandla Unit 1 SS / Exotic shop	Kandla Unit 1 Light Fab Shop	Kandla Unit 2 CS / LAS shop	Module Fab & Assembly Yard	Structural Frame Fabrication Shop
Total area Sq. M	13500	4000	11990	9800	10000
Max. dimension (L X W X H) (m)	65 X 10 X 10	15 X 5 X 5	72 X 10 X 10	No limit	40 X 8 X 8
Unit Weight (MT)	500	15	500	No limit	50
Max. shell rolling (mm)	50	50	150	NA	NA
Max. shell diameter (m)	6.5	3	8.5	NA	NA
Max. shell length (m)	65	10	72	NA	NA

Other Facilities: Expandable Furnace, Blasting & Painting Booths

Shop Certifications: ISO 9001, ISO 14001 (environment system), ISO 45001: 2018 (BS OHSAS 18001 system)

LOGISTIC ADVANTAGE: For Large Modules and heavy fabrication, a dedicated manufacturing facility has been set up by Praj at the Kandla Special Economic Zone (KASEZ), Kandla, Gujarat, on the western coast of India.



THE ADVANTAGE OF THIS FACILITY IS THE PROXIMITY TO THE KANDLA PORT (Only 10 Kms. from Praj's Facility)

FOR BUSINESS ENQUIRIES:

Call: +91 20 71802000 /22941000

Email: info@praj.net



www.praj.net



Critical Process Equipment and Modularization

Offers engineering and manufacturing solutions from concept design to commissioning for energy transition and climate action



Offerings

- Modular process package
- Critical static equipment
 - Reactors
 - High pressure vessels
 - Heat exchangers
 - Columns





Expo Gas Containers Limited.

.....Partners in technical growth

PROCESS PLANT EQUIPMENT MANUFACTURER INCLUDING CODED PRESSURE VESSELS

EXPO Gas Containers Ltd., is a fully integrated Engineering and Construction company which was incorporated in 1982, and governed by Board of Directors who are eminent personalities in the field of technology, finance and management.

We manufacture a wide range of Process Plant Equipments such as Coded Pressure Vessels, Distillation Columns, Towers, Reactors, and Heat Exchangers etc. We also undertake turnkey projects to construct Fixed & Floating Roof Tanks, Mounded Storage Tanks, Horton Spheres, Structural fabrication, Stack, Cryogenic Tanks, Cross Country and In- Plant Piping.

Our manufacturing facilities are located at Murbad, near Mumbai where all basis infrastructure facilities are available. Our facilities are approved by Chief Controller of Explosives (PESO) and Directorate of Boilers.

We are ISO 9001, 14001 and OHSAS 45001 certified company.



Expo Project Engineering Services Pvt. Ltd.

We are specialized in the following field:

- Time bound shutdown jobs
- Column trays & internals
- Installation of Reactor internals
- Catalyst loading & unloading
- Equipment erection
- Structural fabrication & erection
- Project Management
- Tank fabrication & erection
- Turnkey projects

Contact at:

Expo House, 150, Sheriff Devji Street, Mumbai 400 003, INDIA. Tel: +91 9870054063

Website: www.expogas.com, www.expoprojects.co.in

Mr. Murtuza S. Mewawala - Chairman
(Email: smewawala@expogas.com)

Mr. Hasanain S. Mewawala - Director
(Email: hasanain@expoprojects.co.in)



ON SITE CONSTRUCTION PROFICIENCY

We have done number of coal handling and other structural systems for power plants and structural fabrication in Refineries like fabrication and erection of Chimney, CDU / VDU Stack, Pipe rack and Reactor platform structural.

EXPO Gas Containers Ltd., is a fully integrated Engineering and Construction company which was incorporated in 1982, and governed by Board of Directors who are eminent personalities in the field of technology, finance and management. We manufacture a wide range of Process Plant Equipments such as Coded Pressure Vessels, Distillation Columns, Towers, Reactors, Heat Exchangers etc. We also undertake turnkey projects to construct Fixed & Floating Roof Tanks, Mounded Storage Tanks, Horton Spheres, Structural fabrication, Stack, Cryogenic Tanks, Cross Country and In- Plant Piping.

MANUFACTURING LOCATION

Our manufacturing facilities are located at Murbad, near Mumbai where all basis infrastructure facilities are available. Our facilities are approved by Petroleum & Explosives Safety Organization (PESO) and Directorate of Boilers (IBR).

MAJOR MANUFACTURING FACILITIES

Fabrication Shop 1	20 mtr. Wide x 103.7 mtr. Lg x 15 mtr. Ht
Fabrication Shop 2	12 mtr. Wide x 36.5 mtr. Lg x 12 mtr. Ht.
Fabrication Shop 2a	12 mtr. Wide x 55mtr. Lg x 10 mtr. Ht.
Fabrication Shop 2b	20 mtr. Wide x 32 mtr. Lg x 10 mtr. Ht.
Fabrication Shop 3	20 mtr. Wide x 20 mtr. Long x 10 mtr. Ht
Capacity	3500 M.T Per Annum
Bending	} 1 No. (75mm thk x 3000 mm width)
Roll	
	1 No. (36 mm thk.x 2500 mm width)



Client: Indian Oil Corporation Ltd.
Equipment: Floating Tank
MOC: 32 MTR. dia x 15 MTR. Ht



Pressure vessel for Gulf Farbi Saudi Arabia
dia: 5.5M, length: 25M, weight: 83MT

ASSIGNMENTS IN INDIA

We have executed a number of orders for equipment such as Columns & Vessels, Heat Exchangers for our various Clients like Bharat Petroleum Corporation Ltd., Indian Oil Corporation Ltd., Hindustan Petroleum Corporation Ltd., for their various Refineries.

We have also supplied equipments to Bharat Oman Refineries Ltd. Bina Refinery, Chennai Petroleum Corpn., Chennai, Reliance Industries Ltd. Jamnagar etc.

We have also constructed and maintained several Fixed/ Floating Roof Storage Tanks at various locations in India.



Client: Jindal Steel Power Ltd. Angul Orissa, India
Equipment: Stripper Column

(dia: 6.7 mtr., length: 46.26 mtr.) weight: 260 MT
 MOC: SA 240 TP 306L

OVERSEAS ASSIGNMENT

We had the privilege to export a number of equipments to Petronas Refinery, Malaysia through M/s. Wa Tech Wabag as well as M/s. Petrofac International.

We have also supplied several equipments to M/s. Gulf Farabi Petrochemical Co. Ltd., Saudi Arabia, M/s. Mitsubishi Heavy Industries Ltd., Hitachi Zosen Corpn. for their Vietnam project, M/s. OKI Bering Middle East FZE – U.A.E., M/s. Adnoc, Dubai and LP Gas Ltd. – Bangladesh. We had also successfully completed Tank repair job for Galana Refinery & erection of Power Plant in Madagascar



Client: Petronas Refinery, Malaysia (Rapid Project)
EPC: Petrofac E&C SDN.BHD. Malaysia

size: 4000MM dia x 18000MM length
 MOC: SA 516 GR. 70N / SA 240 Type 316L (Int.)

FOR BUSINESS ENQUIRIES:

MR. HASANAIN S. MEWAWALA, Managing Director
 Email: hasanain@expoprojects.co.in

MR. SAMEER SHAIKH, General Manager
 Email: sameer.shaikh@expogas.com



www.expogas.com



ENGINEERING GROWTH

Managing the manufacturing process of varied industries with inspiring support solutions Analytics Process

Expertise in:

- Analytics
- Process Variable Instruments
- Mechanical Products
- Valves
- Steam Engineering Solutions
- Terminal Automation
- Utility Management Systems (UMS)

ENGINEERING | PROJECTS | MANUFACTURING | TECHNOLOGY

Chemtrols Industries Pvt. Ltd. is a leading solutions provider in Process Analytics, Continuous Emission and Environment Monitoring, Terminal Automation, Flow Metering & Custody Transfer Systems, Process Control Instruments, Steam Engineering solutions, and Utility Management Systems. As a specialized service provider, we cater to various industries like Cement, Steel, Oil & Gas, Power, Fertilizer, and Chemicals & Petrochemicals.

As a company, we are committed to providing Quality Products and Services, excelling in all spheres of management through continual improvement of products, processes and systems to satisfy customers, suppliers, employees and stakeholders.

With offices in all the major cities in India and a presence in the UAE, we have an extensive reach across markets. A state-of-the-art manufacturing unit in Goa, quality certifications conforming to most Global standards, and a team of some of the brightest engineers, makes Chemtrols a company to reckon with in the field of instrumentation.

Our long standing relationships with our customers and partners have helped us build a strong position in engineering and instrumentation services. We focus on a clear understanding of the project's scope, adopt a systematic approach, define the methodology, ensuring customer's approvals and then rapidly implement the proposed solution.



4 DECADES OF MANAGING THE MANUFACTURING PROCESS

WE ENSURE THAT THE PROCESSES EMPLOYED AND PRODUCTS DELIVERED, MEET THE APPLICABLE SAFETY, HEALTH, AND ENVIRONMENTAL STANDARDS.

MANUFACTURING FACILITIES

- ▶ Manufacturing locations in Goa & Ambernath (Mumbai) in India
- ▶ State of Art Manufacturing facilities, with more than 1,25,000 sq. ft area
- ▶ In-house strength of R&D, Process knowledge and capability to offer turnkey solutions
- ▶ ISO 9001 certified and accredited by international agencies like ATEX, CE, PED, ASME etc.
- ▶ Qualified & Expert Engineering workforce, spread nationwide through our network sales & service offices
- ▶ Presence in Jebel Ali (UAE) and spread world-wide through partners
- ▶ Nationwide Sales and Service Network with offices in Mumbai, Vadodara, Chennai, New Delhi, Hyderabad, Pune, Kolkata, Bengaluru and Guwahati.

SERVICES & TRAINING

Chemtrols is committed to meet or exceed customers' expectations by providing quality products and services. Service support is a vital aspect of Chemtrols' Philosophy. We continue to keep our focus on rendering prompt and efficient after sales services, for all products and solutions and also offer training on products, operations and services.

We further engage in rendering end-to-end Annual Comprehensive Maintenance Contracts, Sales & Services of all items to our clients on contractual basis. We are backed by a team of experienced process and Instrumentation trained professionals, who have profound expertise in this domain.



AMC & CAMC



24X7 SUPPORT



**SYSTEM
INTEGRATION**



TRAINING

INSTRUMENTS ARE APPROVED BY MAJOR LEADING CONSULTANTS AND CONTRACTORS

- Engineers India Limited (EIL), PDIL, H&G, TOYO, UHDE, MECON, Aker etc.
- Our customers include Samsung Engineering Co. Ltd., Daelim, Indian Oil Corporation Ltd (IOCL), Bharat Petroleum Corporation Ltd (BPCL), Shell & MottMac, Petrofac, Technip, National Fertilisers Ltd., Cameron, Deen-Dayal Field Develop Project (DFDP), UOP India, Technimont ICB, Proserv Middle East AS, LURGI, HPCL, BORL, HMEL ESSAR among many others.

FOR BUSINESS ENQUIRIES:

Call: +91 (022) 6715 1200

Email: chemtrols@chemtrols.com



www.chemtrols.com

Engineering Growth

Chemtrols Industries Pvt. Ltd. is a leading Solutions' provider in managing the manufacturing processes of varied industries with ingenious solutions.

The **ISO 9001:2010** company provides specialized system integration services to industries like the Oil & Gas, Cement, Power, Fertiliser, Chemicals & Petrochemicals etc. in India and the international market, with highest standards of excellence.



Expertise

Analytics

- Process Analytics
- Continuous Emission Monitoring Systems
- Ambient Air Quality Monitoring Systems
- Flame & Gas Detection Systems

Terminal Automation

- Wagon & Truck Loading Systems
- Security Surveillance: CCTV & Access Control Systems
- Tank Farm Management & SCADA

Metering & Measurement

- Flow
- Metering Skids For Liquids & Gases
- Level
- Density
- Temperature
- Moisture
- Mechanical
- Oxygen Analysers

Steam Engineering

- PRDS & DUMP PRDS
- DeSuperheaters
- Control Valves
- Turbine Bypass Valves

Utility Management Systems

- Power Grid Network Management
- Power Distribution Network Management
- SCADA
- Monitoring & Control RTU's & FRTU's for Substation & RMU's

Chemtrols Industries Pvt. Ltd. Amar Hill, Saki Vihar Road, Powai, Mumbai - 400 072 INDIA

Tel : +91-22-6715 1200, 2857 5089, 2857 0557, Fax : +91-22-2857 1913, Email : chemtrols@chemtrols.com, Web : www.chemtrols.com

Network Offices : Mumbai, Vadodara, Begaluru, Chennai, Delhi, Vizag, Guwahati, Kolkata, Secunderababd & Jebel Ali (Middle East)
Registered Office : 910, Tulsiani Chambers, 212, Nariman Point, Mumbai - 400 021 INDIA T:+91-22-22830636, F:+91-22-2287 3573.

GROWTH CATALYST IN PROCESS INDUSTRY

Oil & Gas | Pharmaceutical | Chemical & Fertilizer | Water & Waste Management
Nuclear & Thermal Power | Pulp & Paper | Petrochemical | Hydrogen Fuel Cell

PROUD PARTNER IN SUPPLYING STAINLESS STEEL FOR CRITICAL APPLICATIONS IN PROCESS INDUSTRY



Digester



Heat Exchanger



Chemical Reactor

& Many
More



World Class
R&D



Customized
Grades



Best in Class
Serviceability



Wide Product
Portfolio



International
Certifications



Effective
Deliveries

Our Certifications & Recognitions



AD 2000 W0 pressure
equipment (Germany)

CPD/89/EEC
(European Certificate)



For enquiries please contact: Mr. Pankaj Sahay | Contact: +32-491303961
E-mail: pankaj@jindalstainless.com



A WORLD OF STAINLESS

Stainless is as stainless does. This shining non-corrosive 'metal of the future' rises from scrap to raise skylines around the world, quite literally.

JINDAL STAINLESS - THE INCANDESCENT THAT FUELS THE GLOBAL SUPPLY CHAIN

Recognized globally as a behemoth of the manufacturing industry, Jindal Stainless is one of the top 10 stainless steel manufacturers worldwide. It has a melt capacity of over 1.9 million tonnes per annum (MTPA) and an annual turnover of USD 4.20 billion (as of March 22). The Company is now looking at around USD 32 million capacity expansion and stamp its undeniable dominance by achieving a capacity of 2.9 MTPA. Already playing ahead of the market curve, industry leader, Jindal Stainless exports products to over 60 countries, including major markets like USA and Europe. Its twin ultramodern integrated stainless steel manufacturing complexes in India are augmented by an overseas cold-rolling unit in Indonesia. An exclusive chain of service centres in India and Spain work around the clock to expand the Jindal Stainless footprint in Asia and Europe respectively.

Over the years, Jindal Stainless has emerged as a paragon of reliability and quality assurance. With its multinational footprint, Jindal Stainless has not only ensured that strategic raw materials continue to find uninterrupted logistics, but has also stood steadfast towards its commitments to provide sustainable business solutions worldwide. Enshrined within its core operation tenants, is the relentless impetus to provide environmentally sustainable delivery models.

JINDAL STAINLESS - THE ENGINE OF SUSTAINABLE TRANSFORMATION

Conscientious towards its corporate social responsibility initiatives, Jindal Stainless has been dedicated towards providing long-term Environmental, Social, and Governance (ESG) solutions. Partnering with an industry expert, Jindal Stainless is looking to significantly play a larger role as a responsible manufacturing industry leader. Their strategic outreach roadmap aimed at specific ESG indices is focused on reducing its carbon footprint and recycling its Greenhouse Gas emissions to realize emission reduction targets aligned with the Science Based Target initiative (SBTi). Additionally, Jindal Stainless manufactures stainless steel primarily through the scrap route, and all its products are completely recyclable, making it an active participant in a circular economy. As a responsible corporate citizen, it has implemented dedicated Environment, Health and Safety (EHS) efforts. Ecological conservation is thus woven into the very ethos of Jindal Stainless.

Jindal Stainless has successfully deployed CO₂ emission reduction through waste heat generation and the use of by-product coke oven gas in heating and annealing furnaces. To augment its emission reduction endeavors, Jindal Stainless will now be sourcing its power requirements through renewable energy through its own solar power facility. In the previous year alone, Jindal Stainless reduced its carbon emissions by an unprecedented 3,100 metric tonnes and launched the first phase of its migration from a thermal energy-intensive manufacturing setup to a

renewable energy alternative industry pioneer. With commendable investments in solar energy, wind energy, green Hydrogen as well as economically sustainable bio-fuels, Jindal Stainless has sounded a clarion call to all energy-intensive industries. Jindal Stainless has proven time and again that with visionary leadership and undaunted commitments, decarbonization initiatives can be made commercially viable. Today, the transnational

conglomerate, is fully equipped to meet the stainless steel demand emerging from novel applications by employing green Hydrogen, ethanol and methanol. Jindal Stainless has thus set the decisive tempo for all its competitors to emulate in the year to come. With no signs of slowing down, Jindal Stainless is looking to develop stainless steel ecosystem and is committed to writing a green future for the manufacturing industry.

AN AMALGAMATION OF UNMATCHED QUALITY AND UNSURPASSED DELIVERY

The Company offers a diversified product basket in various stainless-steel series, ranging from Cr-Mn, Austenitic, Ferritic to Martensitic and duplex stainless steel. It also provides value-added customized stainless steel products for a number of critical applications in various strategic segments including nuclear, ITER (International Thermonuclear Experimental Reactor), aerospace, defence, oil & gas, chemical, fertilizers, desalination, ethanol, pulp and paper. The Company also offers tear plates, hot-roll bonded clad plates, and high Sulphur machinable stainless steel grades such as 316F.

Through a direct workforce of over 20,000 employees, and a myriad of associated partners, dedicated vendors, international clients, and downstream allied industries, Jindal Stainless has been the disruptor that has launched the sustainable transition of the Indian stainless steel industry. Through an amalgamation of matchless quality and unparalleled delivery track record, Jindal Stainless has liberated the Indian domestic manufacturing industry from the shackles of protective policies and introduced it as proud market leaders upon the world stage. With a confluence of unmatched manufacturing capabilities and environmentally sustainable initiatives, Jindal Stainless is a torchbearer for the manufacturing industry. With international accolades and global acclaim, the Jindal Stainless brand name shines incandescently amongst its peers.

EACH GRAM OF OUR STAINLESS STEEL IS PLANNED TO PERFECTION.

FOR BUSINESS ENQUIRIES:

Call: +32 491303961

Email: pankaj@jindalstainless.com



www.jindalstainless.com



TECH PRODUCTS FOR PROCESS INDUSTRY



AN ISO 9001, 14001, 45001
& ASME Certified
Company



Supplied more than 4000+
Equipments for Customers
Worldwide

Precision Equipments, the pioneer in the field of manufacturing & supply of Shell and Tube Heat Exchangers since 1981 was established with a clear vision to provide end to end solutions to their customers in the process industry such as Oil & Gas, Petrochemicals, Fertilizers, Chemical, Power Plants, Energy & Nuclear. The company with an employee strength of 400+ and an annual turn over of 25 Million USD has consistently grown with its rich experience in the process industry.

Since its inception, the company has designed and manufactured over 4000+ Process Equipments for Oil and Gas, Petrochemical, Fertilizers and Energy Sector for its Customers in India and International Market. The company now is capable of manufacturing equipment up to 300MT weight(Single Piece). The heavy manufacturing facility is located at 45 kms from Shipping Port and well connected by a road.

The equipment can be easily transported to seaport within 24 hrs of loading at our shop. The company has engineers with vast experience in thermal and mechanical design of Static Equipments who work diligently with EPC contractors and end users to ensure all the technical requirements are taken care in the engineering stage of the project itself.

Equipments are designed as per International codes and standards like ASME, TEMA, HEI, API, IBR etc. The quality requirements are carefully controlled by established and proven procedures by the quality assurance team. The company with its frugal manufacturing techniques, low-cost automation and close project management can manufacture equipments at all time with international quality and more importantly all within the budget of the Customer.



BD SHELL & TUBE HEAT EXCHANGER

Supplied many High Pressure Heat Exchangers to various Refineries, Petrochemicals, Fertilizers & Power Sectors.

REBOILERS | CONDENSERS | EVAPORATORS | COOLERS | WASTE HEAT BOILERS | HEATERS,
PRE-HEATERS & SUPER HEATERS | REACTORS | STRIPPERS | CONVERTERS | ABSORBERS |
REGENERATORS | CONCENTRATORS & PRE-CONCENTRATORS | LNG VAPORIZERS

ACCREDITATIONS

- ASME U Stamp
- ASME U-2 Stamp
- National Board (NB)
- ISO 9001:2015; ISO 14001:2015; ISO 45001:2018



IN-HOUSE CAPABILITIES



Strip Weld Deposit - ESW



BTA Drilling for Tube Sheets - upto 500mm Thk



Orbital TIG for Tube to Tubesheet joint



CNC Plasma Cutting



Titanium Clean Room Facility



Hydraulic Expansion



Double Column VMC for Baffle Drilling



CNC VTL - 6300 mm dia x 3500 mm Ht

FOR BUSINESS ENQUIRIES:

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www.pecpl.com



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HIGH PRESSURE | FALLING FILM | ROD BAFFLE | HELICAL BAFFLE | CRYOGENIC |
TITANIUM HX | HAIR PIN | DOUBLE PIPE | LOW FIN | HIGH FLUX

WHO WE ARE

Precision Equipments was established in the year 1981. Ever since its inception, it has been steadily growing and now it is one of the most preferred suppliers for the manufacture & delivery of process Equipments, mainly Shell and Tube Heat Exchangers

WHAT WE DO

Our Products range includes all TEMA types of Heat Exchangers, Pressure vessels, Reactors, Columns for Oil & Gas, Power, Fertilizers, Chemical Sectors Worldwide



ACCREDITATIONS

ASME U Stamp
ASME U-2 Stamp
ASME R Stamp
National Board (NB)
ISO 9001:2015; ISO 14001:2015; ISO 45001:2018

IN-HOUSE CAPABILITIES

Strip Weld Deposit - ESW



Orbital TIG for Tube to Tubesheet Joint



Hydraulic Expansion



BTA Drilling for Tube Sheets - Upto 500 mm Thk



MAXIMUM CAPABILITIES

DIA-5M LENGTH-30M WEIGHT-300T TUBESHEET-500 MM THK

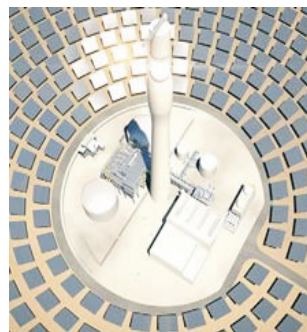
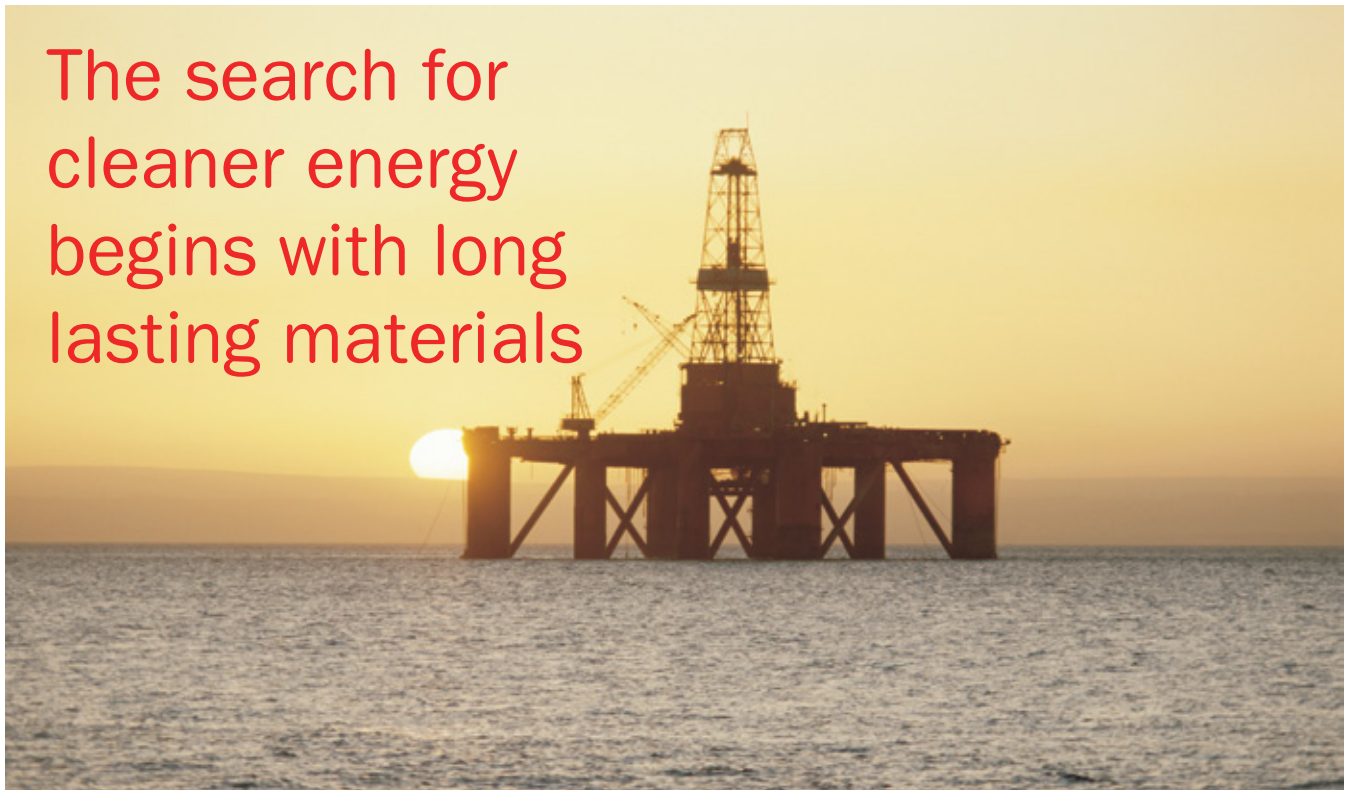


Registered Address:
B-70/1, SIPCOT Industrial Park,
Thandalam, Irungattukottai, Sriperumbudur
Chennai- 602 105, Tamil Nadu, India.

For Business Enquiries:

mktg@pecpl.com
+91 44 4710 0603
www.pecpl.com

The search for cleaner energy begins with long lasting materials



outokumpu classic

Moda Mildly corrosive environments	Core Corrosive environments	Supra Highly corrosive environments
--	---------------------------------------	---

outokumpu pro

Forta Duplex & other high strength	Ultra Extremely corrosive environments	Dura High hardness	Therma High service temperatures	Prodec Improved machinability	Deco Special surfaces
--	--	------------------------------	--	---	---------------------------------

We are the global leader in the advanced material business, with our heritage going back over 100 years to the very invention of stainless steel.

Wherever our partners are, we will be there with high performance stainless steel designed to meet the most extreme demands under the harshest conditions. Because the first step towards a world that lasts forever is making today's energy solutions as dependable and sustainable as possible. We believe in delivering best in product quality and technical expertise while becoming even better at customer orientation, speed and reliability.

Outokumpu wakes every day with the mission to make its long lasting materials as sustainable as possible, because our goal is a **world that lasts forever**.

Outokumpu India Private Limited
B-504, Citi Point, Andheri Kurla Road, JB Nagar,
Chakala, Andheri East, Mumbai 400059
Phone: +91 22 6192 4000/01 ; +91 11 46518438/42
sales.india@outokumpu.com
outokumpu.com





THE GLOBAL LEADER IN SUSTAINABLE STAINLESS STEEL

We believe in a world that lasts forever. The cornerstone of our business is enabling growth and innovation through environmentally, economically, and socially sustainable stainless steel products to benefit modern society for generations to come.

We are our people, our expertise and our legacy

Our history goes back to the invention of steel and we continue to drive stainless steel innovation.

History of Outokumpu

Outokumpu's history began in 1910 with the discovery of copper in Kuusjärvi, Finland – on a hill called Outokumpu, which literally means “strange hill”. Over the years, we have mined and refined various metals in Finland and abroad, before focusing solely on stainless steel in the 2000s.

Strategy and vision

Our vision is to be customer's first choice in sustainable stainless steel. Outokumpu's strategy is built on clear timebound initiatives and targets to competitively position itself for the future and moves now on to the second phase of the strategy with the aim of strengthening the core.

Ways of Working

To steer our journey toward our vision, we commit to promote a high-performing culture and our Ways of Working. The Ways of Working define the way we work together. The way we work is condensed in these fundamentals that describe our important success factors, and they provide us a road map expressing the requirements to be the customer's first choice in sustainable stainless steel.

- > **WE OPERATE SAFELY. ALWAYS.**
- > **WE LEVERAGE THE POWER OF ONE OUTOKUMPU.**
- > **WE DELIVER.**
- > **WE GROW PEOPLE AND VALUE DIVERSITY.**
- > **WE ACT SUSTAINABLY.**
- > **WE ARE A TRUSTED PARTNER.**

SUSTAINABLE SOLUTIONS AND OPERATIONS

Did you know that our mills are in fact giant recycling centers?

Outokumpu contributes to a more sustainable world by producing stainless steel out of recycled material. We have the highest recycled content and the lowest carbon footprint in the market, allowing our customers to reduce their carbon footprint.

We are at the heart of moving society towards more ecologically, socially, and economically sustainable solutions.

UNMATCHED EXPERTISE

Did you know that we are the investor stainless steel?

Our unmatched expertise of stainless steel is available to our customers, who use it to create civilization's basic structures and its most famous landmarks as well as products for households and various industries. They manufacture cars and appliances or operate in energy and heavy industries.

GLOBAL LEADER IN STAINLESS STEEL

Outokumpu operates in the global stainless steel market. Global consumption of stainless steel is growing due to the increasing need of long-lasting and sustainable solutions for the world's most critical challenges. The long-term prospects for the increasing use of stainless steel are positive. Outokumpu's market share in the global market for cold-rolled products is approximately 6%. In Europe, we are the market leader with some 30% market share and the clear number two in the Americas with a market share of approximately 22%.

PRODUCTS

Our stainless steel products are at the heart of modern society and deliver benefits far into the future. Stainless steel is an ideal material to create lasting solutions in demanding applications. Its uses are endless. Thanks to its unique properties such as durability, low-maintenance and resistance to corrosion, stainless steel is not only the strongest, but also the most economically sustainable choice.

THE SUSTAINABLE CHOICE

Outokumpu stainless steel has the lowest carbon footprint in the industry. Outokumpu's carbon footprint is 70% lower than the global industry average. We publish environmental product declarations (EPDs) on our main products using life cycle inventory data. This means our customers are able to calculate the sustainability performance of their product life cycles. At Outokumpu we constantly research and develop new ways of operating to reduce the environmental impact of stainless steel and its production. Our growing environmental efficiency is based on long-term efforts and continuous improvement.

FLAT PRODUCTS

Tailored to your needs, flat products are suitable for various industries from appliances and automotive to construction, heavy industry and beyond. Our flat product forms include coil, strip, precision strip, sheet, plate and quarto plate.

STAINLESS STEEL TYPES

Outokumpu's stainless steels can be divided into different categories which are ferritic, martensitic and PH grades, duplex and austenitic. The best steel depends on the application and together we can find the right one for every application.

What are the 4 types of stainless steel?

FERRITIC: Magnetic ferritic stainless steel grades, also referred to as chromium steel grades, are easy to form and machine. They come in a wide range of attractive surface finishes, and support superior product design. The standard ferritic grades are alloyed with chromium (11.2–19%), but with no, or a very small, addition of nickel.

AUSTENITIC: Austenitic stainless steel series 200 and 300 have become a staple of a wide range of industries, such as chemicals, pharmaceuticals, food and drink, textiles, and pulp and paper. The austenitic grades have good to excellent corrosion resistance, as well as good formability and weldability. This is also the largest group and it is further divided into five sub-groups. These sub-groups are Cr-Mn grades, Cr-Ni grades, Cr-Ni-Mo grades, high performance austenitic grades and high temperature austenitic grades.

MARTENSITIC AND PRECIPITATION HARDENING (PH):

Martensitic steel grades and precipitation hardening (PH) stainless steels are heat treatable and can therefore provide hardness and strength in a wide range of applications. Allowing to workability they are supplied in solution annealed condition. The downstream manufacturer performs final heat treatment to meet the mechanical properties required. For improved strength and hardenability they have a higher carbon content compared to other grades, and nitrogen is sometimes added to further improve strength.

DUPLEX: Duplex stainless steel grades offer an excellent combination of strength and corrosion resistance, allowing you to significantly reduce material thickness and cost in a host of applications. The duplex grades contribute to high strength and high resistance to stress corrosion cracking. These grades also have a ferritic-austenitic microstructure, with a phase balance of approximately 50/50.

INDUSTRIES

Our stainless steel enables modern society through versatile applications in a wide range of environments. Choosing the right stainless steel grade is the key to maximize performance and minimize cost in any industry. Outokumpu experts are ready to help you make the best choice for your needs.

APPLIANCES

Corrosion-resistant, easy to clean, strong and formable: Stainless steel delivers durable, timeless perfection and beauty.

AUTOMOTIVE AND TRANSPORTATION

Carrying us further and taking us where we need to be requires a material that can endure enormous forces, yet at the same time, be light and flexible. The durability and strength of low-weight stainless steel enable optimum performance.

BUILDING AND INFRASTRUCTURE

We want to leave an unforgettable legacy. We want to be proud of what we did and how we did it. Through your work, you tell stories, and true visions are crafted from stainless steel.

ENERGY AND HEAVY INDUSTRY

The backbone of our everyday life has to be unbreakable. The need for durability and innovative thinking in this industry are on a different scale, and stainless steel gives you total control.

Outokumpu has deep experience in providing solutions for the most challenging projects on earth. We understand the technical, efficiency and safety requirements you face – and the ways those challenges can be compounded by extreme environments. That knowledge and experience makes Outokumpu a valued partner in your operation. You can depend on us for in-depth technical expertise in everything from grade selection to material testing.

For installations of vital importance, stainless steel delivers long service life and low life-cycle cost. Outokumpu offers the broadest range of alloys, and efficient, flexible delivery all over the world. And a network of highly responsive service centers specializes in innovative products customized to your exacting needs.



WORKING TOWARDS A WORLD THAT LASTS FOREVER

FOR BUSINESS ENQUIRIES:

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CONVEYING FLUIDS EFFICIENTLY

We Design, Manufacture & Install Glassfiber Reinforced Plastic GRP/FRP, GRE & Thermoplastic Lined FRP Pipes along with manufacturing Headers, Ducts, Stacks, Special fittings and Thermoshield Piping Systems.

Chemical Process Piping Pvt. Ltd. (CPP), has its roots in Chemical Process Equipments Pvt. Ltd. (CPE), a pioneer and a market leader for over 50 years in the field of design, manufacture and installation of GRP/FRP/RTRP Equipment and GRE Piping.

In the year 2004, CPP was incorporated to focus on the fast growing Fibreglass Reinforced Plastic (GRP/FRP/RTRP) Piping and Thermoplastic lined GRP/FRP/RTRP market for the Chemical, Power, Pharmaceutical, Metallurgical, Water, Waste water and Offshore Industries.

CPP has capability to design, manufacture and install GRP/FRP/RTRP, Thermoplastic lined GRP/FRP/RTRP & GRE Piping with reference in several countries.

The pipe designs have been validated by TÜV, Germany.

CPP uses state-of-the-art CNC machines to manufacture the best in class Pipes, Ducts, Headers and Stacks that can sustain highly corrosive fluids at elevated temperatures & pressures.

The installation of all our products are carried out by our own team to ensure that the best designed products are also installed in the right manner thereby ensuring one point responsibility.

We design, manufacture and install the following GRP/FRP/RTRP, Thermoplastic lined GRP/FRP/RTRP & GRE products :

- ▶ Pipes
- ▶ Headers
- ▶ Stacks
- ▶ Fittings
- ▶ Ducts
- ▶ Launderers

CPP has the capability to design & manufacture according to the following standards:

- ▶ DIN 16965/16966
- ▶ AWWA C950
- ▶ API 15LR
- ▶ ISO 14692
- ▶ PS 15-69
- ▶ AS 2634
- ▶ AWWA M45
- ▶ IS 14402
- ▶ BS 7159
- ▶ ASTM D2310/D2992/D2996
- ▶ ABS
- ▶ IS 12709

We are an ISO 9001, ISO 14001 & ISO 45001
Certified Company



IS 12709:1994



• Regelmäßige Betreuung
• Fachbetrieb gemäß
§ 19 IWHG

OIL & GAS | DESALINATION | CHEMICAL | POWER | WATER | OFFSHORE/ONSHORE

GRP/GRE & THERMOPLASTIC LINED GRP PIPING SYSTEM

- ▶ Corrosion resistant
- ▶ Pressure: Upto 64 Bar
- ▶ Easy to install
- ▶ Size: 15 mm - 4000 mm
- ▶ Light weight
- ▶ Design Temp.: Upto 140° C

DESALINATION PLANTS / WATER RESCUE

TUAS-1 SINGAPORE 2004	POWERSERAYA SINGAPORE 2006	LAYYAH UAE 2007	KALBA UAE 2008	HAMRIYAH UAE 2008	CHENNAI INDIA 2008	CHANGI NEWATER SINGAPORE 2009	KHORFAKKAN UAE 2009	UDUPI THERMAL POWER INDIA 2009
MELBOURNE AUSTRALIA 2010	PERTH AUSTRALIA 2010 & 2011	ADANI POWER INDIA 2011	QINGDAO CHINA 2011	TUAS-2 SINGAPORE 2012	BARKA UAE 2012	MONG DUONG II VIETNAM 2013	PAME PUTATAN PHILIPPINES 2014	MIRFA UAE 2015
TUAS-3 SINGAPORE 2017	JAMNAGAR GUJARAT 2017	JEDDAH AIRPORT SAUDI ARABIA 2017	MARINA EAST SINGAPORE 2018	ADNOC CFP ABU DHABI 2019	AMSA MINERA LOS PALAMBRES CHILE 2020	NEMMELI PHASE-II INDIA 2020	DAHEJ INDIA 2021	

To be continued...

FRP/GRP STACKS

CPP is the only company in India with a global exposure in the field of Design, Manufacture & Installation of Abrasion Resistant FRP Piping, Stack & Spray Headers for FGD plants in the Power industry. **CPP has the capability to Design, Manufacture and install the following FRP Products:**

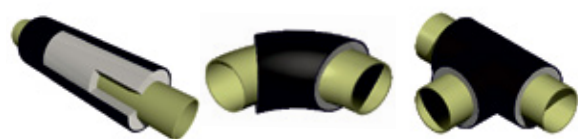
- ▶ Abrasion Resistant Recycle Piping & Support
- ▶ Stacks & Chimney Liners
- ▶ Cooling Tower Headers
- ▶ Abrasion Resistant Spray Headers
- ▶ Ductwork & Supports
- ▶ Cooling Tower Risers

- ▶ Mist Eliminator Flushing Piping
- ▶ Cooling Water Piping : Above Ground & Underground
- ▶ Seawater Intake & Discharge Piping

CPP has capability to design, manufacture and install fiberglass chimneys, stacks, and stack liners that are either free standing or supported upto 10 mtrs. Dia. We have the experience to design virtually any size necessary to accommodate the exhaust steams from almost any process & transport highly corrosive gases at elevated temperature.

For more information write to us at: sales@cppiping.com

THERMOPIPE-X

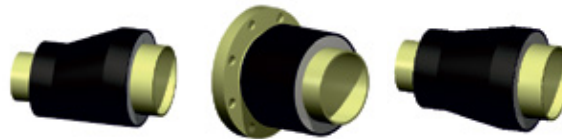


AN OUTSTANDING PRODUCT...

CPP has experience of over 50 years in design, manufacturing & installation of corrosion resistant GRP / GRE piping for Chemical, Water, Power and Oil & Gas Industries.

APPLICATIONS

- District heating (Hot Water System)
- District Cooling (Chilled Water System)
- Oil & Gas
- Industrial Application (Chemical / Steam / Mining Industry Pharmaceutical / Petrochemical)



...WITH ADDED VALUE !

We now combining our corrosion resistant GRP / GRE piping with thermal insulation to achieve low thermal conductivity thus resulting in less thermal losses.

ADVANTAGES

- Corrosion resistance
- UV resistance
- Thermal insulation
- Light Weight
- Maintenance free
- No special aluminium cladding required

FOR BUSINESS ENQUIRIES:

Call: +91 22 67230600

Email: sales@cppiping.com



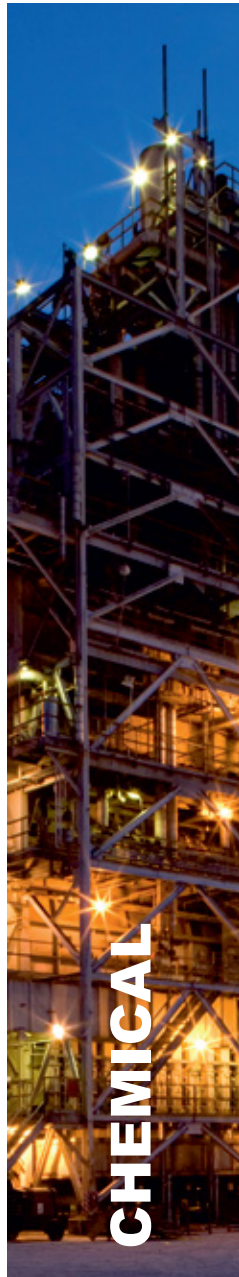
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OIL & GAS



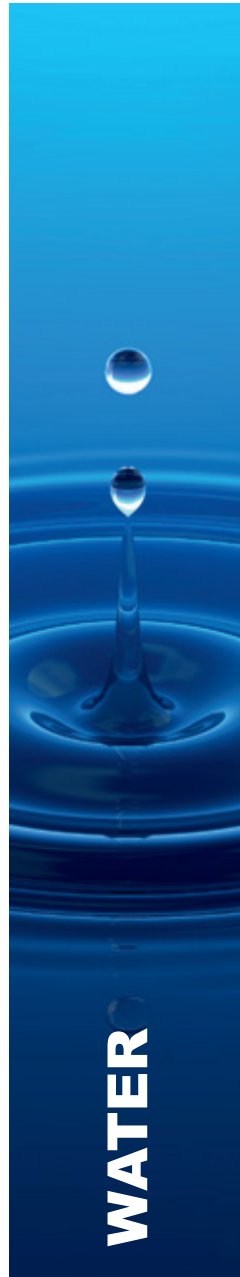
DESALINATION



CHEMICAL



POWER



WATER



OFFSHORE / ONSHORE

Conveying fluids efficiently!™

PIPES | FITTINGS | DUCTS | HEADERS | STACKS | LAUNDERS

Material : Pre-installed FRP/GRP, PVC-FRP, CPVC-FRP, PP-FRP, PVDF-FRP, FEP-FRP



IS 12709:1994



CM/L-7980402



- Regelmäßige Betreuung
- Fachbetrieb gemäß § 19 IWHG

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Quality Forgings and
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Rolled Rings | Slewing Rings & Gear Rings

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and other customized forgings.



Forgings and Relationships

WHICH LAST LONGER

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T: +91 120 4388000, F +91 120 4376971 E-Mail chw@chwforge.com

Unit 2 : Achheja, P.O. Dujana, G.T. Road Greater Noida (Phase II) – 203207, Uttar Pradesh, India

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Forgings and Relationships
WHICH LAST LONGER

CHW Forge is one of the leading forging company in India with more than six decades of rich manufacturing experience. CHW Forge is known for producing world-class high-quality complex and critical forgings and became preferred forging partners with best of the organizations across the world.

CHW Forge has state of the art production facilities equipped with world's best high end forging equipment and backed by a highly experienced engineering professional team. **We specialized in the manufacturing**

of standard flanges and customized complex forgings.

Our products find application in Oil & Gas, Power, Defense, Aerospace, Heavy Engineering, Pressure Vessel and Heat Exchangers.

CHW Forge can support you by **manufacturing ring diameter of 4500mm & 650mm height**. Organization has the capability to produce **single forging of 25Tons** in all type of materials like Carbon Steel, Alloy Steel, Stainless Steel, Duplex, Aluminium, Titanium and Nickel alloys.

CHW FORGE IS NOW API MONOGRAM CERTIFIED COMPANY

CHW FORGE is one of the India's leading Forging Company having an experience of more than six decades in manufacturing high quality of complex and critical forgings. We are pleased to announce that CHW Forge is now an API Monogram Certified Organisation, licensed to apply API 6A, API 20B & API 20C monogram for the forgings and products intended to use for Well Head & Christmas Tree equipment and other Petroleum and Natural Gas applications. With this licensing we shall be able to cater products and forgings meeting the requirement of below specifications.



API-6A- Specification for Wellhead and Tree Equipment

Flanges, Loose Connectors- Type of flanges include blind, threaded, spacer, welding neck, studded, or other connected adaptor flanges in material specification, Carbon Steel, Alloy Steel, stainless steel, duplex steel and Nickel Alloys.



API-20B - Open Die shaped forgings for use in Petroleum and Natural Gas Industry

Product-shaped open die forgings, including rolled rings and all applicable Forging Specification Level



API-20C Closed Die Forgings for Use in the Petroleum and Natural Gas Industry

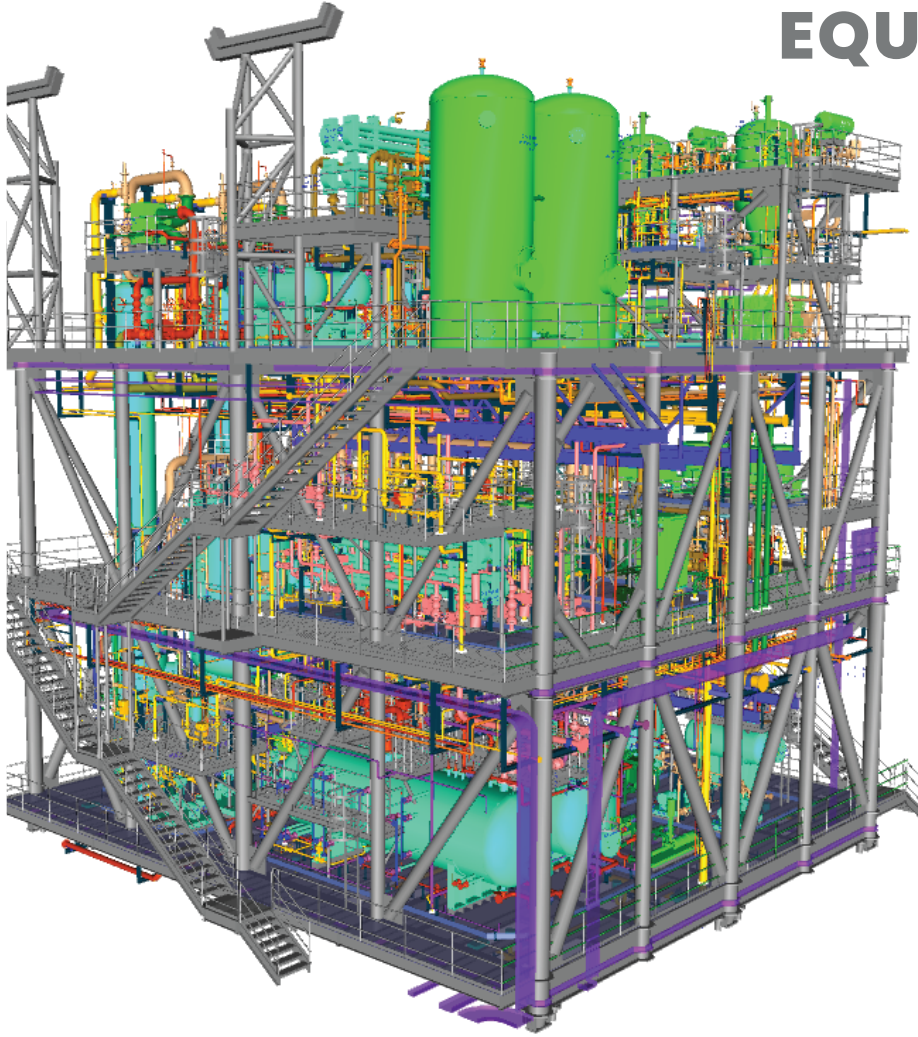
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- ASME 'U' CERTIFIED PRESSURE VESSEL FABRICATION
- COMPLETE SKID FABRICATION



ENGINEERING COMPETENCIES

**PROCESS | 3D MODEL | PIPING | STRUCTURAL |
MECHANICAL | ELECTRICAL | INSTRUMENTATION**

BY INDUSTRY

**OIL & GAS | WATER & WASTE WATER | REFINERY |
PETROCHEMICALS | CHEMICALS & PHARMA**

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& Seamless Ring Rolled Forgings



METAL FORGINGS PVT. LTD.

GLOBAL FORGING SUPPLIER

Metal Forgings Private Limited is one of the largest forging industries in India engaged in manufacturing of light to heavy steel forged components in various grades of carbon, alloy, stainless steel and duplex steel grades. We have been supplying our products since last 60 years to different sectors of industries like Refineries, Petrochemicals, Oil, Gas, Aerospace, Nuclear, Wind, Hydro, Thermal, Power, Defence, Fertilizer, Construction, Automobile, Fabrication and many other Heavy Industry sectors.

We aim at providing industry with internationally accepted high quality products on competitive prices meeting stringent forging standards by virtue of merging latest technology, automation and professional expertise, hence being the pioneer of this trade.

MATERIAL OF CONSTRUCTION (MOC)

SS & Duplex Steel Grades

SA 182/SA965 F304/304L/304H. F316/F316L
SA 182/SA965316 Ti
SA 182/SA965 F317/317L, F321/F321H
SA 182/SA965 F347/347H
SA 182 F6a, X8CrNiMoVNB16-13, F6NM X3CrMo 13-4
SA 182 F51, F53, F60 (Duplex/Super Duplex Grades)

Alloy Steel Grades

SA182/SA336 F1, F5, F9, F11, F12, F22
SA182 F91. SA508
21CrMoV57, X22CrMoV12-1, 40NiCrMo65
30CrNiMo8, 28CrMoNiV59, 31CrMoV9, 18CrNiMo6-7
16MnCr5, X8CrNiMoVNB1613, 27NiCrMoV11-6,
40NiCrMo7, EN19/42CrMo4, EN24 / 34CrNiMo6
EN25. EN31. EN353. 4140. 8620. SAE52100

Carbon Steel Grades

SA 266 Gr.2, Gr.3, Gr.4
SA 105, SA 181, SA 508
SA 350 LF1, LF2, LF3
SA 765 Gr.II. GrIV
A694 F52. F60. F65. F70
S355J2G3. S235JR
EN 8, EN 9
20C8, 30C8, 40C8, 45C8

New Grades Being Developed

Aluminum AA2014, AA2219, AA6061, AA7075
Titanium Ti-6AL-4V, Ti-6AL-6V2Sn, Ti-6AL-4V ELI
Nickel Alloys INCONEL 718, INCONEL 625

Industry Certification

EIL Certificate
Engineers India Limited
IBR Certificate
Indian Boiler Regulation

Certifications

ISO 9001: 2015
PED 97/23/EC & AD2000
WO/TRD100 :
TUV Rheinland
ISO 14001 :
BSI Assurance
ISO 18001 :
BSI Assurance
AS 9100 D

Any other as per ASTM, ASME, EN, DIN, BS, IS, AISI/SAE,
GOST, JIS Grades as specified by customer.





Products	Size Range
Tube Sheets, Solid Circle, Blind	Max Dia: 2500 mm Max Weight 11000 Kg
Nozzles, Shell, Hollow Cylinder	Max Weight 11000 Kg
Seamless Rolled Rings	Max Dia: 3000 mm Max Weight 5000 Kg
Forged Bar, Shaft	Max Dia: 1000 mm Max Length: 6000 mm
Close Die Forged Components	Max Weight up to 650 Kg
Standard Pipeline Flanges	½" to 110" in 150 to 2500 Is Pressure Rating

HEAT TREATMENT FACILITY

Details of Furnace	Treatment
20 Ton Furnace Calibrated as per AMS-2750E/API6A Size: 5800 x 2700 x 1000 mm	Annealing, Normalizing, Hardening, Tempering
30 Ton Furnace Calibrated as per API6A Size: (6000 x 3000 x 1500 mm)	Annealing, Normalizing, Tempering
10 Ton Furnace Calibrated as per API6A Size: 2500 x 2000 x 1200 mm	Annealing, Normalizing Tempering
Water Quenching Tank Size: L 6000 x W 4000 x Deep 5000 mm With Vertical Quenching Facility (1,20,000 Ltrs)	Solution Annealing, Quenching
POLYMER Quenching Tank Size: L 3000 x W 3000 x Depth 5000 mm With Vertical Quenching Facility (35,000 Ltrs)	Polymer Quenching
Muffle Furnaces - 3Nos.	Simulation Heat Treatment & Step Cooling Test

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Email: sales@metalforgings.com



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Forging Facility

Press:

2500T Open Forging Hydraulic Press with Electric Manipulator & Siemens S7 PLC integrated Hydraulic Press- 1000T
1600 Ton Forging Press
Trimming Press 1000T, 630T, 250T, 150T

Seamless Ring Rolling Facility:

3000 mm Ring Roller with 5 MT manipulator
1100 mm Ring Roller with 0.50 MT manipulator.

Hammers:

Open Forging, Hydraulic & MPM Hammers - 5 Nos.

Close Die Hammers:

Counter Blow Hammers 32 Ton,
25 Ton & 13 Ton
Belt Drop Hammer 2 Ton
Frame Hammer 1250C

Machining Facility

- Horizontal & Vertical Lathe
- Horizontal/Turret Lathe
- CNC VTL
- CNC Lathe
- VMC
- HMC
- Double Column Machining Centre
- Milling & Planner Machine
- Drill Machine

In-house Testing Equipment

- Emission Spectrometer 17 Channel
- Metallurgical-1000X Traveling Microscope
- Metallography Machine
- Universal Testing M/c 200 KN
- Impact Test Machine
- UST Machines, PM Machines
- MPT Bench & Yoke Type
- Hardness Tester: Brinell, Rockwell,
- Vickers & Portable
- Ferrite Meter, Coat meter,
- Laser Digital Pyrometer, Radioactivity Tester.

Raw Material Sources

Indian:

SAIL, RINL, JSPL, L&T., Saarloha, Arcvac, Laxcon, UP Steel, SWIL, Avtar Steel, Arora, Rajputana Steel, Arjas Modern Steel, Sunflag Steel, Tata Steel, JSHL, JSW & Mahindra Sanyo

Overseas:

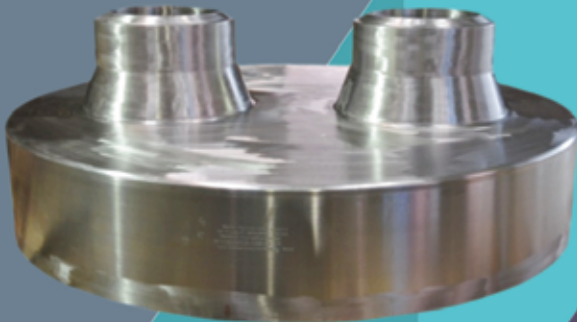
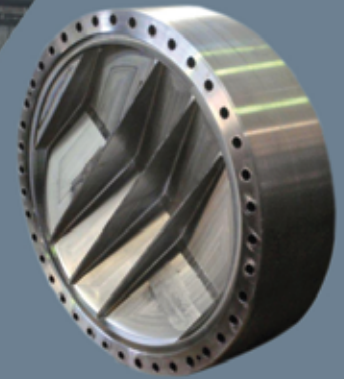
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MF Rings & Bearing Races Ltd.

Works : Plot No. 6, Sector-4, Industrial Estate, Ballabhgarh, Haryana, India

Corporate Office & Works :

B-1, Mayapuri Industrial Area, Phase-I, New Delhi – 110064, India

Ph. : +91-11-40777333, 28114458, 28114376 Fax : +91-11-41833107

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Distillation Column

Filtration & Separation Equipments



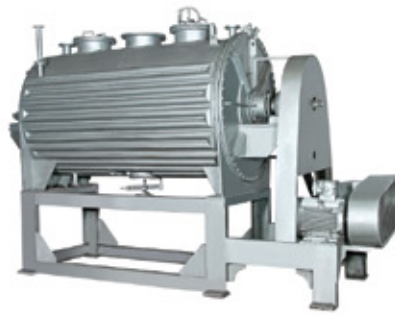
Agitated Nutsche Filter

Evaporation & Drying Equipments



Drum Dryer / Drum Flaker

Evaporation & Drying Equipments



Rotary Vacuum Dryer

Heat Transfer Equipments



Shell & Tube Heat Exchanger



Plot No. C-14/15/53, Akshar Industrial Park, Opp Zydus,
Chacharwadi, Ahmedabad - 382213, Gujarat (India)
Phone: +91-9099087832/834
Email: rld@unimechindia.com / ravidudhat@unimechindia.com

Direct Line: +91-9374623907 / 9825023907

unimechindia.com





A technology for today and tomorrow

PERFORMANCE PACKED PROCESS EQUIPMENTS

Manufacturer of process equipment for chemical, pharma, agro, fertilizers for more than three decades

Uni-Mech Industries - the company with 35+ years' experience on Manufacturing of Process Equipment for Various Industries.

Two manufacturing units in Ahmedabad:

- **Vatva Unit:** Having area of 1200 Sqyard
- **Chacharwadi unit:** Having area of 13000 Sqyard

We involved in designing, manufacturing and undertaking turnkey projects in Pharma & Chemical Process Plants & Equipment. We offer a complete range of Engineering Services, as ours is an integral Engineers entity.

VISION

Our Vision is to transform thoughts in to reality.

MISSION

To Achieve 1000 Satisfied Clients by 2025 by Providing Quality Products in Pharmaceutical and Chemical Industries.

VALUES

- Do what we speak
- Quality consciousness

35+

YEARS OF
EXPERIENCE

10500+

EQUIPMENT
SUPPLY

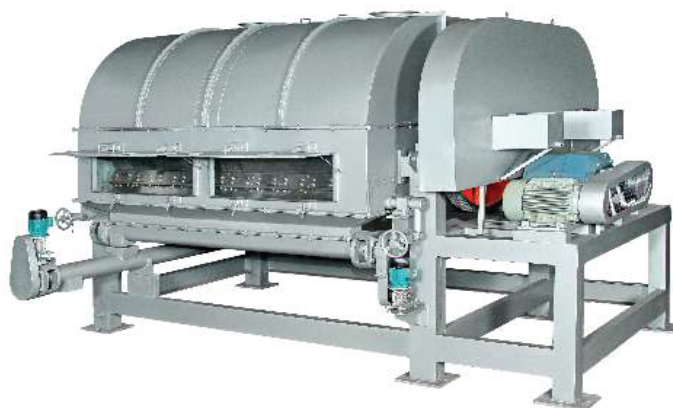
650+

SATISFIED
CLIENTS

**TO DESIGN AND MANUFACTURE
THE PRODUCT AND TO PROVIDE THE
SERVICES ACCORDING TO CUSTOMER'S
REQUIREMENTS. OUR NAME MUST
BE SYNONYMOUS WITH QUALITY TO
THE CUSTOMERS AND TO OVER SELVES.**

INDUSTRIES WE SERVE :

- ▶ Pharmaceuticals
- ▶ Chemical
- ▶ Petrochemicals
- ▶ Fertilizers / Pesticide
- ▶ Agro Chemicals
- ▶ Speciality Chemicals
- ▶ Oil & Gas
- ▶ Food Industry

**SS REACTORS / AUTOCLAVES****DISTILLATION COLUMNS****HOT WATER GENERATOR****DRUM DRYER / DRUM FLAKER****FOR BUSINESS ENQUIRIES:**

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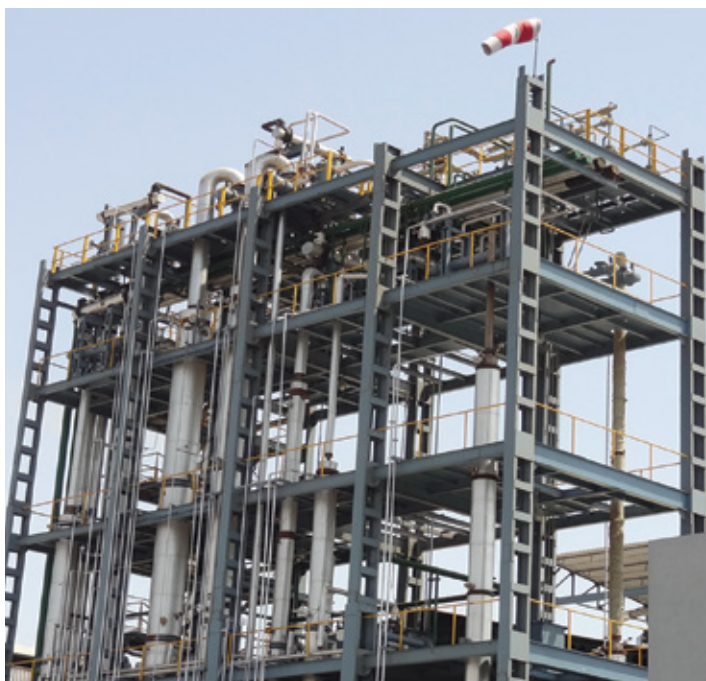
innovative engineers & consultants

PROVIDING QUALITY ENGINEERING SERVICES TO CHEMICAL, PHARMA, AGRO, AROMATIC AND ALLIED INDUSTRIES FOR TWO DECADES

Chemical Plant Engineering consulting has gained prominence in India. With rapid industrialization, Chemical manufacturers are in need of expert consultancy and services. Innovative was established in 1999 to offer a complete range of Engineering Services. Right from the designing services to building the structure to achieve long term effectiveness.

We provide appropriate services which includes a client's need in developing a pilot plant, providing engineering consultancy as well as the right workforce to implement the plan for setting up commercial scale plants and sourcing quality raw materials to construct the plant for their long term maintenance and efficiency.

To enhance client engagement in projects, we provide after sale support and maintenance services.



STRATEGY IS NOTHING WITHOUT EXECUTION



Continuous operation is our major expertise, and when a client approaches us, we suggest them for continuous operation design. The reason behind doing this is that it requires the minimum manpower, utility and gives the best results. Unlike other engineering sector companies, We actually pay attention to what would be best for the customers and provide services based on that.

SERVICES WE PROVIDE

- HIGH VACUUM BATCH & CONTINUOUS DISTILLATION PLANT
- BATCH AND CONTINUOUS SOLVENT RECOVERY PLANT
- CONTINUOUS LIQUID-LIQUID EXTRACTION PLANT
- BASIC DESIGN AND DETAILED ENGINEERING OF NEW PLANTS
- TROUBLESHOOTING OF EXISTING PLANTS
- BATCH & CONTINUOUS FLUID BED DRYER, SPRAY DRYER, FLASH DRYER, SPIN FLASH DRYER
- COMPLETE PLANT ON TURNKEY BASIS

**MEET THE TALENTED ENGINEERS
AT INNOVATIVE ENGINEERS
AND CONSULTANTS FOR
YOUR COMPANY REQUIREMENTS**



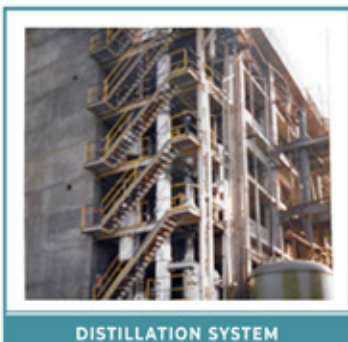
At this point in time, We have number of ongoing projects that are going to last for a year or two. We have already designed, delivered and successfully commissioned continuous static reactor plant and now working more in the same area.

FOR BUSINESS ENQUIRIES:

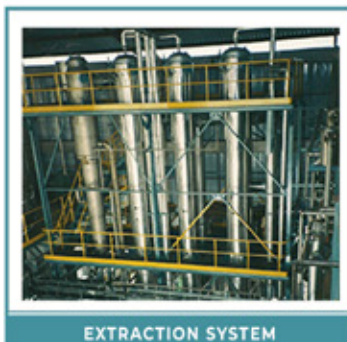
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Email: info@innovativegroup.net.in

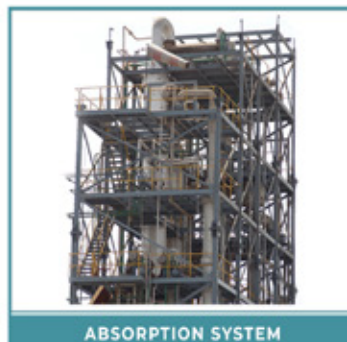
WE OFFER



DISTILLATION SYSTEM



EXTRACTION SYSTEM



ABSORPTION SYSTEM



DRYING SYSTEM



CONTINUOUS STATIC REACTOR



MULTIPLE EFFECTS EVAPORATOR

INDUSTRIES WE SERVE

Chemical • Aromatic • Pharma • Bulk Drugs • Pesticides • Agro

OTHER SERVICES WE OFFER

Basic & Detailed Engineering of green field project

Hydrogenation Plant Engineering

Study of Existing process and cutting down batch cycle time

Study of Existing System and Improving Solvent Recoveries

Cost Reduction in Process Operation

Electrical Engineering

Instrumentation Engineering & Plant Automation





PGE Industries Pvt. Ltd.
SEALING SOLUTIONS SIMPLIFIED

EMISSION CONTROL SOLUTIONS FOR A BETTER TOMORROW

PGE Industries Pvt. Ltd. brings half a century experience in Gasketing and Sealing technology with a 100% AsbestosFREE Certified Manufacturing facility focused on variety of Sealing Components including CNAF Gasket Sheets, Expanded Graphites, Modified PTFE, Expanded PTFE, Expanded Mica and Semi-Metallic Gaskets. We focus on Fugitive Emission control for a better tomorrow.

PGE® SEALPRO

This is a reusable kammprofile gasket which are having excellent sealing properties

PGE® PILOSEAL

This is a spiral wound gasket with non-metal filler that seals the flange connections

PGE® RING JOINT GASKETS

This gasket is a forged octagonal or oval ring that fits into the machined groove of RTJ flanges.

MANUFACTURING FACILITY WELL EQUIPPED WITH CLEAN ROOM, SWG MACHINES, CNC MACHINES, LASER CUTTING MACHINES.





SUSTAINABLE SEALING COMPONENTS

PGE has always stood in the forefront executing challenging projects in India and worldwide. PGE is a EIL (Engineers India Ltd) registered company and a part of Government organization supporting for indigenisation of various spare parts.

PGE Industries Pvt. Ltd. can trace its root by nearly half a century as a trading firm set in Mumbai, India to help with sealing materials for the Indian Navy and the various industries around Mumbai. As humble beginnings under Pilot Gaskets we have a strong and rich history across the Energy, Power, Oil & Gas, Marine, Nuclear and OEM sector serving nearly all Indian Refineries for more than half a century.

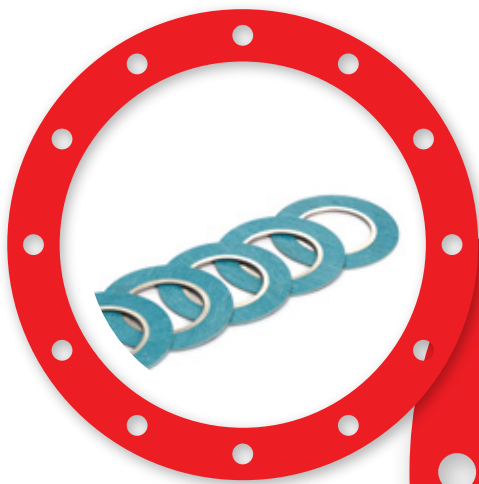
In 2011, PGE® took up the responsibility of sustainable and environmentally friendly Sealing Solution. Our goal was to offer Fugitive Emission certified Gaskets and Components in India without compromising on quality or performance. The Indian Sealing Industry was still using Carcinogenic Asbestos Fibre (CAF) and PGE® we decided to be responsible to our customers and put in a blanket nonAsbestos policy. In fact, even till this date, PGE® is one of the only Gasket Manufacturer to have its Facility and Product certified Asbestos Free. We are also signatory of United Nations Sustainable Development Goals (SDGs)

and pledge towards UN Global Compact Initiative. The only gasket manufacturer to do so in India.

In technical collaboration with Donit Tesnit, D.o.o, Europe we manufacture certified manufacturers for sealing and insulation products which focus on Fugitive Emissions, Leakage Control, Torque Installation and Material Selection. "We are slowly educating our customers about the alternatives, health benefits and savings associated with using correct certified sealing," explains

Mr. Darshan A. Parekh, Director, PGE Industries Pvt. Ltd.

The primary focus of PGE® is to reduce the production downtime, maintenance schedules, shutdown timelines and fugitive emissions while increasing the plant safety. "We have even conducted case studies where we have successfully increased refinery production by approximately 17 per cent and reduced emission loss by 32 per cent just by replacing seals and gaskets with the correct nonAsbestos alternatives," recalls Parekh





In honour of Hon Prime Minister' Make in India' Campaign PGE has expanded its product offering with setting up a state-of-the-art R&D Lab and Clean Room Manufacturing in accordance with Global requirements. The Clean Room Manufacturing is especially critical for Oxygen transportation and generation units. We were proud to support various the fight against COVID during the pandemic with Clean Room manufactured Seals and Gaskets.

PGE® is willing to partner with global stockiest, distributors and partners to represent us on a global scale with our cost economics of manufacturing in Asia. We hope to collaborate with like minded Global OEMs to explore development of critical components and support them for a better and safer tomorrow. PGE Industries Pvt. Ltd. strength lies in its team of talented technical engineers and our connections with our customers.

We always look to support our global clients with solutions that ensure they don't have to worry about the weakest link in their system: The Gasket.

OUR MANUFACTURING FACILITY

1. Clean Room Manufacturing For Critical Process Environment
2. Certified Asbestos Free Manufacturing Unit
3. Laser Cutting Machines
4. Oscillating Knife Plotters
5. CNC Machining
6. Vertical Milling Machine
7. SWG Windings Machine
8. Fire and Helium Testing Rigs


OUR PRODUCTS

1. Spiral Wound Gaskets & KammProfile Gaskets
2. NonAsbestos Gaskets and RTJ Gaskets
3. High Temperature Graphite Gaskets
4. Various Elastomer Components like oRings
5. Thermoplastic Seals made from PTFE, PEEK, POM etc.
6. Valve Spares and Internal such as Laminar Seals etc.
7. API 622 and ISO 15848 approved Gland Packing sets for Valves

FOR BUSINESS ENQUIRIES:

Email: info@pilotgaskets.com

Call: + 91 8080890022

 +91 9892227716



www.pgeindia.com





**System
Engitech Pvt. Ltd.**

ASME Certified | AN ISO 9001 : 2015 Certified

SUPERIOR PRODUCT INNOVATION

We are engaged in Manufacturing of wide range of Chemical and Pharmaceutical Process Plant Equipment. It has been more than two and half decades of successful journey from a humble beginning in 1993.

- ▶ SYSTEM ENGITECH PVT LTD is one of the leading manufacturer of Chemical & Pharmaceutical Process Plant equipment since more than two and half decades beginning in the year of 1993. We expertise in Tailor made equipment and dealing in Turnkey Projects.
- ▶ Our core values are integrity, Loyalty, Transparency & Customer Satisfaction.
- ▶ Segments we serve into : Chemicals , Agrochemicals , Fine Chemicals , Petro Chemicals, Pharmaceuticals Industries & Heavy Engineering
- ▶ Our Maximum Handling capacity is 250 MT per Month with Single job capacity is upto 50MT which includes 6 MTR maximum diameter & 10 MTR height.
- ▶ Complete in house fabrication facilities includes Welding Processes (GTAW, SAW, SMAW) Dish Forming, Shell Rolling (Upto 45 mm), CNC Gas & Plasma Cutting, and different Machining Processes
- ▶ More than 200+ Clients across the world

MANUFACTURING UNITS



Unit 1 (Head office),
Sachin, Surat, Guj., India, Area: 3833m²



Unit 2,
Sachin, Surat, Guj., India, Area:1408 m²



Unit 3,
Panoli, Ankleshwar, Guj., India, Area: 3833 m²

TYPES OF MATERIALS

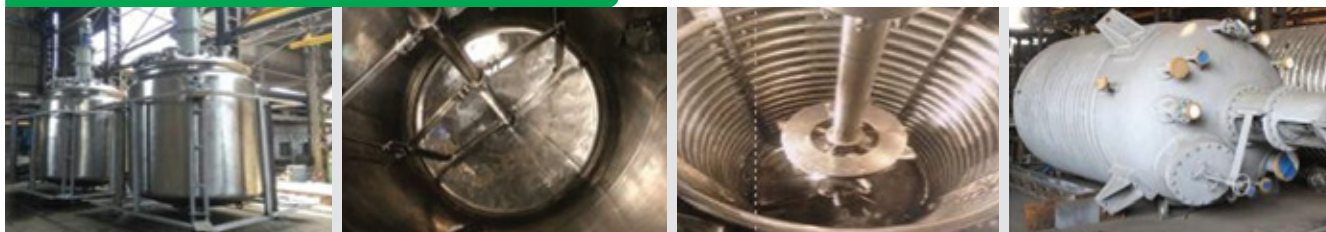
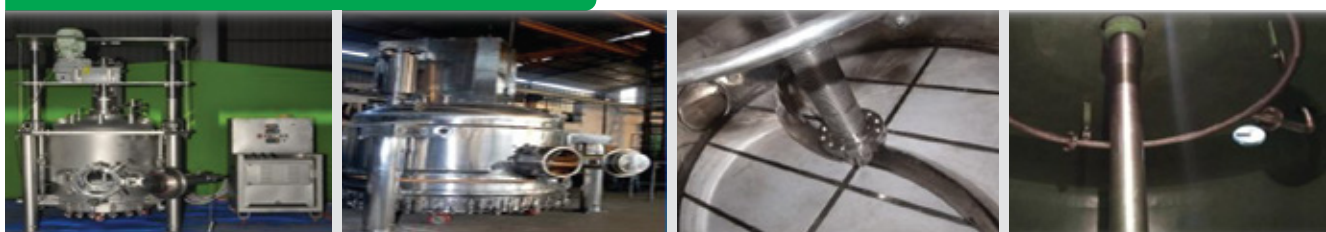
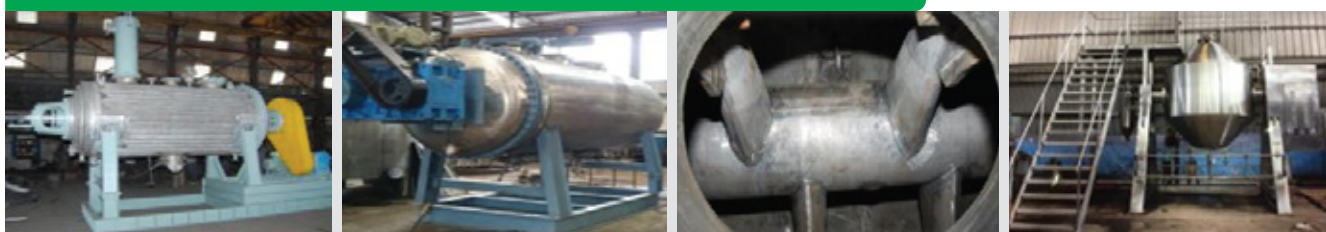
- | | |
|--------------------|-------------------------|
| - SS 316 | - Hastalloy C-276, C-22 |
| - SS 304 | - Incoloy |
| - DUPLEX | - Titanium GR.1 / GR.2 |
| - SA 516 GR.70 | - ETFE Coated |
| - Cladded material | - PTFE Lined |
| with above MOCs | - Rubber LINED |

MAJOR CLIENTS

- | | |
|--------------------------------|-------------------------------|
| - Colourtex Industries Pvt Ltd | - Aether Industries Ltd |
| - Camlin Fine Science Ltd | - Gujarat Flourochemicals Ltd |
| - Ctx Life Science Pvt Ltd | - Navin Flourine Limited |
| - Aarti Industries Ltd | - Accent Microscell Pvt Ltd |
| - Ami Life Science Pvt Ltd | |

QUALITY CERTIFICATES



PRODUCT RANGE**REACTORS, HYDROGENATORS & AUTOCLAVES****HEAT EXCHANGERS & COLUMNS****ANF & ANFD (Agitated Nutsche Filter & Dryer)****RVPD & RCVD (Rotary Vacuum Paddle Dryer & Rotary Cone Vacuum Dryer)****RECEIVERS & STORAGE TANKS**

MISCELLANEOUS EQUIPMENT: *Pan Dryer, Tray Dryer, Sludge Dryer, Gassifier, etc.*

FOR BUSINESS ENQUIRIES:

Call: +91 9925341929 / +91 9825141929

Email: marketing@systemengitech.com / sales@systemengitech.com



www.systemengitech.com



MANUFACTURER OF PROCESS PLANT EQUIPMENT

- Reactors, Autoclaves & Hydrogenators
- ANF, ANFD, RVPD, RCVD
- Sludge Dryer, Tray Dryer
- Columns & Heat Exchangers
- Storage Tanks & Receivers
- Tailor made equipment

FOR INQUIRIES



sales@systemengintech.com
marketing@systemengintech.com



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+91- 9825141929



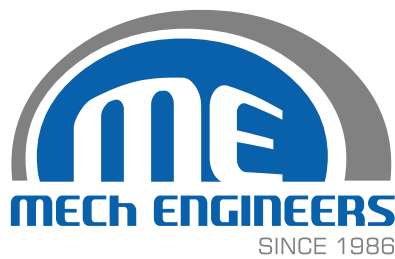
[www@systemengintech.com](http://www.systemengintech.com)



**System
Engitech Pvt. Ltd.**

ASME Certified | AN ISO 9001 : 2015 Certified

Registered Office: 4311/C, Near Sagar Hotel, Road No. 04, Sachin GIDC- 394230, Surat, Gujarat, India



MECh Engineers

(VALSAD (GUJARAT) - INDIA)

“The Engineers of Industrial Growth”

Company Overview



The firm specialises in the design, manufacture, and supply of “Heavy Industrial & Process Plant Equipment” from various corrosion resistance materials like Stainless Steel, Duplex SS, Alloy Steel, Carbon Steel, LTCS, NACE, Cladded Steel, Titanium, Exotic & Nickel Alloys.



In-house Job Manufacturing Single piece capabilities are of

Max Length: 45 m | Max Diameter: 7.7 m | Max Weight: 260 MT |
Max. Test pressure handled: 196 Bar(g) | Volumetric: 910 m³ |
Production Capacity: 7500 MT/Anum (expandable as per demand)

Range of Products

Static Process
Equipment

- Pressure Vessels
- Heat Exchangers
- Distillation Columns/ Towers/ Absorbers
- High Pressure Autoclaves, Reactors
- Storage Tanks, Mounted Bullet Etc.

Custom Build
Process
Machinery

- Agitators for Stirred Reaction Vessels/ Tanks
- Rotary Spherical Ball Digester
- Ribbon Blender/ Rotary Vacuum Dryer

Skid Mounted
Packages &
Modular
Assemblies

- VOC Recovery Systems
- Solvent Recovery Systems
- Mixing Equipment Systems

System & Certifications



Contact Us



Factory
& HO:

Plot No. 803/1,2,3 & 1003, New GIDC, Gundlav,
N.H. No-48, Valsad, Gujarat, 396035, India.

Cellphone:

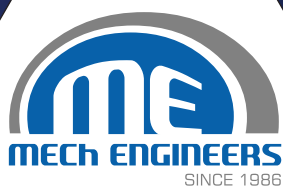
+91 - 9727797495 (WhatsApp)

E-mail:

Marketing: marketing@mechengineers.net
General: info@mechengineers.net

Website:

www.mechengineers.com



DELIVERING CUSTOM MADE EQUIPMENT WITH QUALITY

Specialising in the design, manufacture, and supply of Process Plant Equipment, Custom Built Machineries, Technological and Shop Fabricated Structural Components.

MECh Engineers was founded in 1986 with the office as well as manufacturing facilities located in the thriving state of Gujarat (India). Since our inception, we maintained a core focus on safety, reliability, innovation and complete customer satisfaction. Our team of expert engineers have the requisite entrepreneurial skills coupled with thorough understanding of global engineering quality standards that enable us to deliver quality products to our clients.

Custom Fabrication is our specialty; Design, Manufacturing & supply of Heavy Industrial & Process Plant Equipment, catering heavy industrial equipment for process industries like Petrochemical, Chemical, Fertilizers, Refineries and Oil & Gas, manufactured as per most Indian & international codes from various material of construction like Stainless Steel, Alloy Steel, Carbon Steel, LTCS, NACE, Cladded Steel, Exotic & Nickel Alloys is our core strength. Quality Inspection and Testing is carried out as per project specific Inspection & Test Plans. Selection of an NDE method and the extent of testing as per requirements of our client / Code.

Furthermore, the company has deep expertise in manufacturing various heat transfer internals like spiral coils and limpet coils which are used for heating and cooling in the chemical reaction applications.

MECh Engineers have developed all inhouse facilities and competencies to manufacture the equipment. They have always been striving to innovate and explore new and better ways to manufacture shell and tube heat exchangers, to meet every demand of their clients.

"We are shell and tube heat exchanger manufacturers for a wide range of industries including chemicals, fertilizers,



petrochemicals and power generation, among others. Our major clientele is in chemicals and the existing clientele have plans for major expansions which will fuel up demand of new heat exchangers for us," explains Girishkumar Bhootaka, CEO at MECh Engineers.

Furthermore, MECh Engineers have always made positive investments in infrastructure and technical development, so as to perfectly meet expectations to the fullest and help clients overcome various techno-commercial challenges. The company is also a member of HTRI (Heat Transfer Research, Inc.) Consortium.

MISSION

Enhancing value for all stakeholders by delivering premium products through operating efficient manufacturing systems with sustainable business practices.

VISION

Being a premier global manufacturing organisation for making world-class special purpose products, thereby establish MECh Engineers as "Preferred One Stop Solution Supplier" with major worldwide engineering consultants, EPC contractors and end customers of Heavy Industrial & Process Plant Equipment.

PRODUCT RANGE

Design, Manufacture, Supply & Install of "Heavy Industrial & Process Plant Equipment" such as:

Static Process Equipment	Custom Build Process Machinery	Skid Mounted Packages & Modular Assemblies
Pressure Vessels ————— Heat Exchangers ————— Distillation Columns / Towers ————— High Pressure Autoclaves ————— Reactors ————— Storage Tanks, Mounted Bullet Etc.	Agitators for Stirred Reaction Vessels / Tanks ————— Rotary Spherical Ball Digester ————— Ribbon Blender / Rotary Vacuum Dryer	VOC Recovery Systems ————— Solvent Recovery Systems ————— Mixing Equipment Systems

MECh Engineers produces vessels either in several pieces or in one piece according to customers drawings and specifications, vessels having a height of 45 m and a diameter of up to 7.7 m & 126MT in weight can be produced in one piece.

STATE-OF-THE-ART MANUFACTURING FACILITY

The present manufacturing facility is suitable to manufacture different kinds of equipment across various sizes from 1MT to 260MT in single

piece and up to 7700mm diameter and three inches shell thickness. Moreover, MECh Engineers have the needed expertise in working a wide range of metallurgies including stainless steel, nickel & alloys, titanium, carbon steel (HIC), LTCS, duplexes, clad plates etc.

"Our shop is IMS certified (ISO 9k, 14k & 45k) and has authorization from ASME for "U" & "U2" and national board "R" Stamp. We have obtained approvals from regulatory authorities such as Indian Boiler Regulations, Petroleum & Explosive Safety Organizations (CCOE) for pressure vessels and heat exchangers under code compliance. Further, for our company comply to SA8000 standard, our management systems have been evaluated as being among the top performers in our business category; it is also a tool that enables us to obtain and maintain competitiveness and pursue innovation in our field," highlights Girishkumar.



**SERVED 80+ PROMINENT CLIENTS
INCLUDING THOSE ENGAGED IN
HIGH-PRESSURE OPERATIONS**

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www.mechengineers.com



Dipesh Engineering Works

■ A member of J. B. Patel Group of Companies ■

HIGH-PERFORMANCE PROCESS ENGINEERING SOLUTIONS

We deliver process engineering solutions and coded equipment to unlock the performance of your plant

Dipesh Engineering Works (DEW) has proven expertise over four decades in designing, manufacturing and supplying coded process equipments, skid, systems & plants to global companies. We have ASME U, U2, R, NB and ISO 9001 certified shops and cater to the European market as well with CE Marking meeting PED requirement.

VARIETY OF INDUSTRIES SERVED

Pharmaceuticals, Biotech, Chemicals, Petrochemicals, Aerospace, Steel, Defence, Nuclear, Water & Wastewater Treatment, Power, Dyes & Paint and other industries.

VERSATILE AND DIVERSE PRODUCT PORTFOLIO

Thousands of our equipment have stood the test of time in harshest of operating conditions globally. Some of them include:

- ▶ Shell & Tube Heat Exchangers.
- ▶ Hydrogenators
- ▶ Tall Vertical Columns/Absorbers/Scrubbers
- ▶ Reactors with Heat Transfer, Agitation.
- ▶ Agitators/Mixers for Vessels.
- ▶ Pressure Vessels, Tanks, Receivers
- ▶ Alloy Fabrications (Bare, Cladded & Lined)
- ▶ Rotocone Dryers/Rotary Vacuum Paddle Dryer
- ▶ Pressure Piping & Cooling Water Piping.
- ▶ Skids & System and Plants
- ▶ Industrial and Aerospace Grade Autoclaves with Quick Opening Doors

MATERIAL HANDLING EXPERTISE

We have experience in handling various materials of construction including Stainless, Low Alloy, Duplex/Super Duplex, Carbon Steels, Super alloys such as Inconel, Hastelloy, Monel, Nickel, Copper, Cupro Nickel, 904L, Alloy 20, Aluminum Bronze, Aluminum and Titanium in our segregated shops. Also offered with protective linings, bondings and coatings including, Rubber/Lead/Glass Flaked, Epoxy, Phenolic, Fiber reinforced linings, FEP, ECTFE, PFA, Halar etc.

We offer jobs under third-party acceptance including Lloyds, TUV, Jacobs H&G, BVIS, Mott McDonald, Technip KTI, AKER, SAIPEM, and TCS and so on.



**WE BUILD LONG TERM
BUSINESS RELATIONSHIPS
WITH OUR CUSTOMERS
THAT ARE BASED ON
MUTUAL GOALS,
ETHICAL BUSINES.**

All Types of
Heat
ExchangersGmp
Reactors For
Pharmaceutical
Needs

Catalytic Tabular Reactor

High Pressure Hydrogenation
Autoclave

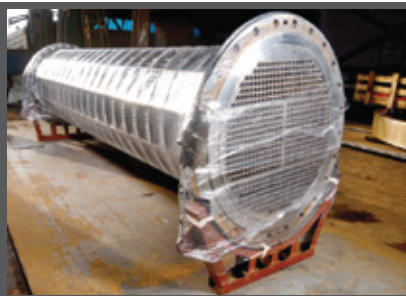
Aerospace Grade Autoclaves



All Kinds of Coded Vessels

Multiple Effect
Evaporator/Condenser

Distillation Columns

Heat Exchanger Retubing
and BundlingSkids incl. Instruments,
Piping & Structure.Complete
Turn-Key
Plants &
Solutions

HTRI

Ansys

SOLID EDGE

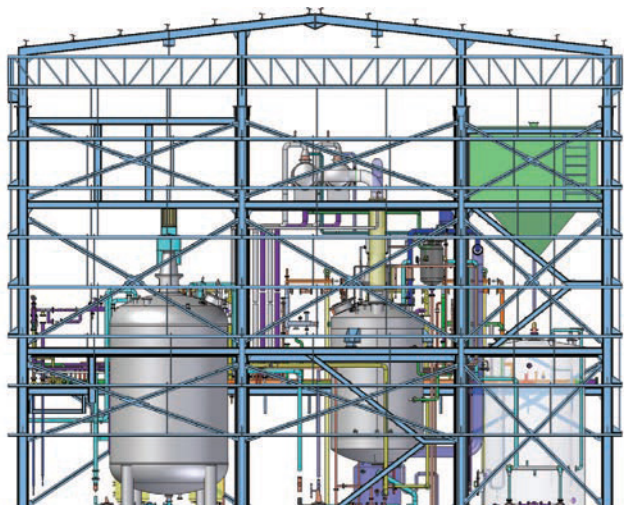
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Vessel Analysis**FOR BUSINESS ENQUIRIES:**

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Email: sales@dipeshengg.net



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From concept to commissioning

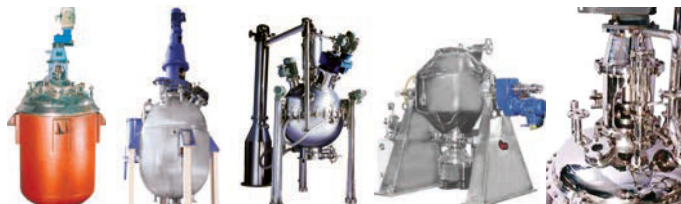
Coded Process Equipment, Plants, Skids and Systems

THE DIFFERENCE BETWEEN A VENDOR AND A TRUE PARTNER IS ONE WORD: RELIANCE

Having worked with a variety of process industries over last 30 years in India and abroad, we have realised one thing: There is no such thing as a challenging assignment. For a worldclass design engineering, manufacturing and supplying company like ours, it is just another day at work. No wonder our clients have not only given us repeat orders but have also trusted us to build them complete plants, skids, piping systems, structurals and other complex packages. And we have never let them down.

Our 100+ expert engineers and more than 400 skilled technicians ensure that we always solve the problem no matter how complex it is. Needless to add, our plants and equipment conform to ASME, TEMA, DIN, BIS, IS, SMPV, EJMA, API, and C-GMP standards and we offer them under third-party acceptance of Lloyds, TUV, Jacobs H&G, BVIS, AKER, SAIPEM and TCS.

Don't take our word for it. Ask us for references and details of our projects in your industry. We will be happy to discuss with you.



Level 3, Sej Plaza, Marve Road, Malad West, Mumbai - 400 064. India.
Tel: +91.22.40 736 736 | Fax: +91.22.40 736 737
Email: sales@dipeshengg.net | www.dipeshengg.com

AN ASME U, U2, R, NB STAMP CERTIFIED COMPANY
ALSO AVAILABLE WITH PED CERTIFICATION



PROVIDING CUSTOMIZED CODED PROCESS EQUIPMENT AND WORLDCLASS TURNKEY PLANTS TO GLOBAL CLIENTS SINCE 1981

INNOVATIVE SOLUTIONS FOR THE PROCESS INDUSTRY



CONTUFILT
Precious Metal
Catalyst Recycle



NANOPOREX
Cavitation Gas-Liquid
Mass Transfer



PORESEP
Process Membrane
Systems MF/UF/NF/RO



**PHT-Ox Pressure Hydro-
Thermal Oxidation -
HIGH COD water
treatment**



CHD-Ox
Catalytic Hydro-Oxidation
treatment -Recalcitrant COD



**BIOGAS Generation
&
CBG Upgradation**



SuperCAV
Intense Aeration
Replace Diffusers



VAPOZEM MVR-
Integrated Evaporation
System



Fabrication
BS/DIN/ASME Standards
with U-Stamp

Engineering Today : Greener Tomorrow

Website : www.divaenvitec.com

email : info@anoutfilter.com

Contact : +91 9167 259 611

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ENGINEERING TODAY GREENER TOMORROW

Maintaining equilibrium between optimum solutions to process industry problems, and their negative environmental impact.

Diva Envitec Pvt Ltd (DEPL) is a process engineering company with a focus on filtration & separation technologies for the industry.

DEPL saves millions of dollars for customers through energy-efficient processes, product recovery from waste streams and process interventions.

The company caters to a wide spectrum of industrial applications in Pharmaceutical, API, Chemical, Agrochemicals, Dyes and Pigments, Sugar & Distillery, Mining, Oil and Gas, and Wastewater Treatment.

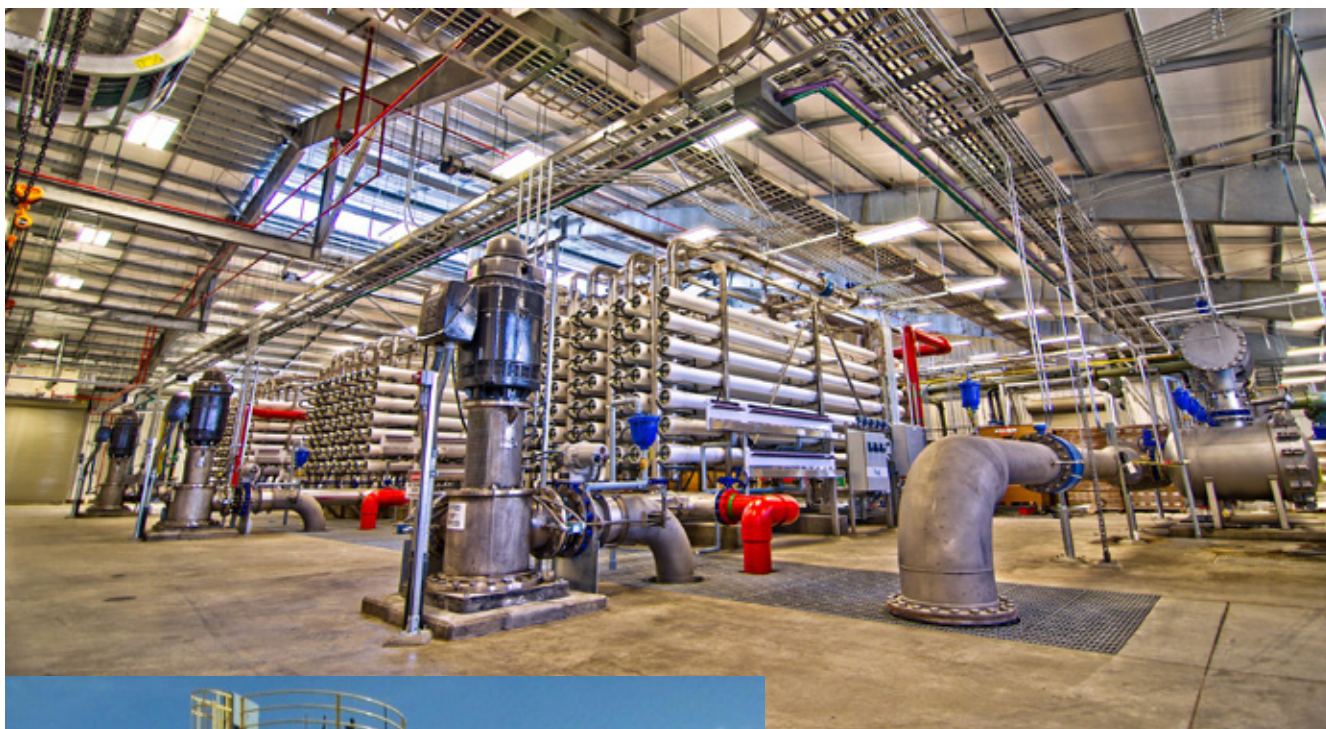
Successful projects delivered across the globe

- ▶ Skid-mounted plants of nano-filtration and RO for wastewater treatment.
- ▶ Process Membrane Filtration Automatic Skids
- ▶ Ultrasonic Reactors
- ▶ Hot gas filtration in Polysilicon plant
- ▶ Brine recovery systems in Sugar refineries
- ▶ Condensate Polishing and recovery in Distilleries
- ▶ Pervaporation systems
- ▶ Aeration systems, Micronisers etc.
- ▶ ETP and ZLD Plants for wastewater treatment

FABRICATION FACILITY

BS/DIN and ASME Standards – U-Stamp Facility
Our products are diversified for various fields of application, these products include

- ▶ **Contufilt-M/AC/R**
Continuous Tubular Filters our design replacing Dr.M and Amafilters (Precious Metal Catalyst Recovery, Activated Carbon Filtration and Raney Nickel Catalyst Filtration)
- ▶ **NanoPorex**
Intensive Liquid-Gas Mixing – Increasing Mass transfer generating nano-bubbles
- ▶ **NanoCAV**
Reaction enhancement with Ultrasonic Cavitation
- ▶ **Poresep Membrane**
Molecular Separation and product recovery
- ▶ **Vapozem**
MVR Integrated Evaporation systems
- ▶ **SuperCAV**
Aeration system replacing Diffusers using Super-cavitation
- ▶ **CHD-Ox**
Catalytic Hydro-Oxidation of Wastewater to treat recalcitrant/toxic COD less than 100,000 mg/l
- ▶ **PHT-Ox**
Pressure Hydro-thermal Oxidation (Tubular - Wet Air Oxidation) of Wastewater to treat high COD more than 100,000 mg/L
- ▶ **Utilities**
Cartridge Filters and Housing



INNOVATION, SCIENCE AND TECHNOLOGY IS OUR PRIORITY

OUR LIST OF CLIENTS INCLUDES:

- Reliance Industries Limited
- Integrated Casetech Consultants Ltd
- Goldstar – Star Africa Group – Zimbabwe
- Mitr Phol – Thailand
- Indian Rare Earth Ltd
- Bhabha Atomic Research Center
- Nuclear Power Corporation
- Heavy Water Board
- Meghmani Group
- Gujarat Alkali and Chemicals Ltd
- Thirumalai Chemicals Ltd
- Indian Bureau of Mines
- Cipla Ltd
- Bayer India
- Dr. Reddy's Laboratory
- Sun Pharmaceuticals Industries Ltd
- Deepak Fertilisers and Petrochemical Corporation
- Lupin Limited



FOR BUSINESS ENQUIRIES:

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Email: info@aboutfilter.com

Mr. Lalit Vashista - *CEO and Founder* (lalit@aboutfilter.com)

Mr. Dilip Jain - *Technical Director* (dilip@aboutfilter.com)



www.divaenvitec.com



LEADERS IN AIR POLLUTION CONTROL SYSTEMS

We are in pursuit of continuous excellence for better value addition for its customers, has entered new grounds by embracing latest technologies and extending its product range.

We are manufacturer of high-quality Scrubber, Classifier, Bag Filter and Cyclone for a wide variety of industrial applications. With tailor made solutions and innovative ideas, we completely adapt to the wishes of our customer & our motto always is Quality, save environment and providing correct solution.

Our installations are spread across the vast industrial sectors both in India as well as overseas. We as a team believe in customer satisfaction by delivering cost effective engineering solutions confirming to clearly defined performance parameters of European Emission Standards.

WE ARE

- ▶ Established in 2012
- ▶ Engaged in Different technology product with out of the box thinking.
- ▶ Know how about various process application.
- ▶ Hands-on experience on air pollution control and powder handling

INTELLECTUAL CAPABILITIES

- ▶ Two patents applied one for Scrubber and another for Classifier.
- ▶ Patented venturi scrubber with anovolute breaker for better performance.
- ▶ Patented classifier to separate different sized particles from powder stream without rotating parts.

10+
YEARS OF EXPERIENCE
IN INDUSTRIAL
APPLICATIONS

100+
INSTALLATION
IN VARIOUS AREAS

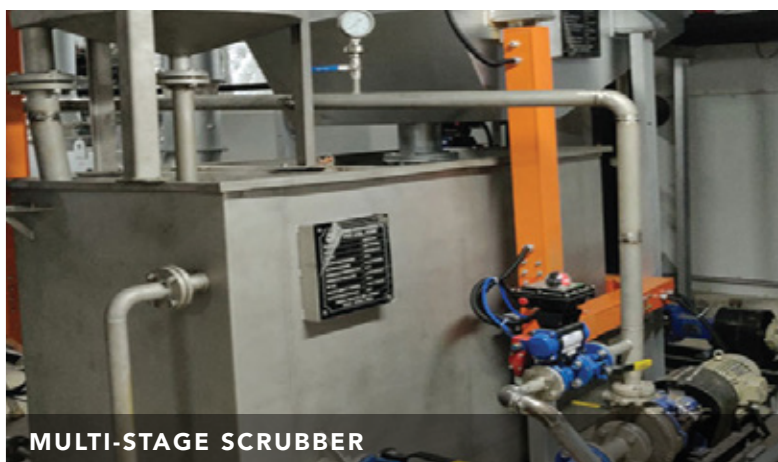
INDUSTRIES SERVED

- Food
- Pharmaceutical
- Paint & Pigment
- Paper & Pulp
- Power
- Solvent Extraction
- Cement
- Pharmaceutical
- Chemicals
- Metals & Mineral
- Steel
- Breweries & Distilleries





VENTURI SCRUBBER



MULTI-STAGE SCRUBBER



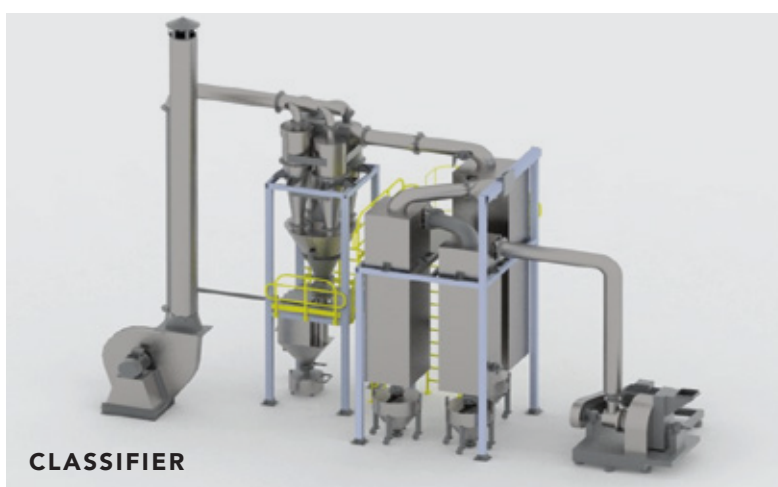
PACKED BED
SCRUBBER



BAG FILTER



CYCLONE



CLASSIFIER



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WITH **COMMITTED DELIVERY**

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LEADERS IN AIR POLLUTION CONTROL SYSTEMS



TECHNOLOGY & BUSINESS INTELLECTUAL

Venturi Scrubber



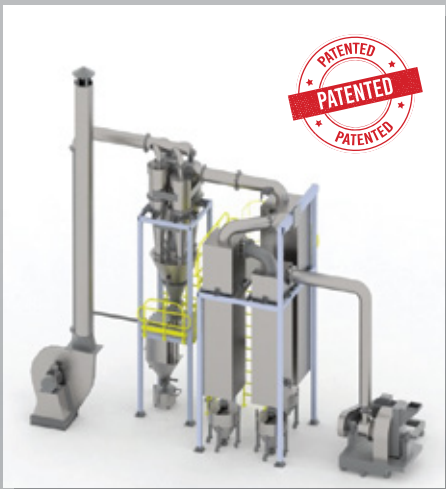
Packed Bed Scrubber



Multi-Stage Scrubber



Classifier



Bag Filter



Cyclone



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We provide turnkey solution with committed delivery

We are manufacturer of high-quality Scrubber, Classifier, Bag Filter and Cyclone for a wide variety of industrial applications. With tailor made solutions and innovative ideas, we completely adapt to the wishes of our customer & our motto always are Quality, save environment and providing optimum solution.

100+
INSTALLATIONS
IN VARIOUS
INDUSTRIES

TNBi Industries Pvt. Ltd.

Office No. 306 & 307, MCC Tower Next to Lokmat Building, Vadgaon Kh., Sinhgad Rd., Pune- 411041, INDIA

Email: sales@tnbiindustries.com Call: +91 92255 61222

Making Our World Safer



TUV India Pvt. Ltd. (TÜV NORD GROUP) is a customer-focused, innovative, and independent, technical, quality & safety services organization; dedicated to providing future-proof solutions through technological excellence for the success of its clients with the highest level of integrity. With a presence at over 40 strategic locations in India, a branch office in Sri Lanka, state-of-the-art laboratories at Bengaluru, Pune and Jamnagar, 100 important countries worldwide and through digital means we are always connected to you, our esteemed customer, anywhere, anytime.

Our Services Portfolio

- Industrial Inspection Services
- Management Systems & IT Systems Certification
- Buildings & Infrastructure
- Project Services
- Renewable Energy
- Food & Packaging Testing
- Food Certification & Inspection
- Product Testing - Electricals, Electronics and Industrial Machinery
- Product Certification
- Petroleum, Chemicals & Gas Cargo Inspection Services
- Petroleum, Chemicals & Gas Testing Services
- Railway Technology
- TUV India Training Academy





NEW SANICRO® 35 BRIDGING THE GAPS TO NEW OPPORTUNITIES

Sanicro® 35 is the latest grade addition to our growing portfolio of nickel alloys and austenitic stainless steels. This super-austenitic grade is unique because it bridges the performance gaps between stainless steels and higher cost nickel alloys. It's precisely this "no compromises" thinking that led a NACE jury to nominate Sanicro® 35 as best new material for 2021. From hydraulic and instrumentation tubing to heat exchangers, Sanicro® 35 minimizes risk and extends production lifecycles in demanding environments.

For further enquiries, please email our APAC Business Development Manager Virkam Pandit, vikram.pandit@sandvik.com