

THE LINDE GROUP

Linde

Linde Engineering India.



Linde Engineering in India.

Linde Engineering India Pvt. Ltd. (LEI) established in 1987 has a T-EPC set up at Vadodara. LEI is a 100% subsidiary of 'The Linde Group' employing more than 1000 people. Linde has over 130 years of technological expertise in delivering engineering, procurement and construction services. With more than 1,000 process engineering patents and 4,000 completed plant projects, Linde ranks among the leading international Technology + EPC contractors.

LEI delivers projects for major market segments such as:

- Petrochemical Plants
- LNG and Natural Gas Processing Plants
- Synthesis Gas Plants
- Hydrogen Plants
- Gas Processing Plants
- Adsorption Plants
- Air Separation Plant
- Polyolefin Plants
- Cryogenic Plants
- Furnaces for Petrochemical Plants and Refineries
- Wet Air Oxidation

Linde has expertise in the following:

Hydrogen & Syngas

Linde has the technology and the experience to design, supply and construct complete plants for the production of hydrogen, carbon monoxide and mixtures of these two gases (synthesis gas) as well as ammonia and methanol from the feedstocks such as natural gas, liquid gas, naphtha, residual oil and coal. Linde is the only company, world-wide, that designs, owns and operates hydrogen and synthesis gas plants using its own technology apart from delivering such plants & other clients. Experience from its own plant operations flows into plant construction. The process steps used for such plants include CO conversion, sour gas removal by RECTISOL® washing and cryogenic H₂/CO separation.

Refinery & Petchmen Integration

Building on Linde's in-depth expertise in refinery processes, we can offer Engineering, Procurement and Construction (EPC) services based on third-party technologies for all project sizes, from small to world-scale facilities. We can integrate refineries and crackers to optimise the performance of every complex. Refineries are the sources for feedstocks like naphtha and gas oil for steam crackers. The integration of both the units offers great potential for operation optimisation and increase refinery margins.

LNG Liquefaction and Regas

Linde's portfolio for Natural Gas has a rich 40 year experience and lends energy-efficient, tailored plant solutions, from world-scale plants to smaller LNG terminals for regional markets as well as world-scale plants. Linde Engineering is the only company in the LNG business capable of offering its customers a broad portfolio of liquefaction technologies, receiving terminals (Regas), cryogenic core equipment as well as distribution infrastructures and services

Linde has developed a flexible and modularised plant concept specifically for the emerging small-to-mid-scale LNG market.

LNG Plant, Hammerfest, Norway



27,000 Nm³/h Hydrogen Plant at the IOCL Refinery in Barauni



Gas Processing Plants

Gas processing plants are to a large extent based on Linde's proprietary process and production technology. They serve to purify and cryogenic separation of gas mixtures. The units are designed as per the individual application and specific requirement of the client. Plant design and scope of supply will typically include several proprietary equipment items produced in Linde workshops like plate-fin heat exchangers, coil-wound heat exchangers or the isothermal reactor which ensures high quality reliability of these plants.

Wet Air Oxidation Plants

The Wet Air Oxidation process is economical, low pressure and has the ease of operation for oxidizing the spent caustic sulfidic streams before it is finally disposed to the main plant overall waste water treatment unit.

Linde Engineering India has designed a time reactor for the oxidation of such sulfidic components. Depending on the sulfidic components content in the feed spent caustic, it may be necessary to introduce additional heat using steam injection for maintaining the reaction temperature in the reactor. For the spent caustic, we offer a Neutralization Process, which guarantees pH of oxidized spent caustic in the range of 7.0 - 9.0.



Sulphur Recovery Unit for HPCL Mahul, Mumbai

Ethylene Crackers, Polypropylene & Polyethylene Plants

Linde can offer ethylene plants for all feed stocks, such as ethane, propane, butane, LPG, light naphtha, full range naphtha, raffinatges, AGO, gas condensates and HVGO.

Linde Engineering offers the complete execution for polyethylene projects, from FEED to complete EPC execution. We cover every step of the production process, including raw material purification, catalyst preparation, polymerisation, additive handling, pelleting, vent recovery, pellet blending and storage, bagging, palletising and bulk loading. Polyethylene plants are integrated into petrochemical complexes together with steam crackers and other downstream units. At Linde Engineering, we optimise this integration and recover monomers from the vent and off-gas streams of polyethylene plants in crackers. We have built polyethylene plants based on Univation and Phillips technology and are an approved and preferred contractor for Univation. We can offer the full range of design and construction services, from Front End Engineering Design packages (FEED) to full EPC project execution, including raw material purification, catalyst preparation, polymerisation, additive handling, vent recovery, pellet blending, pelleting and storage, bagging, palletising and bulk loading.

Pressure Swing Adsorption Plants

Linde Engineering has strengthened its position as world leader in this field of technology by continuous and innovative improvements of the Pressure Swing Adsorption (PSA) process. Over 500 PSA plants including the world's largest units have been designed and supplied by Linde. The well proven Linde High Performance PSA systems provide an economic and reliable separation and purification technology for a wide range of process gases. Capacities range from small plant sizes of a few hundred Nm³/h to large scale plants of over 400,000 Nm³/h feed gas flow. These PSA systems are suitable for a vast number of different applications in the refining, petrochemical, iron/steel-making, and mining industry. Our oxygen generator PSA and VPSA plants deliver a host of benefits including:

- Oxygen on demand
- High availability
- Fully automated operation
- Easy partial load operation
- Energy efficiency

DRI Heaters

Linde Engineering supplies DRI heaters for all kinds of direct reduction iron (DRI) technologies including ENERGIRON (HYL, DANIELI), COREX-MIDREX and CIRCORED and also designs and delivers special cracker furnaces for VCM (EDC), Ketene and TICL production. Our tailor-made DRI heaters can be used to heat reducing gas (mainly carbon monoxide and hydrogen gas with high carbon activity) in all kinds of DRI technology.

At our major execution centres in Germany, China, India and the US, more than 3,000 highly qualified and skilled engineers, including key industry experts, rely on cutting-edge engineering processes, standards and software tools. These resources form the backbone of our highly efficient and effective engineering services.

Engineering excellence – every step of the way.

Linde's Engineering, a leading player in the international plant engineering business, covers every step in the design, project management and construction of turnkey industrial plants. Drawing on our extensive, proven process know-how, we set the standards for innovation, flexibility and reliability with ground-breaking concepts and a dedication to engineering excellence.

The economic success of our customers and partners around the globe is of primary importance. With a clear focus on efficiency, sustainability and growth, we cooperate with you to develop customised solutions for projects of all sizes and degrees of complexity. The aim is always on finding a solution that is optimal both technically and economically. Linde's Engineering Division has already delivered more than 4,000 plants worldwide.

Core competencies in plant engineering:

- Air separation plants
- LNG and natural gas processing plants
- Petrochemical plants
- Hydrogen and synthesis gas plants
- Chemical plants
- Adsorption plants
- Cryogenic plants
- Biotechnology plants
- Carbon capture and utilisation plants
- Furnaces, fired heaters, incinerators

Core competencies in plant manufacturing:

- Packaged units and coldboxes
- Coil-wound heat exchangers
- Plate-fin heat exchangers
- Cryogenic columns
- Cryogenic tanks
- Air-heated vaporisers
- Water bath vaporisers
- Spiral-welded aluminium pipes

Linde Engineering India Pvt. Ltd

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