

Making our world more productive



Linde Engineering Dresden

Discover how we can contribute to your success at linde-engineering.com

Get in touch with our Linde Engineering Dresden team:

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Cutting-edge plant services

Linde Engineering Dresden – your partner in the production and processing of gases



One-stop service

Backed by the global reach and technology excellence of Linde Engineering, Linde Engineering Dresden offers a one-stop service covering every step of the project lifecycle – from concept through commissioning to after-sales service.

A partner to trust

Linde Engineering Dresden is a world-leading partner for the design, construction and delivery of CO₂ and polyolefin plants. Customers worldwide benefit from our 60-plus years of expertise in engineering, procurement and construction (EPC) services for various petrochemical, pharmaceutical and special plants under our Smart-EPC concept. We support our customers over the entire development and lifecycle of their plant – right from the commercialization of new processes down to the revamp of existing facilities. Customers choose to partner with us for many different reasons. The first is undoubtedly integrity. Our customers know they can always rely on us as a trustworthy and responsive partner to deliver what we promised. In a nutshell, we persevere until the outcome matches our customers' expectations.

Customers also appreciate our ability to objectively assess the total cost of ownership and work closely with them to maximize competitiveness, deploying innovative technologies and state-of-the-art tools and workflows to boost efficiency. We encourage our team to move out of their comfort zone and look at process challenges from a fresh angle so they can continually surprise our customers with innovative answers.

Backed by the global reach and technology excellence of Linde Engineering, we offer our customers a one-stop service covering every step of the project lifecycle – from concept through commissioning to after-sales service. In addition, we complement our own know-how through strategic alliances with selected technology partners to make doing business with Linde Engineering Dresden as easy and uncomplicated as possible for our customers.

Jürgen Velte

Managing Director Linde Engineering Dresden



Linde Engineering Dresden

Benefit from our core competencies

- Liquid CO₂ plants and carbon capture and storage units
- Polyolefin plants
- Smart-EPC
 - Special plants
 - Pilot and demonstration plants including scale-up to commercial capacities
 - Complex plant revamps



Post-combustion capture plant, Wilsonville, USA

Liquid CO₂ plants and carbon capture and storage units

Our expertise in this area ranges from carbon dioxide purification, liquefaction and transport through carbon capture and storage to enhanced oil recovery. We help customers, for instance, to turn unwanted offgas streams emitted by industrial processes into a useful product for carbonating drinks, freezing and preserving food, or promoting greenhouse growth. In addition to cost-effective, modularized solutions for smaller and mid-sized projects, we also customize individual plants to specific project challenges.

New global standard for LCO₂ plants

In Manchester, England, for example, we teamed up with Linde Gas to plan and construct a turnkey CO₂ purification and liquefaction plant for BOC. The gas will be captured from an offgas stream released by a US food company. The stream results from the production of large volumes of alcohol for use in food, beverages,

pharmaceuticals and cosmetics. This involves fermenting renewable resources, a process which generates carbon dioxide as a by-product. Now, instead of being vented to the atmosphere, the gas will be purified into food-grade CO₂. Synergized engineering and gases know-how, coupled with a modular engineering concept and streamlined execution model, have greatly accelerated construction timelines for this project.

Other noteworthy references include the world's largest carbon dioxide purification and liquefaction plant for Jubail United Petrochemical Company (UNITED), a manufacturing affiliate of SABIC (Saudi Basic Industries Corporation) in Jubail, a post-combustion carbon capture flue gas wash unit in Wilsonville, USA, and a carbon capture plant in Répcelak, Hungary.



LCO₂ plant in Manchester, England

Collaborating to mitigate climate change



Capturing and recycling carbon dioxide emissions can play an important role in helping to mitigate climate change. Linde and BASF have joined forces to develop and advance post-combustion capture (PCC) technologies. This alliance bundles Linde's strengths and proven track record in the design and delivery of turnkey industrial plants with BASF's leading role in high-performance gas treatment technologies for carbon capture.

Pilot PCC plants based at RWE, Niederaussem (Germany), and NCCC, Wilsonville (USA), combining Linde's engineering skills and BASF's OASE® blue solvent technology have demonstrated that this technology is now ready for industrial scale.

It is ideally suited to a range of industries including coal-fired power plants, gas turbine applications and waste incineration.

"Close ties between Linde Engineering and Linde Gas mean we can combine global reach and operational experience with cutting-edge technology."

Sebastian Holz,
Vice President Sales & Technology

Polyolefin plants

At Linde Engineering, we have the technological expertise and engineering, procurement and construction (EPC) excellence to meet the challenges involved in building complex polyolefin plants – whatever the scale.

Linde is a world-leading provider of the technologies required to steam-crack gaseous and liquid hydrocarbons into basic chemical building blocks like ethylene and propylene. The downstream polyolefin units then combine these blocks to create important raw materials such as polyethylene (PE) and polypropylene (PP), which are used to manufacture all kinds of everyday plastic products.

Linde Engineering is an approved bidding contractor for both the UNIPOL™ PE Technology licensed by Univation Technologies and the UNIPOL™ PP Technology licensed by Grace.

From the desert to the Arctic, we have built some of the world's most complex ethylene production facilities in the most hostile climates and remote locations imaginable.

In the Western Siberian town of Tobolsk, for example, we constructed a polypropylene plant for Tobolsk-Polymer LLC, one of the top three PP producers in the world. The 2 x 250 kilotons/annum (kt/a) plant went on stream in 2013, with Linde delivering the full EPC scope. Moving south to the other temperature extreme in the desert, we completed a turnkey EPC polyolefin plant in Al Jubail with a capacity of 2 x 400 kt/a for Eastern Petrochemical Co. in 2009. Other reference projects currently under construction include a world-scale PP plant in La Porte, Texas, and two PE lines in Monaca, Pennsylvania, in the United States of America.

“The alliance means that we can build our vast and long-standing engineering and process expertise into a project at a very early stage. By generating design documents via coordinated systems, the customer can put a more accurate estimate on their plant costs at earlier stages.”

Semra Gercek,
Technology Delivery Director, Univation

Connecting leading technologies. Delivering proven solutions.



Looking beyond Linde's steam cracker technology, we are committed to optimizing the entire value chain for our customers by maximizing performance and cost efficiencies.

To further advance polyethylene and cracker integration, we teamed up with Univation Technologies, the global leader in licensed polyethylene technology.

Under this alliance, we combine our steam cracking technology, engineering, procurement and construction (T-EPC) capabilities with the downstream UNIPOL™ PE Process.

This alliance gives our customers the benefits of streamlined technology, capital and operational expenditure savings and improved quality in early-stage design of ethylene cracker and polyethylene projects.



The UNIPOL® polypropylene plant in Bratislava is one of the most renowned of its kind

“It is our technological edge and superior process know-how that allow us to tackle first-of-a-kind challenges – and to consistently deliver the results our clients need.”

Dennis Schulz,
Chief Financial Officer (CFO)

Smart-EPC

In the chemical industry, some projects are more challenging than others – at times calling for know-how and experience that reaches beyond ‘just’ engineering. Special equipment and unusual substance mixtures may challenge plant engineers to venture into uncharted design or materials terrain. Often the answer lies in a first-of-its-kind build that has not yet been commercialized. Other typically challenging business cases require planning-intensive revamp services – so that an existing plant can be modernized without interrupting operational continuity of the chemical complex.

Successful execution of these projects hinges on in-depth process know-how coupled with proven EPC capabilities and a solid track record in the delivery of non-standard plants and projects. At Linde Engineering Dresden, we call this Smart-EPC.

Engineering expertise

Under our Smart-EPC offering, we bundle our engineering expertise, long-standing experience and process know-how with various in-house and licensed technologies to take the risk and complexity out of special plants. Our engineers have the ability to design a wide range of purpose-built industrial units that are customized to individual process needs.

As part of Linde Engineering, we combine the agility and lean mindset of a mid-sized company with the reach and financial backing of a global organization. In particular, we benefit from access to fully equipped research and development (R&D) centers, including extensive lab and pilot plant facilities. This, combined with our technology-focused heritage and full EPC competence, enables us to scale up new processes from the lab through pilot plants to full commercial-grade units.

References in this area include a titanium tetrachloride production facility (TPF) in

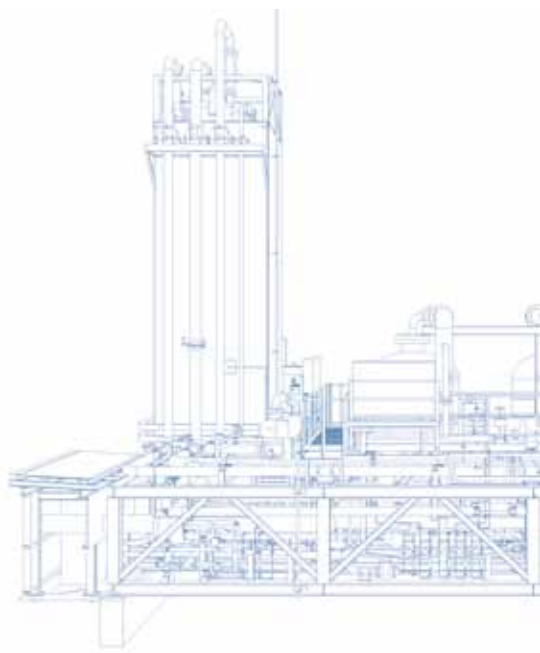
Riyadh, Saudi Arabia; a CO₂ injection plant in Maxdorf, Germany; and a plant to recover hydrogen from purge gas from an ammonia synthesis plant in Moron, Venezuela.

Accelerated implementation of new technologies

To advance commercialization of new and promising technologies, we also design pilot plants at the sites of our industrial partners, Linde Gas included. These are often integrated into commercial process plants, enabling us to test new technologies under realistic conditions and bring the latest engineering innovations to our customers as quickly as possible. Recent examples include a CO₂ pilot plant featuring oxyfuel technology to reduce emissions at Schwarze Pumpe, Germany, which we realized in collaboration with Vattenfall Europe Technology Research GmbH.



Oxyfuel combustion, pilot plant at Schwarze Pumpe, Germany



Detailed view of the purge gas recovery unit for an ammonia synthesis plant in Moron, Venezuela

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Successful project execution



Engineering expertise and know-how

Complex plant revamps

Customers all over the world are looking to modernize operations and rely on us to handle complex, time-critical revamp projects across the full spectrum of chemical plants. Beyond modernization, the need to revamp can also be triggered by a need to debottleneck or a desire to upgrade some products. Regardless of the motivation, our customers can rely on us to find the best solution for their needs.

Starting out with joint workshops, we collect all relevant information and evaluate different options. After scoping the project, we work in close collaboration with our customers to ensure optimum outcomes on tight timelines. We integrate revamp technologies into existing plant designs, rerate equipment and existing installations, modernize process control and safety systems and ensure compliance with all applicable regulations.

Besides our own established CO₂ and polyolefin plants, we have expanded and improved several other chemical and petrochemical plants. Notable revamp references include a monoethylene glycol (MEG) project in Al Jubail,

Saudi Arabia; a catalyst change at the UNIPOL™ PE plant in Gelsenkirchen, Germany; and a debottlenecking and modernization project at a butadiene extraction plant in Wesseling, Germany.

Although rare, emergencies similarly call for proven revamp experience. Here also, we have confirmed our revamp excellence by quickly rebuilding critical process areas, minimizing downtime and mitigating losses. Unipetrol, the Czech Republic's largest crude oil processor, recently turned to us for assistance after an incident at their steam cracker in Litvinov. We quickly developed a rebuilding concept and were awarded the EPC contract. In close cooperation with Unipetrol, we were able to repair the unit and get the customer back in business ahead of schedule.

“We don’t believe in half-measures – we keep working, day and night, till the system is up and running like it should.”

Dirk Richter,
Vice President Project Execution

Service matters

Regardless of the size and complexity of your project, you can rely on our project team to combine our engineering expertise with the execution services you need to ensure timely and successful completion of your project. Our complementary services add value at every process step, covering the design, project management and construction of everything from polyolefin and liquid CO₂ plants through pilot and special plants under our Smart-EPC concept.

Services at a glance

- One-stop EPC service
- Seamless integration of alliance technologies
- State-of-the-art tools and workflows to maximize efficiency
- Advice on turning unwanted offgas streams into useful products
- Fully equipped R&D centers with extensive lab and pilot plant facilities
- Custom-designed pilot plants to prepare for commercial scale-up
- Joint feasibility and scoping workshops
- Full compliance with all environmental and safety regulations
- Quick, expert response in the event of an emergency

"Construction of the new Emden terminal has been one of the most important assignments we at Gassco have ever undertaken as an operator. I'm therefore very proud that the construction work has been completed within the agreed schedule and at a lower cost than originally estimated."

Frode Leversund,
CEO of Gassco

"Sharq achieved a safe and smooth start-up with on-spec products within one week."

Mohammad Z.A. Al-Wadaey
President of Eastern Petrochemical Company, Sharq

"We can generally recommend Linde Engineering Dresden as EPC contractor and would consider them again for future projects."

Mikhail Karisalov
Chief Operating Officer, OOO SIBUR

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