

Press release

Smart data and creativity redefine plant engineering – Linde presents digital highlights at ACHEMA in Frankfurt

- **The best of both worlds: Linde combines conventional plant engineering with digital business models more typical of the start-up world**
- **Digital Base Camps inspire and drive the digitalisation process at The Linde Group**
- **Exclusive exhibition experience: Virtual tour through a plant module currently being built in one of the world's largest gas processing plants**

Pullach / Frankfurt am Main, 04 June 2018 – Virtual reality, smart glasses and digital twins of real-life plants are just three of the digital innovations that The Linde Group's Engineering Division will be showcasing at ACHEMA 2018 in Frankfurt, Germany.

"Digitalisation is fundamentally redefining the plant engineering business. By leveraging our data assets creatively and intelligently, we can offer engineering customers revolutionary new ways to increase operational efficiency and plan more proactively," explains Jürgen Nowicki, Spokesperson for the Board of Directors at Linde's Engineering Division.

Production processes are increasingly integrating new methods and services that build on the insights gained by networking components with the latest information and communication technologies. Linde already has years of experience in integrating digital technologies into all lines of business. What is new, however, is something typical of the start-up sector – the accelerator process to fast-track new ideas. Interdisciplinary teams work on digital projects for three months and then quickly transition them to the business portfolio if they prove successful. The team simply drops anything that does not work within this timeframe.

To bundle digitalisation efforts and anchor them throughout the company, Linde set up Digital Base

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Camps at its sites in Pullach, near Munich, and in Singapore. The camps are home to digital experts who have already gained multiple years of experience working in Linde's traditional lines of business – complemented by data specialists and software developers. The teams are rounded out with digital experts from technology start-ups and partner universities.

“Ideas for new digital projects often come from employees working in our day-to-day business,” says Julien Brunel, Head of Digitalisation at the Linde Engineering Division. “Close collaboration between the digitalisation team and our business team is a key success factor.”

One of Linde's highlights at ACHEMA is the product of this accelerator process. The Group is giving visitors the chance to “test-drive” virtual reality training for a gas processing plant that Linde Engineering is currently building in the Amur region of eastern Russia. Using a digital model, operators can familiarise themselves with the inner workings of a plant before the plant has even been completed in real life. This makes it much easier to bring the plant on stream later down the line and ensures that operating staff is well equipped to deal with critical situations. The simulator is created using digital design drawings.

Visitors to the exhibition can also try out LindeGO, a system that uses smart glasses to provide plant operators in remote regions with instant access to technical support from Linde. Linde experts use live streaming to connect with local operators wearing LindeGO glasses and can then provide remote support without having to actually travel to the site.

In addition, Linde Engineering will be presenting the LINDE PLANTSERV™ portal at ACHEMA. This e-marketplace connects real-life plants with their online digital twins, making it much easier for operators to organise repairs and order spare parts at competitive prices. All they need is a web browser. The portal contains a diagram of every customer's plant, enabling them to find and efficiently order the parts they need from the list of available suppliers. Linde operates the platform and guarantees that the parts shown in the system are the right fit.

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“Many of our projects use digital data that Linde has been collecting across various lines of business for years,” adds Brunel. “For example, we are channelling data from 500,000 sensors located in around 1,000 industrial plants dotted around the globe into continuous optimisation of our predictive maintenance algorithm, which we can then deploy worldwide. This enables us to identify equipment health issues early on and take corrective action.” The aim of the project is to ensure maximum plant availability. In Southeast Asia alone, Linde expects to save several million euros every year through optimised maintenance cycles.

Linde Engineering will be atACHEMA in Frankfurt from 11 to 15 June. The company looks forward to welcoming visitors to stand 9.1 in hall D4, where they can discover Linde Engineering’s latest projects, experience innovative technologies first hand and talk to Linde experts at the exhibition.

About The Linde Group

In the 2017 financial year, The Linde Group generated revenue of EUR 17.113 bn, making it one of the leading gases and engineering companies in the world, with approximately 58,000 employees working in more than 100 countries worldwide. The strategy of The Linde Group is geared towards long-term profitable growth and focuses on the expansion of its international business, with forward-looking products and services. Linde acts responsibly towards its shareholders, business partners, employees, society and the environment in every one of its business areas, regions and locations across the globe. The company is committed to technologies and products that unite the goals of customer value and sustainable development.

For more information, see The Linde Group online at www.linde.com

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