Framing for success with structural steel.

Optimised operations with connected welding from Linde.
Get connected.
To run your business more efficiently.

Demand for structural steel is set to expand by as much as 64 percent by 2025. This is being fuelled by a general increase in construction activity around the world and the compelling structural and environmental advantages of steel as a framing material.
Turning challenges into opportunities

All players in the structural steel value chain – whether service centres, fabricators or on-site construction companies – are looking to capitalise on the promising new opportunities offered by this trend. At the same time, the structural steel business is extremely competitive. In recent decades, productivity and energy efficiency have improved considerably. Operators are keen to exploit the latest technologies to further increase productivity, improve quality and lower costs. This includes exploring the process optimisation potential offered by gas-enabled technologies during key fabrication steps such as cutting, welding, heat treatment, flame straightening, gouging and grinding.

Rising legislative and competitive pressures

New legislation and regulatory changes are also placing growing pressure on structural steel companies to improve the quality and productivity of their welding operations. In 2014, for instance, the EN 1090 standard was introduced to harmonise safety, quality and traceability of welding processes for structural components throughout Europe. This also applies to structural steel importers. Specific requirements include the application of welding procedure specifications (WPSs), the appointment of a dedicated person to oversee operations, the organisation of suitable operator training and the introduction of a welding quality management system (QMS).

EN 1090 also regulates “constituent products”, i.e. any material or product used to manufacture a component which remains part of the finished product. This includes raw materials, welding gases and welding consumables.

Given the scope and complexity of legislation such as EN 1090, a growing number of companies are looking to welding and gas specialists to help them meet the heightened need for traceability and quality control. In particular, many SMEs or sub-contractors would welcome greater guidance and support, especially in accessing qualified WPSs and digitalising time-consuming, paper-based audit trails. In addition, given that working hours is by far the biggest cost block in welding, many companies would appreciate greater insights into welder productivity and ways to reduce costly reworking.

Fuel gas of choice

Acetylene offers a number of compelling time and efficiency benefits for welding, cutting, heat treatment, pre-heating, flame straightening, brazing, gouging and coating:

- Excellent thermal properties – hottest and most localised flame
- Excellent heat transfer – making it around 33% faster at cutting than propane
- Faster pre-heating and piercing than propane
- Lowest oxygen requirements of all fuel gases.
Holistic, connected approach to structural steel fabrication

At Linde, we believe the answer lies in connected welding solutions. We have developed an end-to-end, fully integrated portfolio of fuel, shielding and specialty gases and gas mixtures to support all structural steel fabrication steps. These come in a variety of supply modes and purities to suit your specific process, mobility and volume requirements – scaling from portable packages such as GENIE® and MOBI™ through high-volume cylinders to mini-bulk and bulk deliveries. For your added convenience, we complement our proven expertise in gases with qualified consumables and equipment from leading OEMs so you have one point of contact for all your needs – personal protective equipment (PPE) included.

Building on this gases and equipment portfolio, we also offer innovative application technologies such as our LINDOFLAMM® flame solution to optimise the efficiency of pre- and post-heating. These are enhanced by an extended service portfolio spanning maintenance, certification, supply management, safety audits, training and legislative compliance support. Our welding specialists would be glad to advise you on the applications and services best suited to your needs.

Rounding out this connected welding offering, we have developed a cloud-based welding management system to digitalise your operations. AVANTO™ is an advanced cloud-based solution that removes cost and complexity from your business.

**AVANTO allows you to:**
- Create a digital WPS repository and manage updates to it
- Define and manage project and job workflows
- Manage your welders’ qualifications
- Assign project and job resources such as people, materials and equipment
- Generate work packages for customers
- Run reports and view KPIs via a dashboard.

Pioneering welding management with AVANTO™

AVANTO™ is an advanced cloud-based solution that removes cost and complexity from your business.

**Optimising flame processes with LINDOFLAMM®**

Our complete portfolio of acetylene-based LINDOFLAMM® flame solutions is designed for optimum performance and cost efficiency. It is ideal for all heating, post-heating, flame straightening, flame hardening, flame brazing, fusing and hot forming tasks.

**Highlights include:**
- Customisation by Linde experts
- Ideally for manual and fully automated processes
- Highest productivity with optimum heat transfer to the workpiece thanks to unique properties of acetylene
- Up to 50% faster preheating times compared with burners that run on slow-burning fuel gases.
Tailored to your needs

We understand that process needs vary considerably from one organisation to another. If you’re a fabricator, for instance, you probably cover all steel fabrication processes and may welcome an end-to-end, connected offering from your welding partner. Service centres, on the other hand, may prefer a more modular approach to support specific cutting or flame straightening tasks. And if you are an assembly specialist, you will most likely be looking for dedicated mobile gas supply solutions for typical on-site jobs such as oxyfuel and plasma cutting. To ensure you get exactly what you need – regardless of your size or core competencies – we offer all of our services and products on a modular basis.

A one-stop service gives you the convenience of a single provider for all your product and service needs. You also have the peace of mind that comes from knowing not only has your solution been tailored to your individual needs, but also that it complies with international quality standards. In addition, partnering with a leading global supplier of connected welding solutions gives you the added bonus of consistency and security of supply.

Last but not least, with our welding management solution, you gain instant visibility into your entire welding process flow – from the time your engineer sets up a job to final delivery to your customer. Streamlined data capture and intelligent reporting replace paper-based trails, giving you real-time insights into productivity levels and allowing you to reduce weld failures and the cost per metre welded. This ultimately benefits your bottom line.

ACCURA® – gas management made easy

ACCURA® is an easy-to-use, Web-based management service that allows you to manage your gas cylinders more efficiently by optimising holdings, eliminating waste, enhancing safety and ensuring traceability.

With ACCURA, you can:
→ Simplify and reduce administrative effort
→ Run stock counts and track movement histories
→ Analyse usage and rotation to control costs
→ Find lost cylinders
→ Set alerts for quality and safety
→ Place follow-up orders.

For more information, visit www.linde-gas.com/connected-welding or contact your local Linde representative.
Getting ahead through innovation.

With its innovative concepts, Linde is playing a pioneering role in the global market. As a technology leader, it is our task to constantly raise the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

Linde offers more. We create added value, clearly discernible competitive advantages, and greater profitability. Each concept is tailored specifically to meet our customers’ requirements – offering standardised as well as customised solutions. This applies to all industries and all companies regardless of their size.

If you want to keep pace with tomorrow’s competition, you need a partner by your side for whom top quality, process optimisation, and enhanced productivity are part of daily business. However, we define partnership not merely as being there for you but being with you. After all, joint activities form the core of commercial success.

Linde – ideas become solutions.