

WE LEARN FROM YOU EVERY DAY –
AND THINK OUTSIDE THE BOX.

When it comes to dealing with liquids and gases, Bürkert has become a sought-after partner all over the world. Why? Probably because we have been learning for and from our customers for more than 70 years now. This enables us to always think that crucial step ahead and around the bend.

We make ideas flow.

For your added value. Let us prove it to you – we look forward to your challenge.

Bürkert Fluid Control Systems

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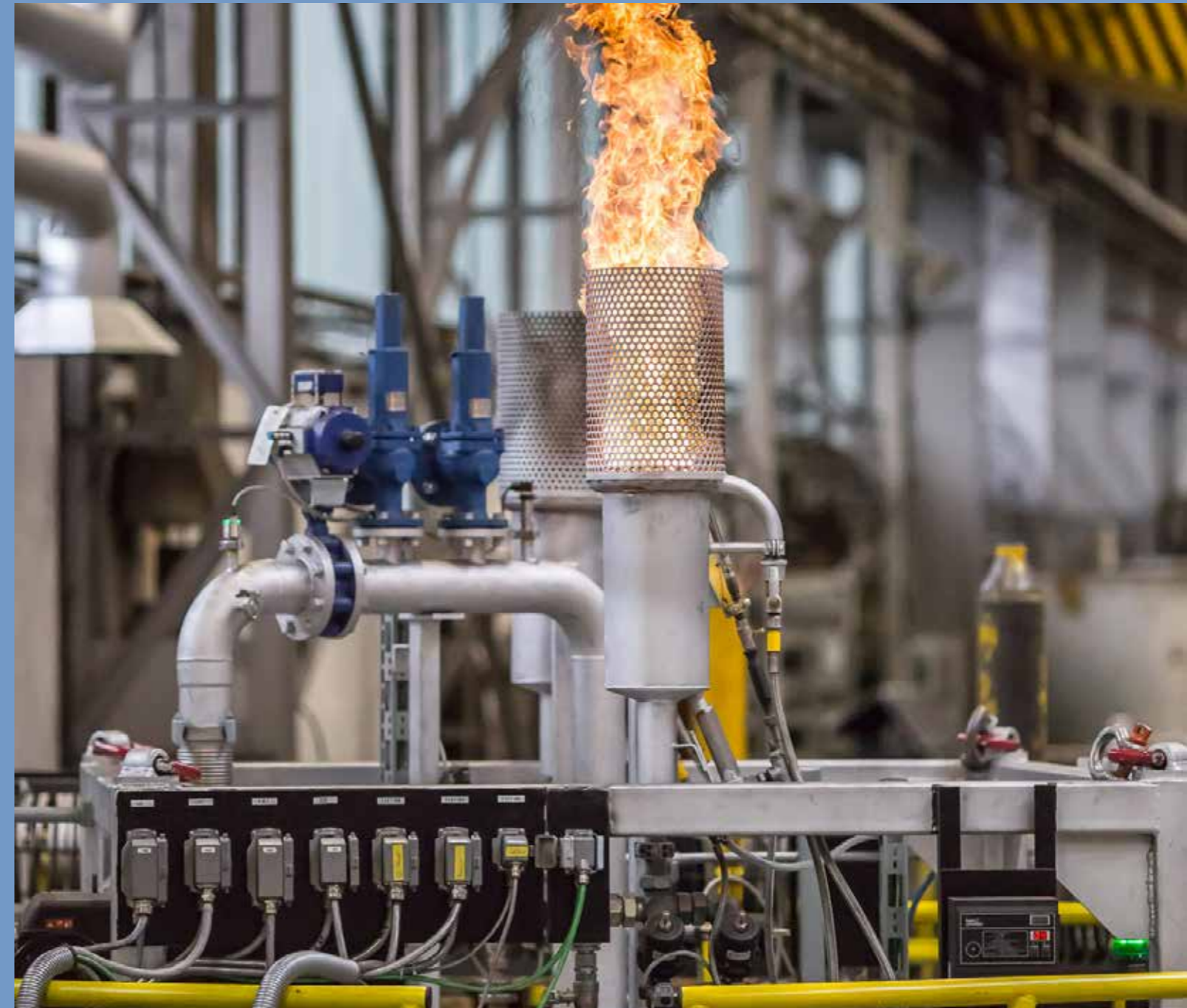
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BEST PRACTICE

Härterei Carl Gommann GmbH

Optimising the furnace atmosphere in heat treatment plants



PROCESS RELIABILITY THANKS TO TEAM WORK COOPERATION WITH GOMMANN, KGO AND STANGE

Increasing quality requirements, reproducibility, documentation and shorter delivery times coupled with a high degree of cost awareness – these are the challenges facing operators of heat treatment plants. Responsive mass flow controllers (MFCs) that are specially designed for precisely dosing large gas quantities offer advantages here. When experts in fluidics, control specialists and furnace designers work hand in hand, the user profits from the resultant plug-and-play complete solutions, which can easily connect to higher-level control equipment to provide exact dosing and logging of gas quantities. Thanks to excellent team work, Härterei Carl Gommann GmbH in Remscheid achieves greater process reliability for the heat treatment of steel.

Reproducibility required

The material steel is renowned for its diverse technical applications. By adding alloy elements, it is possible to produce steels with different characteristics. In combination with different thermal treatments, the mechanical properties of the steel can be optimised to suit the respective machining and usage conditions. Härterei Carl Gommann GmbH specialises in the heat treatment processes of nitriding and nitrocarburizing as well as stress-relief annealing and the hardening and tempering of sheet metal. The company also develops sophisticated nitriding procedures for new materials and special alloys. Gommann purchases most of its heat treatment plants from the casting system and furnace builder KGO GmbH. STANGE Elektronik develops compact controls that are especially tailored to the needs of annealing furnaces. In the furnaces used for surface finishing, the products are hardened and tempered by exposure to heat and specific atmospheres. The gas compositions play a key role in the outcome of the heat treatment process – as do the temperatures. The gas quantities are fed in as specified by the control equipment via mass flow controllers because this is the only way to optimise the reproducibility of the gas composition and, therefore, the process reliability.



Did you know?

The applied mass flow meters are based on the new Bürkert device platform EDIP – Efficient Device Integration Platform. This combines the operation, communication and interfaces of the process devices.

Precise regulation of the gas supply

Furnace builders and control manufacturers place special requirements on mass flow meters: They need to operate very precisely, employ proven technology, be easy to network and robust – all without costing the earth. All these needs are met by Bürkert mass flow meters. The MFCs Types 8742/8746 can be calibrated for up to four gases. They are designed as compact devices incorporating the following components: flow rate sensor, control electronics as well as a proportional valve as an actuator. They guarantee very sensitive and precise control independent of disturbance variables such as pressure fluctuations or temporary flow resistances. The integrated PI controller and direct-acting proportional valve that serves as an actuator guarantee high response sensitivity. The sensor elements that come into direct contact with the media combine rapid response times and immunity to contamination. The new MFCs communicate directly with the STANGE control based on CANopen. This offered the prospect of cost savings and streamlining throughout the plant since there would be no need for an additional fieldbus.

Solution-based team work

However, it is often not just specifications and technical characteristics that determine the success of a project but also the capacity for team work, especially when so many companies are involved. Initial challenges relating to the power supply were also simply resolved thanks to the close cooperation between the project partners: the software specialists from the expert in fluidics were able to provide the still required operating mode “node guard” in next to no time. The high power consumption of the MFCs demands sufficient cable cross sections over long distances. Among other things, the use of a suitable intermediate feed for the power supply provided the solution.

Ultimately, the MFCs delivered a plug-and-play complete solution for controlling the furnace atmosphere – a solution that could also be easily connected to the higher-level control equipment to ensure exact dosing and logging of the gas quantities.

How you benefit from Bürkert solutions for the heat treatment of steel:



Better process reliability: successful team work between the participating companies resulted in a plug-and-play complete solution that guarantees a reproducible gas composition.



High level of flexibility: power supply and software function challenges were solved quickly and efficiently by the Bürkert specialists.



Reliable operation: the selected MFCs ensure fast response times and precise regulation of the gas supply.