

Thermocouples for the glass industry

to EN 60584



RECKMANN

YOUR PARTNER FOR TEMPERATURE



RECKMANN GMBH supplies many different types of thermocouples, mineral insulated thermocouples, resistance thermometers and cable sensors (including IECEx/ATEX versions) for all industries worldwide with temperature-monitored processes.

Since 1970, RECKMANN GMBH has focussed on quality and competence.

With our experience, we manage to find the best solution for you time and again.

RECKMANN GMBH

Your specialist for temperature measurement technology based in Hagen (Westphalia, Germany)

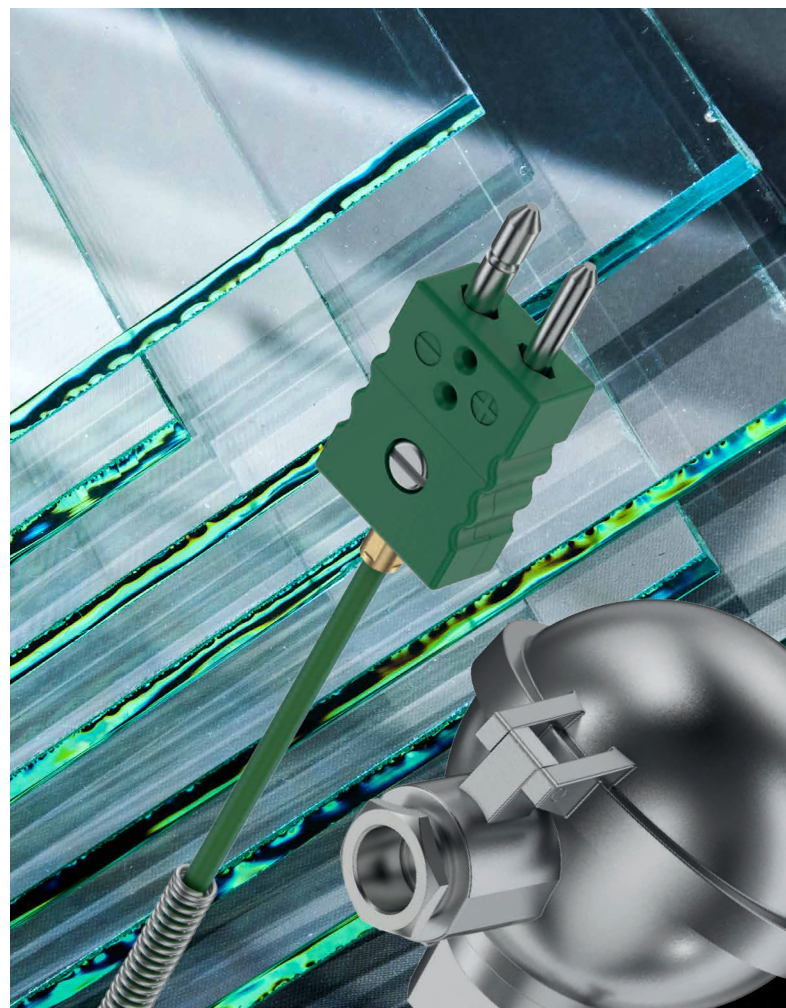
In the glass industry, meeting temperature specifications is an essential requirement for successful processing of glass. Even small deviations can have a significant effect on the quality of the subsequent products.

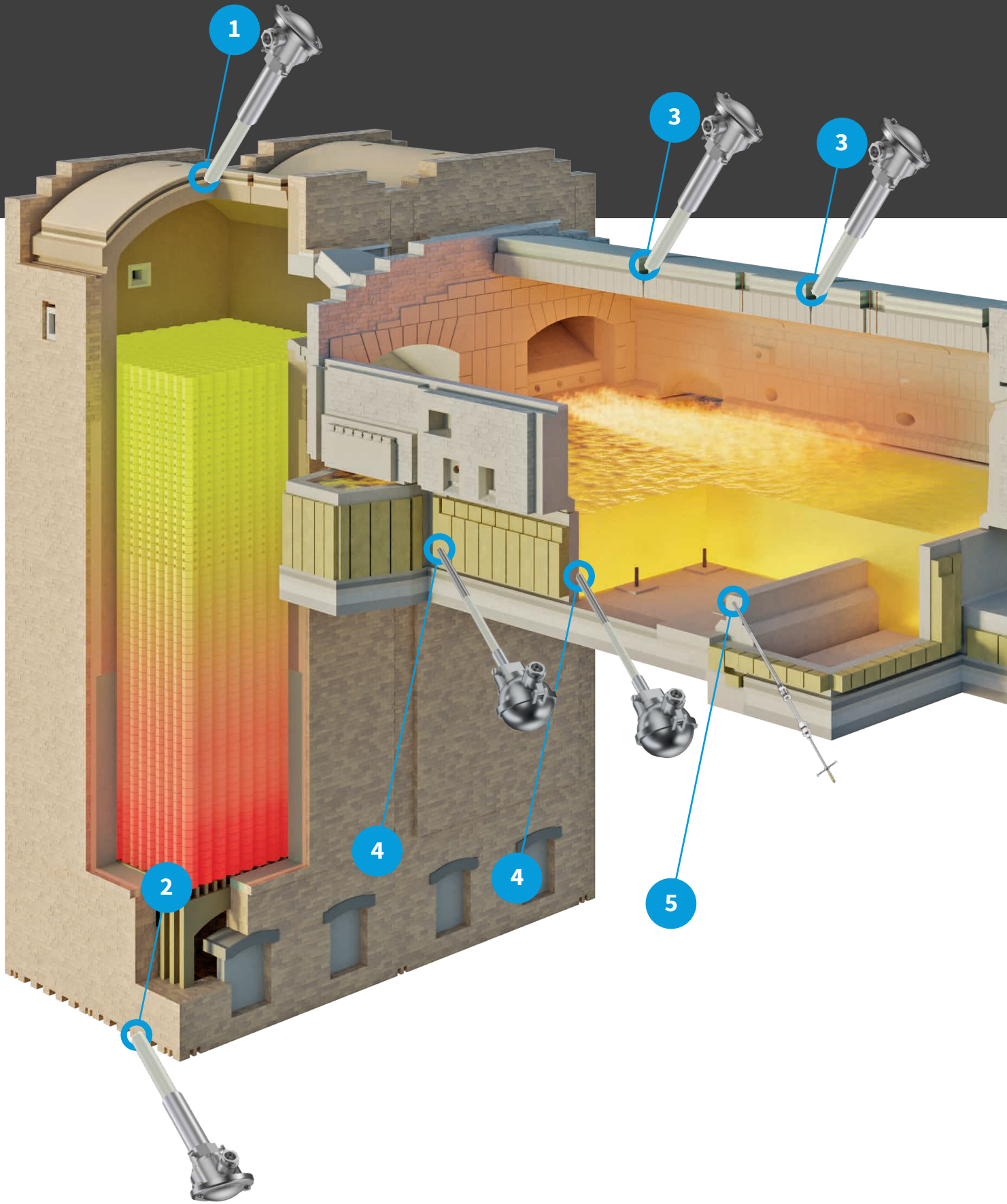
In addition, there are the high temperatures associated with glassmaking. Absolute reliability and precision of all materials used – including under extreme temperature conditions – are necessary.

During the glassmaking, particular attention must be paid to the temperature controls, measurements and monitoring processes in the glass melting furnaces and the connected production stations.

The RECKMANN company therefore attaches a great deal of importance on the absolute reliability and precision of all its products for glassmaking.

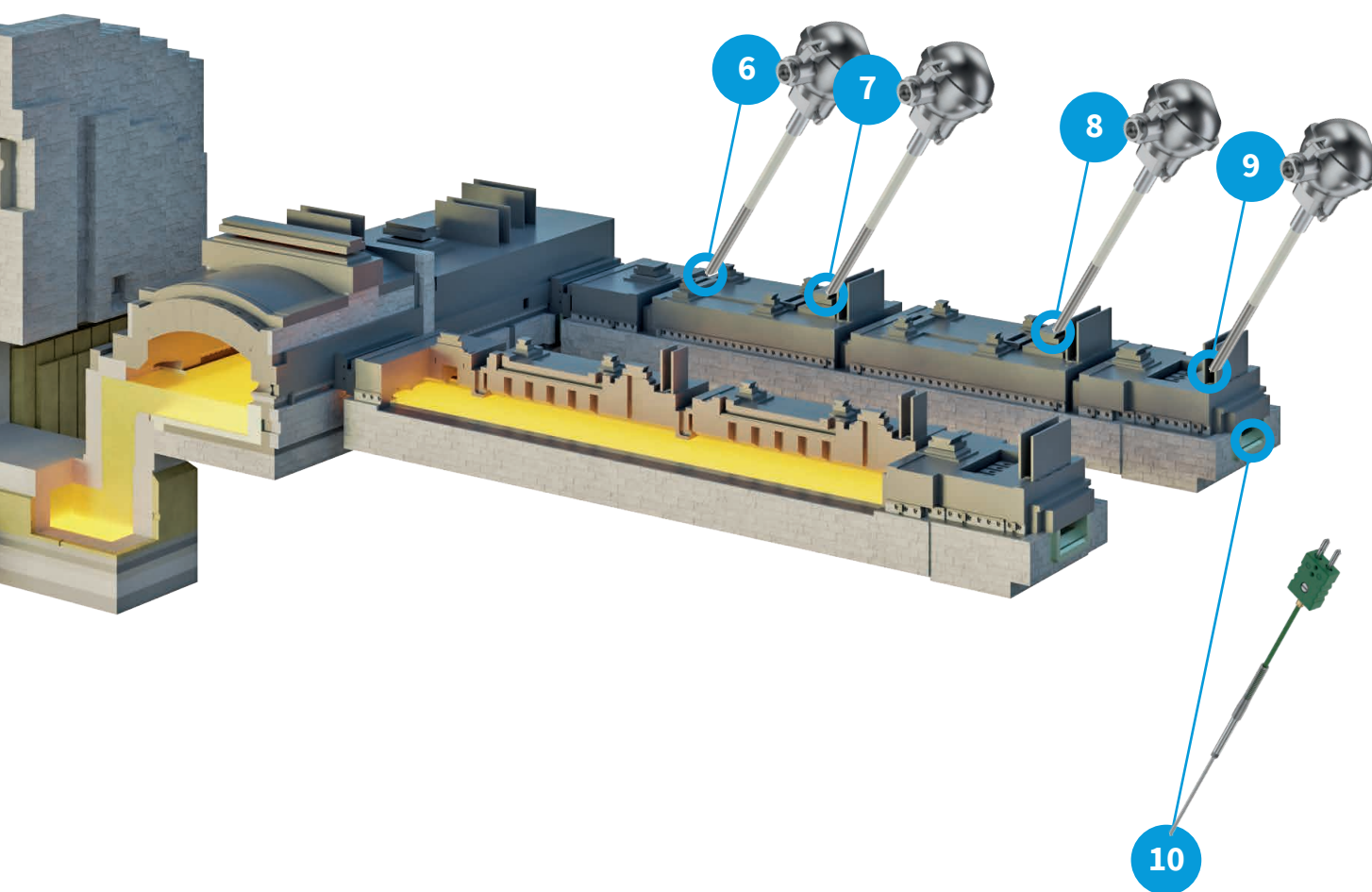
RECKMANN GMBH produces high-quality products for all measurement and monitoring tasks associated with glassmaking. The quality management system of RECKMANN GMBH and our in-house calibration laboratory have proven their worth in this area for years. Accordingly, our product range is improved continuously and is further developed in the interests of our customers.





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Measuring points

in the area of a glass furnace for container glass production

Key

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Regenerator

RECKMANN GMBH produces thermocouples for ducts and for crowns, for measuring the temperatures in the regenerator. High-quality ceramics and thermocouples made of noble metal are used for temperature measurement in the crown – as well as for the measurement in the furnace crown.

Lower temperatures, for example, such as those that occur in the rear wall of the regenerator or in the flue gas branch duct can also be recorded by RECKMANN thermocouples with appropriate heat-resistant protective tubes made of metal. These are generally NiCr-Ni/K thermocouples.

Crown

Thermocouples for the furnace crown, so called crown thermocouples, are exposed to very high temperatures of up to 1800° C in the glass melt.

The instruments are used for both direct and indirect measurements. Within these high temperature ranges, it is particularly necessary to counteract premature contamination (“poisoning”) of the thermocouples and thus their failure.

RECKMANN GMBH therefore only uses the highest quality ceramics and special materials for this measurement area. Thermocouples for the crown are typically produced with double protective tubes made of C799.

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Bottom / side wall

The temperatures in the side wall and in the bottom of the furnace are highly relevant during glassmaking. Here, the measurements are taken not only directly in the liquid glass but also in the refractory block.

RECKMANN GMBH offers different thermocouples with protective sheaths made of noble metal or with ceramic protective tubes for these measurement situations. Platinum thermocouples of the type S / R / B are also available at short notice.

Bubbler tubes

The refining and homogenisation process in the melt is frequently assisted by so-called bubbler systems.

The task of the bubblers is to intensify the convection flow in the furnace. In addition, they form an additional barrier, which ensures that unmelted material maintains sufficient distance from the refining area.

RECKMANN GMBH supplies different types of bubble tubes as specified by the customer.

Key

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Glass level sensors

Apart from precise measurement of the temperature, the level in the glass melt is also monitored and controlled by special sensors. Glass level sensors generally consist of an aluminium oxide protective tube and a sensor made of noble metal, which protrudes from the tube.

High-quality glass level sensors are produced by RECKMANN, individually tailored to the customers' wishes.

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Spout thermocouples

The final check of the glass temperature and its viscosity is carried out by special feeder sensors.

RECKMANN manufactures spout thermocouples according to its customers' technical specifications for this important measurement segment.

Variations are possible, for example, with replaceable protective sheaths or special types.

7-8

Distributor, forehearth and feeder

Different elements are used for continuous monitoring and control of the glass temperature. As the measuring instruments are continuously in direct contact with the liquid glass here, thermocouples with sheaths made of noble metal are used. RECKMANN produces sheaths made of different platinum alloys for this area.

Dispersion-strengthened sheaths and platinum coatings can be produced by RECKMANN with all kinds of different thicknesses, grades and dimensions. Thermocouples for distributor and forehearth are produced as single or double elements, depending on the customer's wishes. The output signals of these thermocouples can be used to optimally control the glass temperature. The screen or matrix measurement is frequently taken with 3 Triplex thermocouples, which are arranged in the form of a matrix in the glass flow in the homogenisation zone.

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Mould thermocouples

So-called mould thermocouples are used for continuous temperature measurement in the glass moulds or their surroundings.

In general, they are designed as mineral insulated thermocouples and their type and diameter are then adapted to the requirements. They are frequently designed as type K, type J or type N.

RECKMANN GMBH produces ready-made mould thermocouples with external diameters between 0.25 mm and 10.8 mm. Temperature measurements up to 1.100° C are possible with these thermocouples, depending on their type.



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