

RECKMANN

Your partner
for temperature.

A photograph of a glass bottle manufacturing process. In the foreground, a robotic arm is positioned over a glowing orange glass bottle. Several other similar bottles are visible in the background, also glowing with heat. The scene is set in a factory environment with industrial machinery and a blue-tinted background.

**THERMOCOUPLES FOR
THE GLASS INDUSTRY**



In glass production, stable processes and consistent product quality depend on accurate temperature measurement and reliable monitoring. RECKMANN develops high-quality thermocouples to DIN EN 60584, along with measurement solutions for the toughest operating conditions.

Our established quality management system and our calibration laboratory, accredited to DIN EN ISO/IEC 17025, ensure the highest levels of precision and reliability.

**1970
founded**

**150
employees**

**Headquartered
in Hagen**

**€24 million
annual turnover**

RECKMANN GMBH

Your partner for temperature measurement in the glass industry

We manufacture and supply thermocouples worldwide for every stage of glass production, for both flat glass and container glass.

Our thermocouples add value in two ways: their accurate measurements safeguard glass quality, and they contain platinum and rhodium, precious metals that are essential for these high-temperature applications.

That is why we offer customers a free precious metal account, which decouples the value of the material from often volatile market prices and makes costs easier to plan.

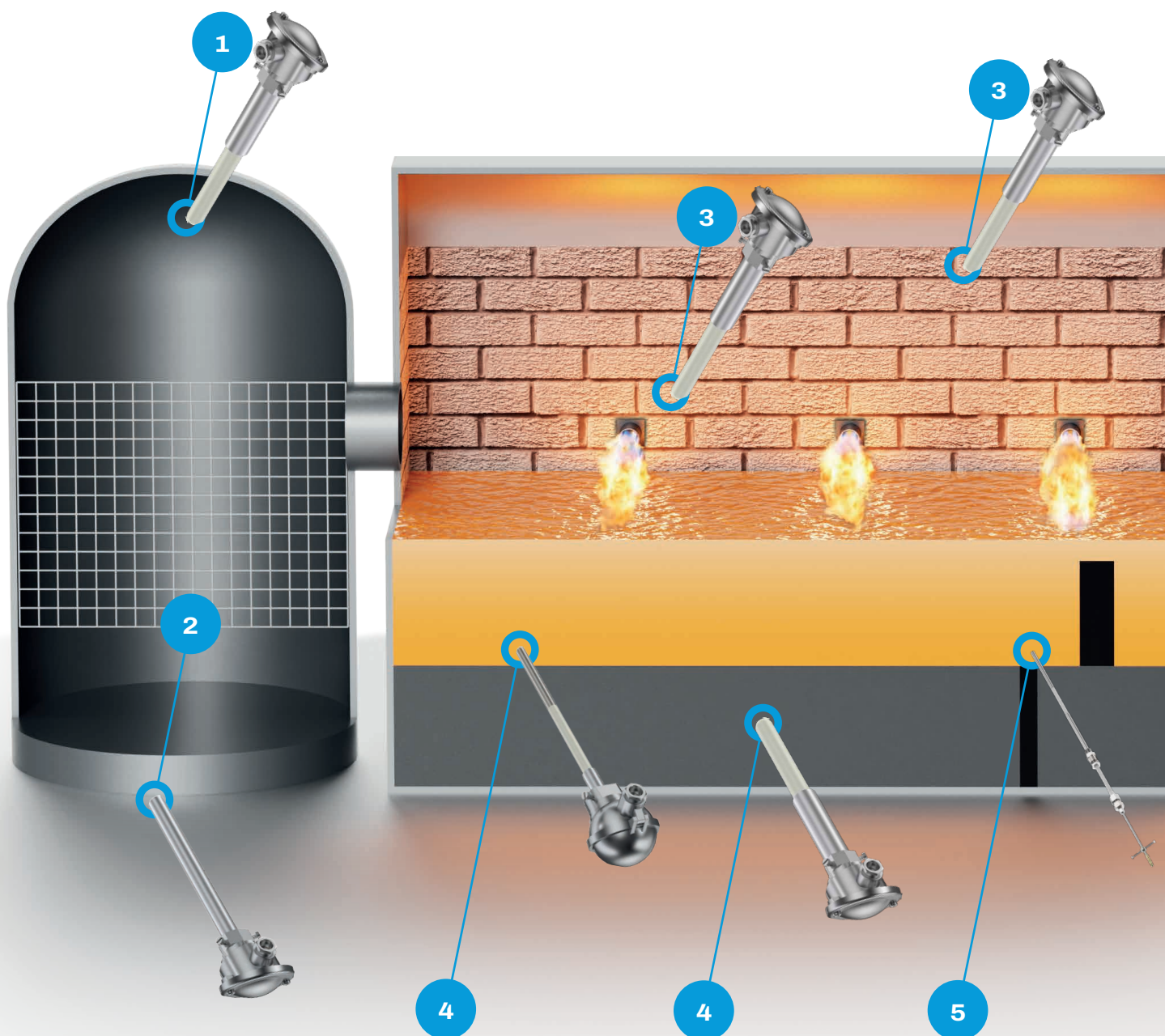
Customers can return used material to us for refining. The recovered value is credited to the account and is available for new thermocouples. This keeps precious metals in circulation, makes responsible use of resources and gives our customers stable prices.

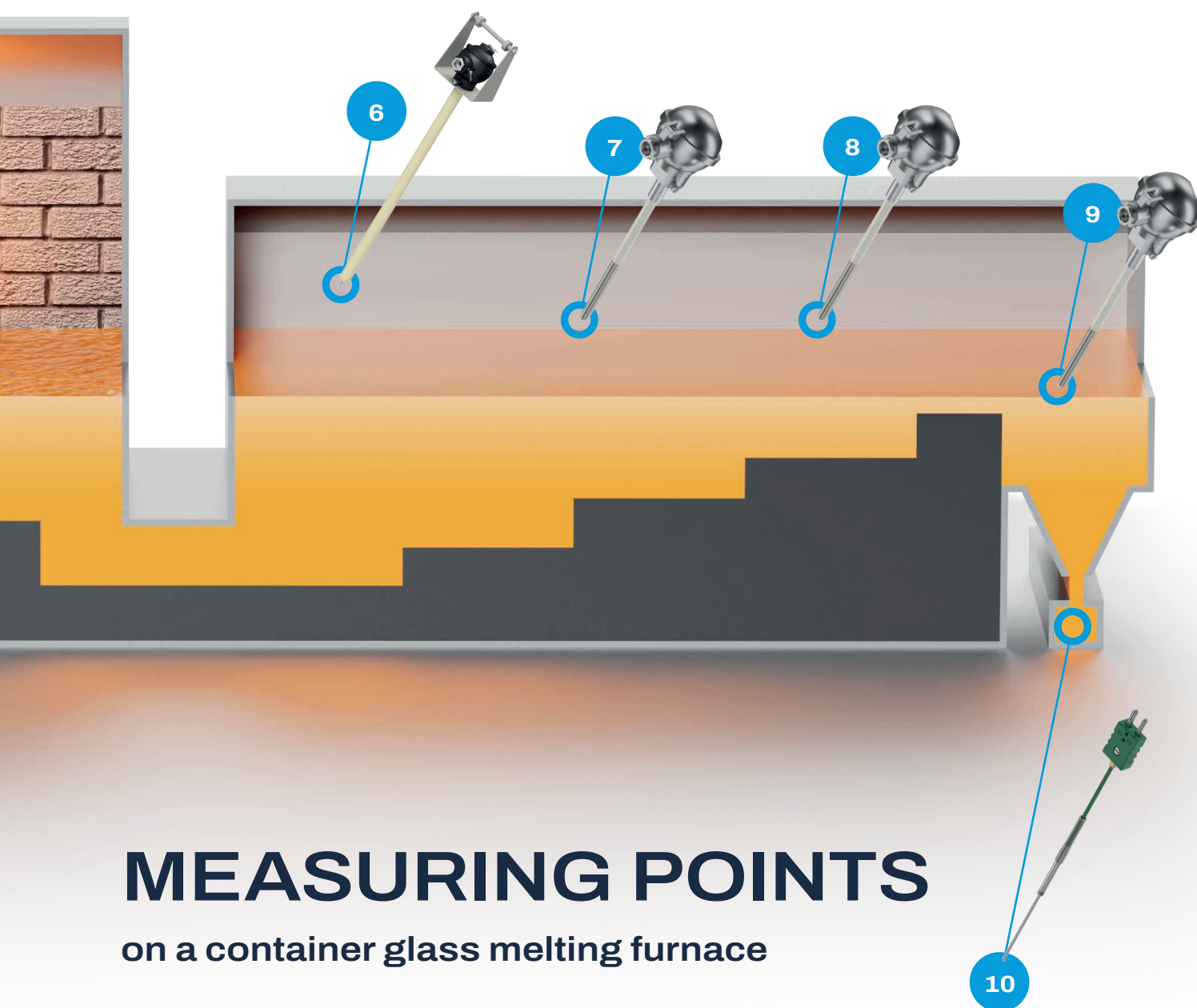


100% RECYCLABLE

THERMOCOUPLES FOR THE GLASS INDUSTRY

to DIN EN 60584





KEY



Regenerator

Temperatures in the regenerator are measured with thermocouples installed in the flue gas ducts and the crown area. As in the furnace crown, measuring points in the regenerator crown use ceramic protection tubes and precious metal thermocouple wires.

At lower-temperature measuring points, such as the regenerator rear wall or the flue gas branch duct, thermocouples with heat-resistant metal protection tubes are normally used, often Type K (NiCr-NiAl).



Crown

Thermocouples in the furnace crown are exposed to temperatures of up to 1,800 °C. They are used for both direct and indirect temperature measurement.

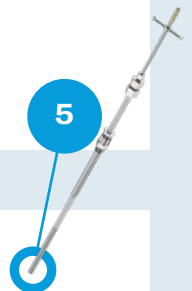
At these temperatures, ceramic protection tubes and precious metal thermocouple wires are essential for reliable measurement and a long service life. Thermocouples for this application are usually fitted with double protection tubes made of C799 ceramic.



Bottom / Side Wall

Temperature measurements in the side wall and furnace bottom provide key information on the melting process and for condition monitoring of the furnace. Measurements are taken both in the molten glass and in the refractory lining.

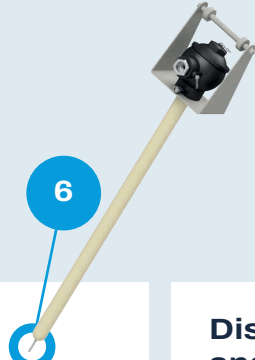
Depending on the location, thermocouples with precious metal sheaths or ceramic protection tubes are used. For high temperatures, platinum-rhodium thermocouples of Types S, R or B are the usual choice.



Bubbler Tubes

Bubbler systems are often installed to support fining and homogenisation of the glass melt. The injected gas promotes convection currents in the melting tank and helps separate unmelted batch from the fining zone.

Bubbler tubes are available in various designs and are adapted to the specific process requirements.



Glass Level Probes

In addition to temperature, the glass level in the melting furnace is continuously monitored and controlled. This is done with specially designed glass level probes, typically consisting of an alumina protection tube and a precious metal electrode.

Each probe is designed to suit the specific process and installation conditions.



Distributor, Forehearth and Feeder

Glass temperature in the distributor and forehearth is continuously monitored and controlled by thermocouples in permanent contact with the melt. Due to the high thermal and chemical stress, they are fitted with precious metal sheaths made of various platinum alloys.

Depending on the application, they are supplied as simplex, duplex or multipoint thermocouples. To capture the temperature profile across the glass cross-section, several measuring points are often arranged as a grid or matrix in the homogenisation zone. The resulting data enables precise temperature control of the glass stream.



Spout Thermocouples

Glass temperature is checked one last time in the feeder, using dedicated feeder or spout thermocouples. These measuring points provide essential data for controlling the glass flow and maintaining constant forming conditions.

Designs vary from plant to plant, for example with replaceable sheaths or as customised versions.



Mould Thermocouples

Mould thermocouples monitor the temperature in and around glass moulds. They are usually mineral-insulated thermocouples, with design, diameter and measuring range adapted to the specific operating conditions.

Types K, J and N are frequently used. With the right design, temperatures of up to around 1,100 °C can be measured.

THERMOCOUPLE EXAMPLES

for regenerator and crown



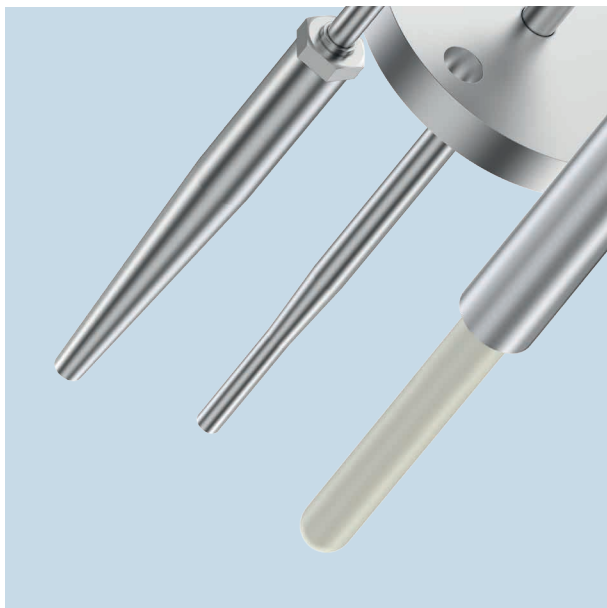
THERMOCOUPLE EXAMPLES

for distributor, forehearth and feeder



ACCESSORIES

Protection tubes



Cables



Connection heads



Mounting hardware



GlassSense

A new era of temperature measurement in the glass industry

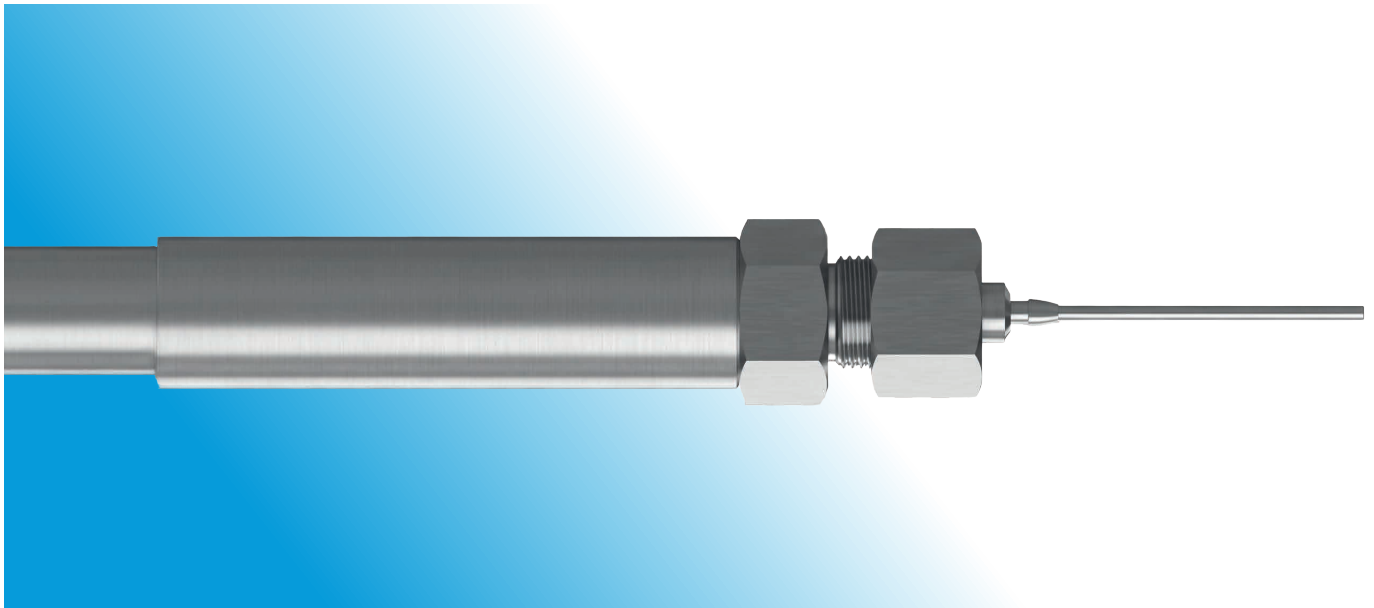
GlassSense ushers in a new era of temperature measurement in the glass industry: moving away from traditional analog measurement toward digital recording of temperatures and conditions. For you, this means more precise measurement results and deeper insights into the process and sensor technology. All of this is packaged in a hermetically sealed thermocouple design for a long service life.



NEW!

GlassSense

The thermocouple reimagined:
precise, digital, hermetically sealed



The smart thermocouple solution for the glass industry

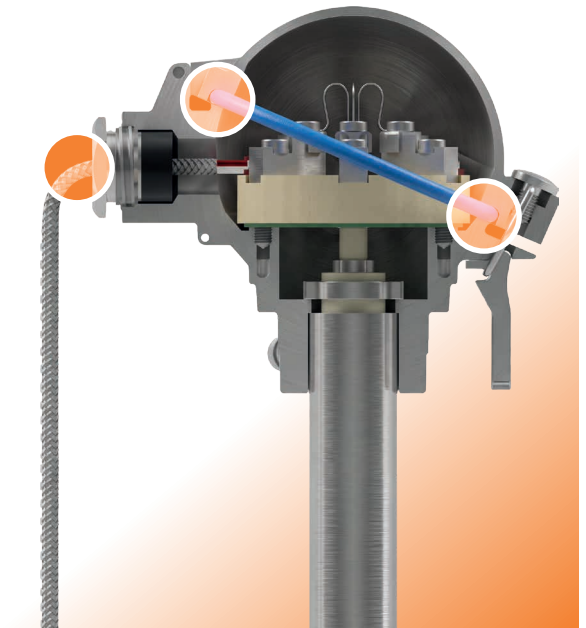
GlassSense was developed specifically for temperature measurement in the container and flat glass industries. Encased in an innovative, hermetically sealed design, GlassSense delivers precise measurement results, diagnostic, status, and parameterization information thanks to its integrated IO-Link transmitter. All without a connection head!

WHY GlassSense?

Because GlassSense is one of the few true innovations in temperature measurement for the glass industry in decades!

Let's take a closer look at the details.

Traditional thermocouples have a connection head. Whether it's made of aluminum or gray cast iron, it's a weak point because it isn't airtight under harsh environmental conditions and high temperatures, and it also contains materials with organic components. So it's only a matter of time before foreign atoms penetrate the thermocouple and contaminate the valuable platinum wires. The result: The structure of the platinum changes, causing measured values to drift ; sooner or later, the platinum wire breaks, leading to a failure of the thermocouple.



● Damage or Contamination

GlassSense is hermetically sealed, even under extreme conditions

Our patented design replaces the connection head with a welded tube construction. No organic materials, no screws or covers. GlassSense is simply sealed.

A reference temperature measurement inside the stainless steel tube ensures that the IO-Link transmitter always outputs the correct process temperature – regardless of the current ambient temperature.

In glass production, this guarantees precise measurement results and, consequently, consistent quality of the molten glass.

Process reliability depends, among other things, on having as few interfaces as possible. That is why the IO-Link transmitter is permanently connected to the thermocouple via a flexible sheathed cable.

The connection to the digital process control system is made via a robust M12 connector.

WITH ADDED VALUE

Hermetically sealed design

for a long service life



Reference/ambient temperature measurement and compensation

for precise measurement results



Advanced process data acquisition

for early detection of changes
in operating conditions



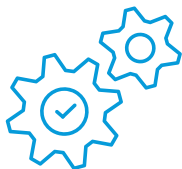
Cable break and short-circuit detection

for rapid fault diagnosis



Service data

for predictive maintenance



Digital communication via IO-Link

for direct connection to
existing process
control bus systems



Operating and ambient temperatures

from the measuring tip
to the electronics



Example temperatures

Your partner for temperature.

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