

PFAUDLER

Glass-Lined Technology

Temperature

Glass-Lined
Instrumentation for
Highest Standards



GMM
Pfaudler

PFAUDLER

— Glass-Lined Technology

For over 130 years, Pfaudler is the leader in developing new technologies to meet the highly specific chemical processing needs of its clients. One reason why our glass-lined equipment is trusted by over 90% of the world's top chemical companies is the sheer reliability of our reaction technologies and comprehensiveness of our glass-lined accessories. These technologies are critical to the safe containment of corrosive contents, maintaining the vessel pressure and ensuring the final batch quality.

In short, our glass-lined technologies are absolutely integral to an effective process.

PRODUCTS & EQUIPMENT

Glass Lined Reactors

Glass Lined Mixing Systems

Baffling Technologies

Storage Tanks & Receivers

Glass Lined Columns

Accessories

Glass Lined Instrumentation

Glass Lined Heat & Mass Transfer

50/5/50t



Temperature Measurement

Sometimes speed is key

Early recognition of process temperatures enables you to regulate it precisely and minimise fluctuations. Lower energy input and lower energy losses result in **well-balanced energy management** and therefore **lower costs**. Various technologies are available, depending on the application.

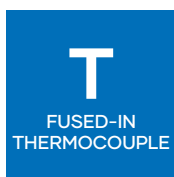
Quick measurement results are essential for optimal temperature control. Pfaudler's fused-in glass lining solutions closely offer a clear advantage – they are in contact with the medium. Sometimes speed is key!



Fused-in resistance thermometer

The functionality of Pfaudler's type TW temperature probe relies on the temperature dependence of the electric resistance of platinum. The platinum measuring unit, a PT 100 resistance thermometer, is fused into the glass lining of baffles or thermometer wells, providing an **optimal heat transfer**. Compared to conventional glass lined temperature measurements the heat transfer coefficient of fused-in sensors is lower, ensuring extremely low half-value times.

- **Fastest** glass-lined temperature probe
- **No sealing** elements
- **Long service life**, excellent long-term stability and maintenance free
- No drifting



Fused-in thermocouple

In the Pfaudler type T temperature probe, the temperature is measured exactly where it is needed. A Pallaplat thermocouple is fused into the glass lining of C-baffles or valve cones, providing an **optimal heat transfer**.

- Up to **six measurement points** on one probe carrier
- **No sealing** elements
- **Long service life**, excellent long-term stability and maintenance free
- No drifting

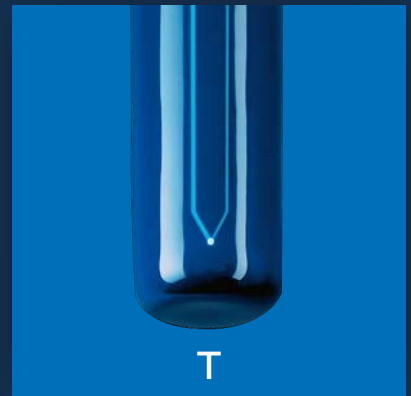
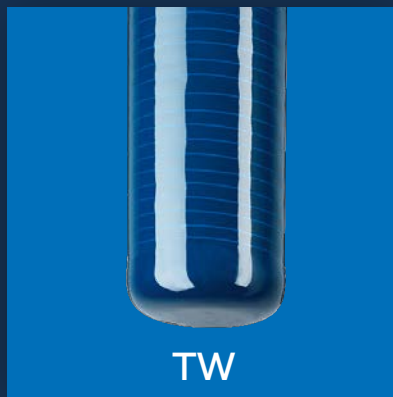
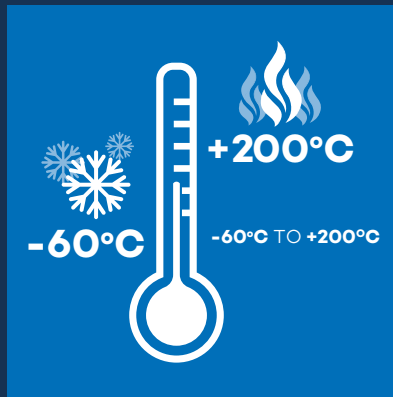
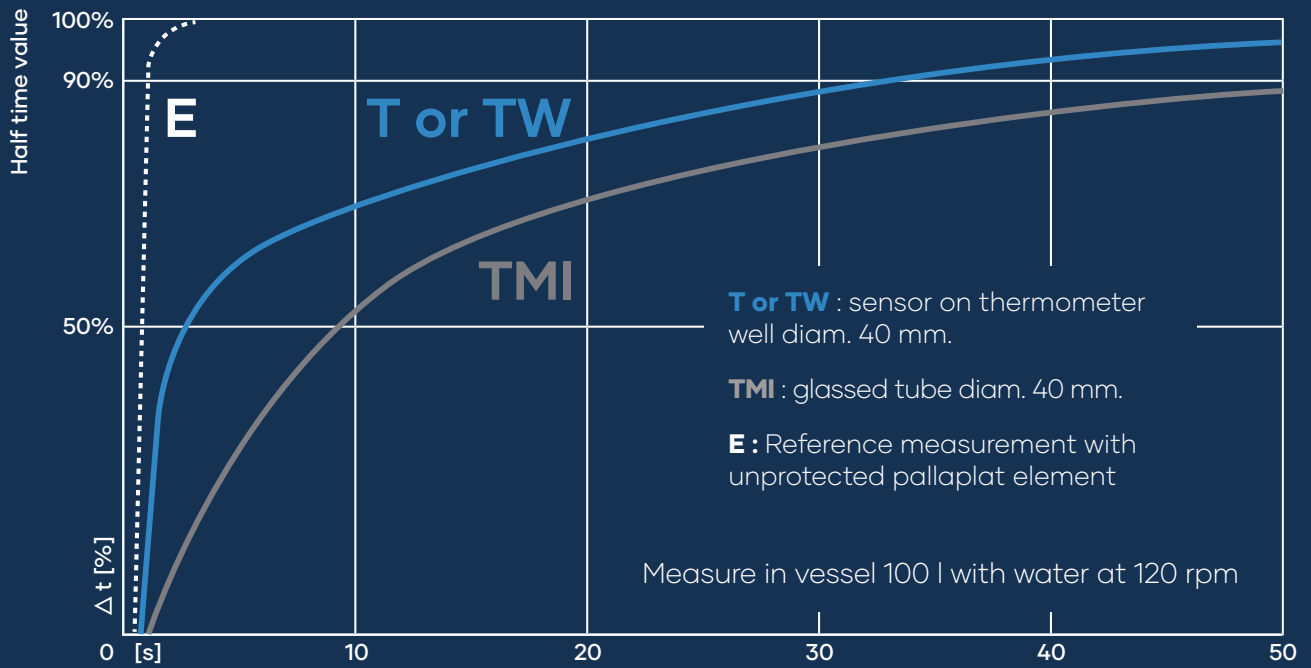


Inserted temperature sensor

Pfaudler's type TMI temperature probe is a **robust, simple and cost-effective solution** for measuring temperature. The measuring insert – a resistance thermometer – is pressed by spring action to the bottom of the baffle or valve cone.

- **Reduced wall thickness** and coated contact point for improved heat transfer
- Measuring insert is **easy to replace** and recalibrate

Time response



Features and Benefits

Early detection. Precise control

Features	TW	T	TMI
Fastest glass-lined temperature probe	•		
No sealing elements in the wetted area	•	•	•
Can be fused into the glass lining layer of a baffle, a Quatro-Pipe or a thermometer well	•	•	
Up to three measurement points can be arranged on a single probe carrier	•		
Temperature measurement for complex component designs		•	
Small measuring element – excellent for installing on small components, e.g. valve cones or spacer rings		•	
Up to six measurement points can be arranged on a single probe carrier		•	
Optimised heat transfer realised by a permanent contact pressure, a reduced wall thickness and a gold coated contact point			•
Can be plugged into a baffle, a thermometer well or a valve stem			•
Accuracy at 1/3 class B to DIN 43 760 / IEC 751			•

Benefits	TW	T	TMI
Permits exact reactor temperature regulation	•	•	
Optimal operational reliability	•	•	•
Long service life and long-term stability	•	•	
Maintenance free	•	•	
Measuring insert is easy to replace			•

Technical Data

Type	TW	T	TMI
Technology	Fused-in Pt 100 thermometer	Fused-in thermocouple	Inserted Pt 100 sensor
Measuring range	-60 to +200 °C	-60 to +200 °C	-25 to +200 °C
Operating temp.	-60 to +200 °C	-60 to +200 °C	-25 to +200 °C
Operating pressure	-1 to +40* bar	-1 to +40* bar	-1 to +40* bar
Ex. protection	II 1/2G Ex ia IIB T6 II 2G Ex ia IIC T6	II 1/2 G Ex ia IIB T6 II 2G Ex ia IIC T6	II 2 G EEx ib IIC T6, T5, T4

* depending on component or nozzle size

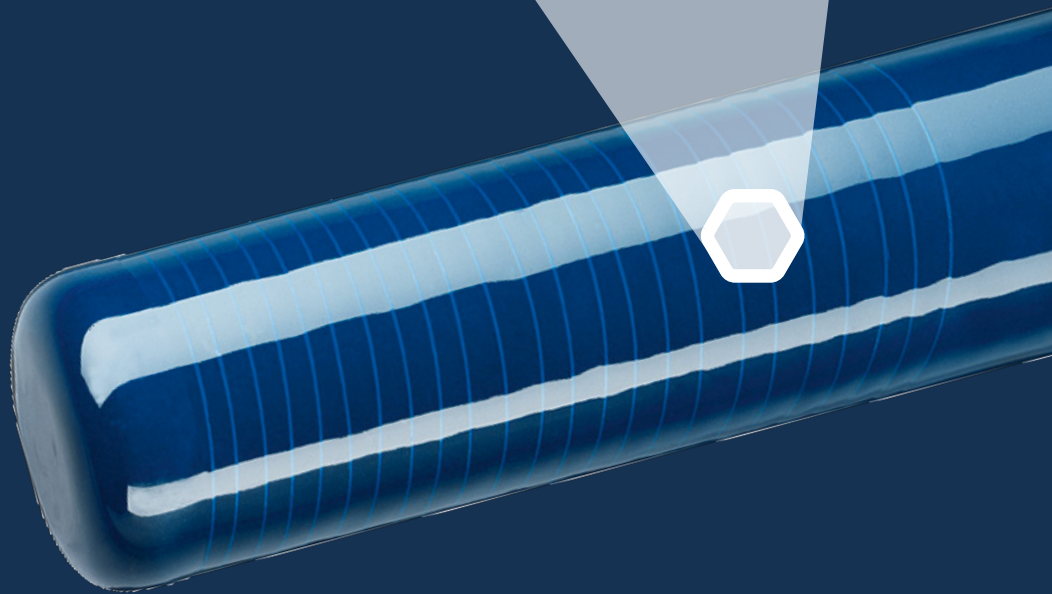
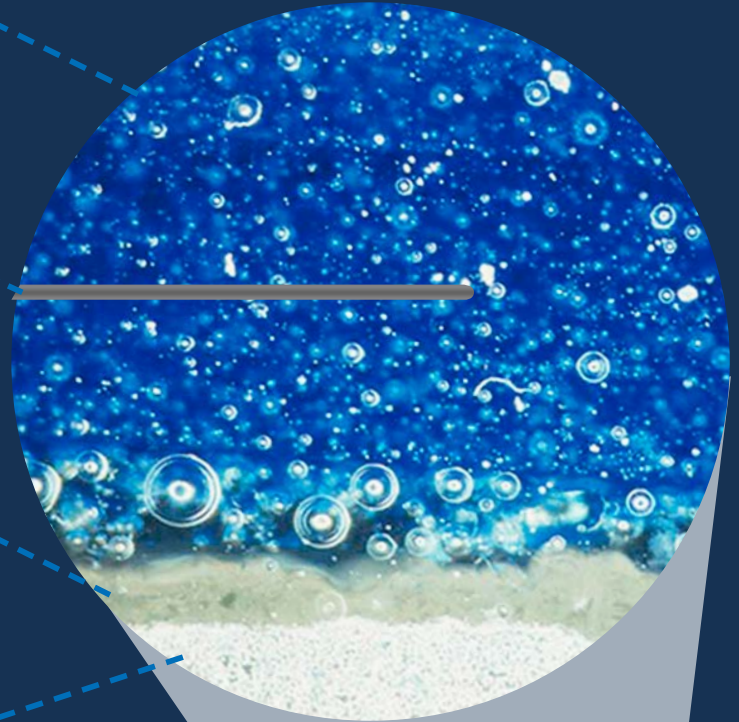
TW
FUSED-IN
RESISTANCE
THERMOMETER

TOP LAYER

PT 100
RESISTANCE
THERMOMETER

**GROUND
LAYER**

STEEL



Worldwide Presence



GMM Pfaudler is a global leader in corrosion-resistant technologies, systems, and services for the chemical, pharmaceutical, food and energy industry.

Our Branded Product Lines that include PFAUDLER, NORMAG, MAVAG, MIXION, INTERSEAL, EQUILLOY and EDLON, showcase our strength as a group, our capabilities, and our pursuit for constant innovation. With an end-to-end solutions-oriented approach, a global footprint, and a perfectly integrated offering system we are able to meet complex industry demands worldwide.

GMM Pfaudler is driven by 1500+ individuals across 4 continents and 14 global manufacturing facilities around the world. The Group's targeted investments in strategic markets, innovation and competitiveness paves the way forward for GMM Pfaudler's continued legacy.

100
Countries

1500 +
Employees

04
Continents

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