

The perfect fit for your measuring point

Temperature transmitters
from Endress+Hauser



Temperature transmitters

Temperature measurement is the decisive factor in a large number of industrial processes. Across all industries, accurate, fast and reliable measurement of the process temperature guarantees the quality of the products and the safety of the system.

Thermometers provide a precise and reliable measurement signal in a wide variety of processes. To be able to read this signal correctly, it is necessary to convert it into a standardized analog or digital signal which can be interpreted by the process control system. This conversion happens in the transmitter - it acts as an interface between the sensor and the control room. With its smart features, it is possible to obtain more information from the temperature measurement device, for example the condition of the temperature sensor and possible failure diagnostics for quick troubleshooting.



Benefits at a glance

Increased accuracy, enhanced safety, optimized usability and a high degree of standardization and digitalization!

What makes our temperature transmitters from Endress+Hauser the perfect fit for your measuring point?

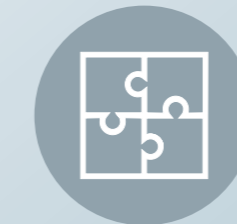


Usability

Simple parameterization and monitoring via Bluetooth or digital communication. Optimized operability due to on-site indication via integrated or pluggable display as well as simple installation and quick wiring thanks to push-in terminals.

Safety

Transmitters are suitable for use in hazardous areas and provide additional information from the measuring point, like extended diagnostics such as corrosion detection. They are available with SIL approval and dual channel input for sensor backup and drift detection.



“Perfect fit”

The ideal combination of the right iTEMP transmitter with the required communication signal and housing form and the right iTHERM ModuLine thermometer makes the features of the comprehensive Endress+Hauser temperature portfolio available for all systems and applications. The perfect solution for every measuring point - all from one single supplier.



Accuracy

Increased accuracy of the measurement data thanks to a stable and accurate output signal, the lab calibration of sensor and electronics at Endress+Hauser and the individual sensor-transmitter matching using Callendar-Van Dusen linearization. Reduction of measurement errors through galvanic isolation.



Standardization

Conversion of the RTD or TC input signal into a standardized analog or digital output signal, allowing standardized input cards, barriers and cables to be used from the transmitter to the control unit.

Portfolio overview

Temperature transmitter

Our Endress+Hauser temperature transmitters are the perfect fit for all industries and a wide range of applications.

- Various digital and analog output signals ensure optimal selection of the transmitter according to the existing or desired system environment
- Several features and approvals guarantee perfect alignment of the measuring point to the respective industry requirements
- Different housing types make the transmitters suitable for a wide range of systems and applications

Communication standard	 IO-Link	4-20 mA			 HART COMMUNICATION PROTOCOL	 FOUNDATION	 PROFI BUS	 PROFI NET	
Field housings				 TMT71	 TMT142B  TMT72	 TMT162  TMT82	 TMT162  TMT85	 TMT162  TMT84	 TMT86
Top hat / DIN rail		 TMT31	 TMT31	 TMT71	 TMT72	 TMT82			
Head mount	 TMT36	 TMT31	 TMT31	 TMT71	 TMT72	 TMT82	 TMT85	 TMT84	 TMT86
Sensor input(s)	1-ch RTD	1-ch RTD	1-ch TC	1-ch universal	1-ch universal	2-ch universal	2-ch universal	2-ch universal	2-ch universal
Additional information		fixed configuration / programmable			 Bluetooth	 SIL 2 SC 3			 ethernet-apt™
		Ex ec			Ex ia (Ex IS) / Ex db (Ex XP)				
					 plug-in display unit (TID10) available for head transmitters				
Segment		FLEX			FLEX		FLEX		

* available from the first half of 2025

Industry focus

The benefits of increased accuracy, improved safety, enhanced usability, standardization and digitalization optimize the industrial production facilities of companies across all industries.

That is why our temperature transmitters are available with a variety of features and approvals enabling them to be used in any industry, for any application and under any conditions.

- Food & Beverage
- Water & Wastewater
- Oil & Gas / Marine
- Life Sciences
- Chemical
- Power & Energy
- Mining, Minerals & Metals
- Utilities - steam

The following pages show examples of how our transmitters, in combination with the right thermometer and system product, solve the typical challenges of various industries.



Hygienic industries

The iTEMP TMT36 temperature transmitter, the iTHERM ModuLine TM411 thermometer and the Memograph M RSG45 data recorder are examples from our product portfolio that are perfectly suited to solving the typical challenges of the hygienic food & beverage and life sciences industries.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.



The challenges

1

High reliability and accuracy of the measurement data.

The solution



TMT36



TM411



RSG45

- Stable, accurate and reliable signal processing thanks to standardization of the measurement signal
- Diagnostic information in accordance with NAMUR NE107
- High accuracy due to Callendar-Van Dusen equation

The benefits

1

Increased product quality and resource savings through reliable process monitoring and optimized processes

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The challenges

2

High hygiene requirements for processes, cleaning and disinfection.

The solution



TMT36



TM411



RSG45

- Hygienic design for compliance with standards
- Hygiene approvals: 3-A, EHEDG, GMP, ASME-BPE
- CIP- and SIP-cleanable
- Innovative features such as iTHERM QuickNeck and tee and elbow thermowell

The benefits

2

Increased product safety through compliance with industry standards and safe CIP and SIP implementation

Hygienic industries

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The challenges

3

Compliance with legal verification and documentation requirements for measured values. (tamper proof according to FDA21)

The solution



TMT36



TM411



RSG45

- Fulfills legally compliant and tamper proof storage of data in accordance with FDA 21 part 11

The benefits

3

Regulatory or customer audits without hesitation thanks to legally compliant storage and continuous availability of process data

Hygienic industries

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The challenges

4

Optimization of the system through simplification, standardization and digitalization.

The solution



TMT36



TM411



RSG45

- Stable, accurate and reliable signal processing thanks to standardization of the measurement signal
- IO-Link communication for seamless integration of the measuring equipment and digitization of the measuring point
- Push-in terminals for fast and tool-free wiring
- On-site indication via plug-in display

The benefits

4

Cost and time savings thanks to uncomplicated commissioning, integration and operation of the measuring devices

Heavy industries

The iTEMP TMT86 temperature transmitter, the iTHERM ModuLine TM151 thermometer, the active barrier RN22 or RN42 and the Memograph M RSG45 data recorder are examples from our product portfolio that are perfectly suited to solving the typical challenges of the heavy industries of oil & gas and chemicals.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.



The challenges

1

Optimization of energy and raw material consumption through accuracy and reliability of measurements and simulation calculations.

The solution



TMT86

- Stable, accurate and reliable signal processing thanks to standardization of the measurement signal
- High accuracy due to Callendar-Van Dusen equation
- Profinet system integration allows process calculation and simulation for raw material optimization



TM151

- Minimized immersion length thanks to Namur design in the barstock thermowell reduces process intervention, heat exchange and turbulence of the process fluids while improving accuracy and response time



RN-Series + RSG45

The benefits

1

Cost savings through reduced use of resources while maintaining product quality and increasing production capacity

Heavy industries

The iTEMP TMT86 temperature transmitter, the iTHERM ModuLine TM151 thermometer, the active barrier RN22 or RN42 and the Memograph M RSG45 data recorder are examples from our product portfolio that are perfectly suited to solving the typical challenges of the heavy industries of oil & gas and chemicals.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.



The challenges

2

Precise control of process temperatures when handling hazardous materials to ensure safety.

The solution



TMT86

- Stable, accurate and reliable signal processing thanks to standardization of the measurement signal
- High accuracy due to Callendar-Van Dusen equation
- Use in hazardous areas, advanced diagnostics like corrosion detection, SIL approval, dual-channel input for sensor backup and drift detection



TM151

- Combination of fast response time (iTHERM QuickSens) and long durability (barstock thermowell with iTHERM TwistWell)
- DualSeal function as a second sealing barrier enables the detection of leaks and ensures compliance with international safety requirements even if a fault occurs



RN-Series + RSG45

- Use in hazardous areas to increase reliability and safe data processing
- Barrier required for every device with Ex ia approval

The benefits

2

Safety for people and media in the system with low maintenance costs and reduced downtime

Heavy industries

The iTEMP TMT86 temperature transmitter, the iTHERM ModuLine TM151 thermometer, the active barrier RN22 or RN42 and the Memograph M RSG45 data recorder are examples from our product portfolio that are perfectly suited to solving the typical challenges of the heavy industries of oil & gas and chemicals.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.



The challenges

3

Control and reliable documentation of emissions and exhaust gases.

The solution



TMT86



TM151



RN-Series + RSG45

- Factory calibrations and calibrations by accredited laboratories for the entire measurement loop (transmitter, sensor, barrier)

- Memograph fulfills legal documentation obligations with regard to emissions and exhaust gases

The benefits

3

Reliable storage of process data as proof of compliance with legal requirements, auditability towards third parties and to avoid high penalties

Heavy industries

The iTEMP TMT86 temperature transmitter, the iTHERM ModuLine TM151 thermometer, the active barrier RN22 or RN42 and the Memograph M RSG45 data recorder are examples from our product portfolio that are perfectly suited to solving the typical challenges of the heavy industries of oil & gas and chemicals.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.



The challenges

4

Optimization of plant commissioning and maintenance through simplification, standardization and digitalization.

The solution



TMT86

- System integration through PROFINET® allows process calculation and simulation for raw material optimization
- Push-in terminals for fast and tool-free wiring
- On-site indication via plug-in display
- Remote access for easy commissioning and maintenance
- Digital communication down to the field level



TM151



RN-Series + RSG45

- Barrier with push-in terminals for fast and tool-free wiring

The benefits

4

Cost and time savings through uncomplicated process simulation as well as commissioning, integration and operation of measuring devices

Power & Energy

The iTEMP TMT72 temperature transmitter, the iTHERM ModuLine TM131 thermometer and the EngyCal RH33 BTU meter are examples from our product portfolio that are perfectly suited to solving the typical challenges of the power & energy industry.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.



The challenges

1

Setting up Green Hydrogen energy supply to optimize plants and processes for the energy and heat transition.

The solution



TMT72

- Use in hazardous areas, advanced diagnostics like corrosion detection, Ex approval



TM131

- Requirements for the great variability of applications in hydrogen production perfectly fulfilled with just one thermometer
- Ex approval required for hydrogen production



RH33

- RH33 and TM131 with MID approval option as perfect combination to allocate energy consumption in the process and identify potential savings

The benefits

1

Up-to-date systems with renewable energies lead to positive image effects and sustainability as well as saving costs

Power & Energy

The iTEMP TMT72 temperature transmitter, the iTHERM ModuLine TM131 thermometer and the EngyCal RH33 BTU meter are examples from our product portfolio that are perfectly suited to solving the typical challenges of the power & energy industry.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.



The challenges

2

Increasing plant safety.

The solution



TMT72

- Use in hazardous areas, advanced diagnostics like corrosion detection, Ex approval



TM131

- Ex approval required for hydrogen production



RH33

The benefits

2

Increased process safety leads to reduced downtimes, low maintenance costs and constant insight into the inspection processes

Power & Energy

The iTEMP TMT72 temperature transmitter, the iTHERM ModuLine TM131 thermometer and the EngyCal RH33 BTU meter are examples from our product portfolio that are perfectly suited to solving the typical challenges of the power & energy industry.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.

The challenges

3

Increasing process efficiency.



The solution



TMT72

- Stable, accurate and reliable signal processing thanks to standardization of the measurement signal
- High accuracy due to Callendar-Van Dusen equation



TM131

- Combination of iTHERM QuickSens and fast-responding thermowell for the shortest response time



RH33

- RH33 and TM131 with MID approval option as perfect combination to allocate energy consumption in the process and identify potential savings

The benefits

3

Optimized use of resources and increased production capacity through improved efficiency

Power & Energy

The iTEMP TMT72 temperature transmitter, the iTHERM ModuLine TM131 thermometer and the EngyCal RH33 BTU meter are examples from our product portfolio that are perfectly suited to solving the typical challenges of the power & energy industry.

All products from a single source and perfectly integrated for a flawless measuring process, tailored to the individual application.


The challenges

4

Optimization of plant commissioning and maintenance through simplification, standardization and digitalization.




The solution




TMT72

- Push-in terminals for fast and tool-free wiring
- On-site indication via plug-in display
- Bluetooth for simple parametrization and monitoring in the field via mobile device



TM131



RH33

The benefits

4 Cost and time savings thanks to uncomplicated commissioning, integration and operation of the measuring devices

Sensor-transmitter-matching

According to Callendar-Van Dusen equation

Our sensor-transmitter-matching, using the Callendar-Van Dusen equation, ensures the highest accuracy when ordering a thermometer including a temperature transmitter from Endress+Hauser.

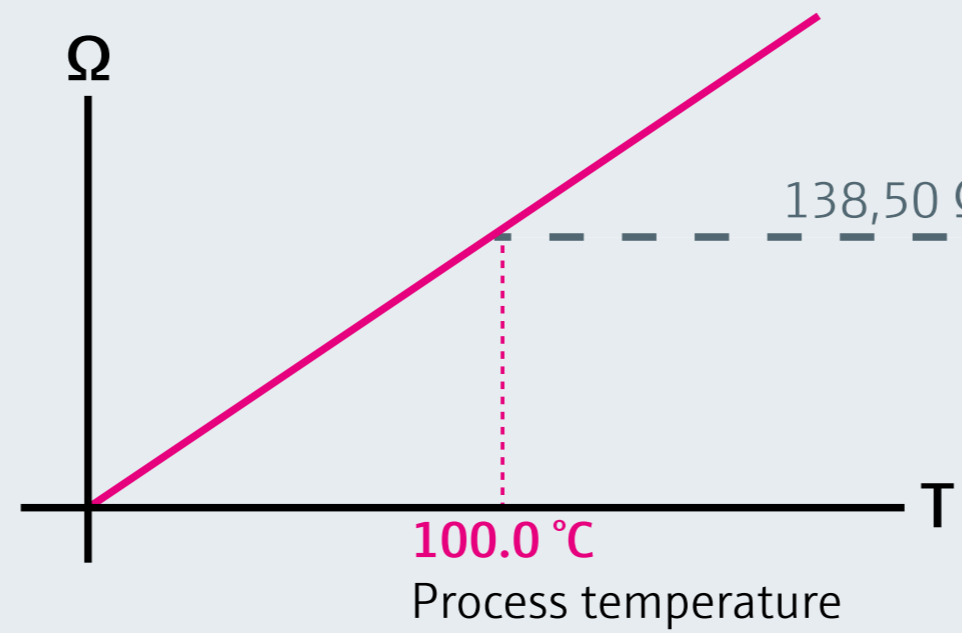
With an in-house calibration the individual sensor characteristic curve is determined and stored in the transmitter.

In this way, sensor and transmitter are optimally harmonized and measurement deviations are reduced to a minimum.

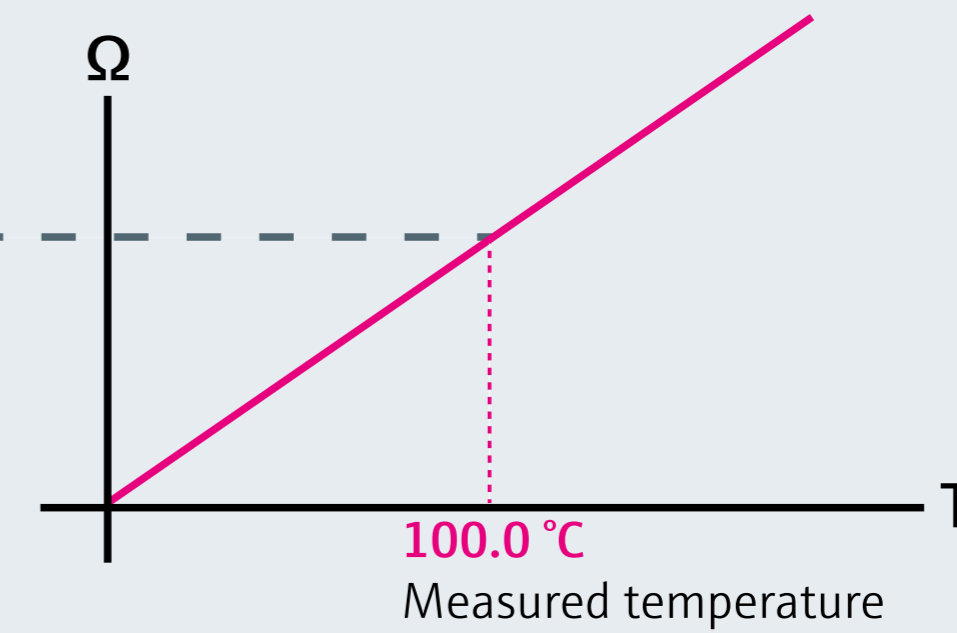
Benefits

- Measurement errors are greatly reduced
- Highest possible accuracy of temperature measurement ensures safety and quality

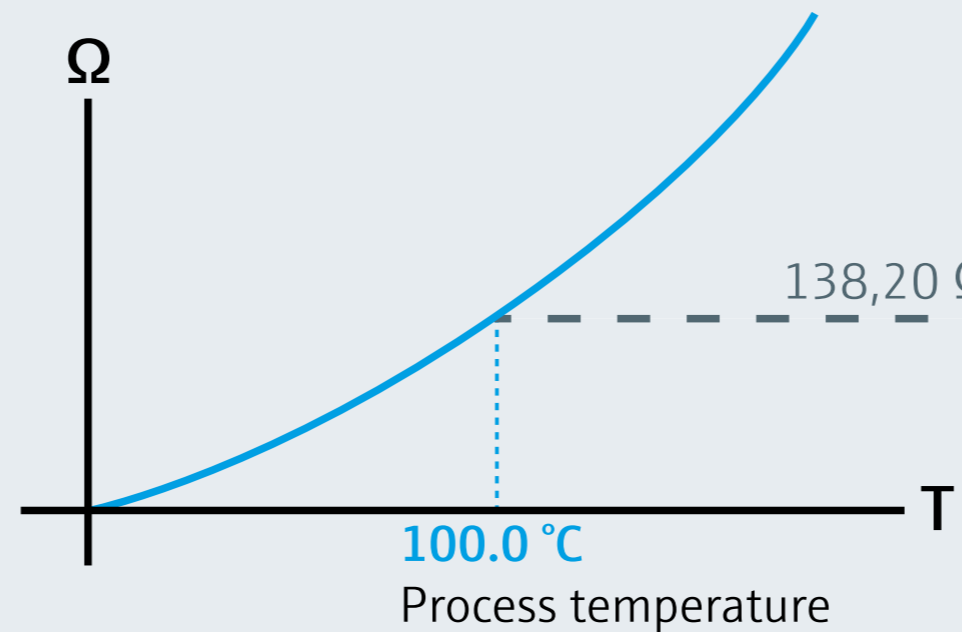
Perfect
Pt100 sensor



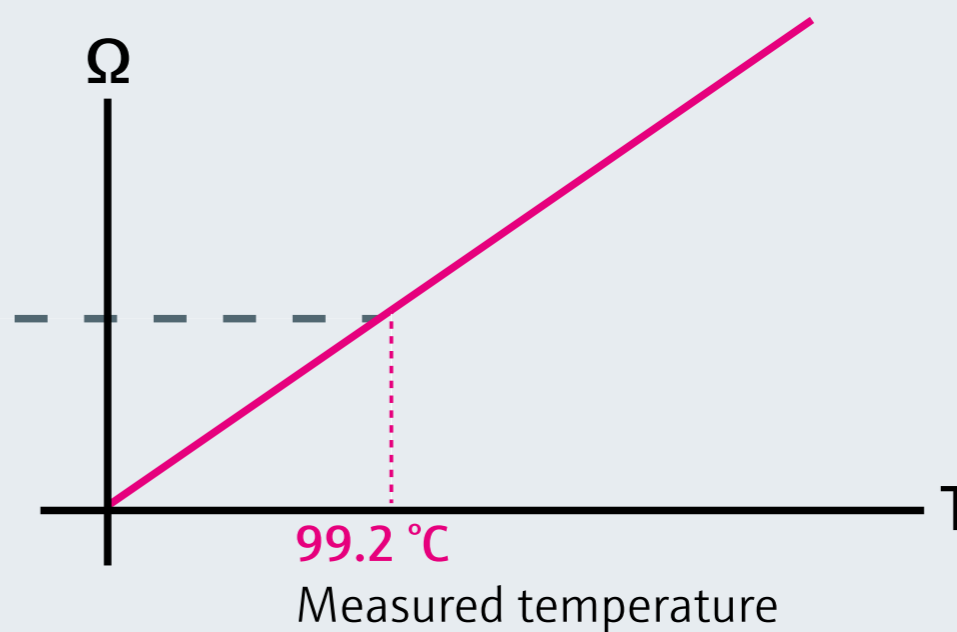
Ideal
Linearized curve in the transmitter



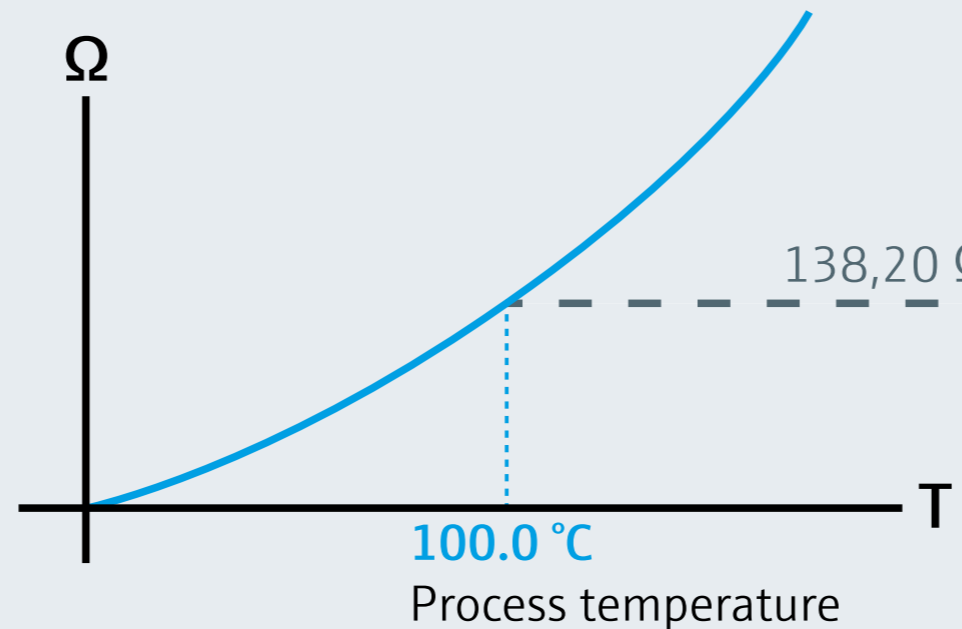
Real
Pt100 sensor



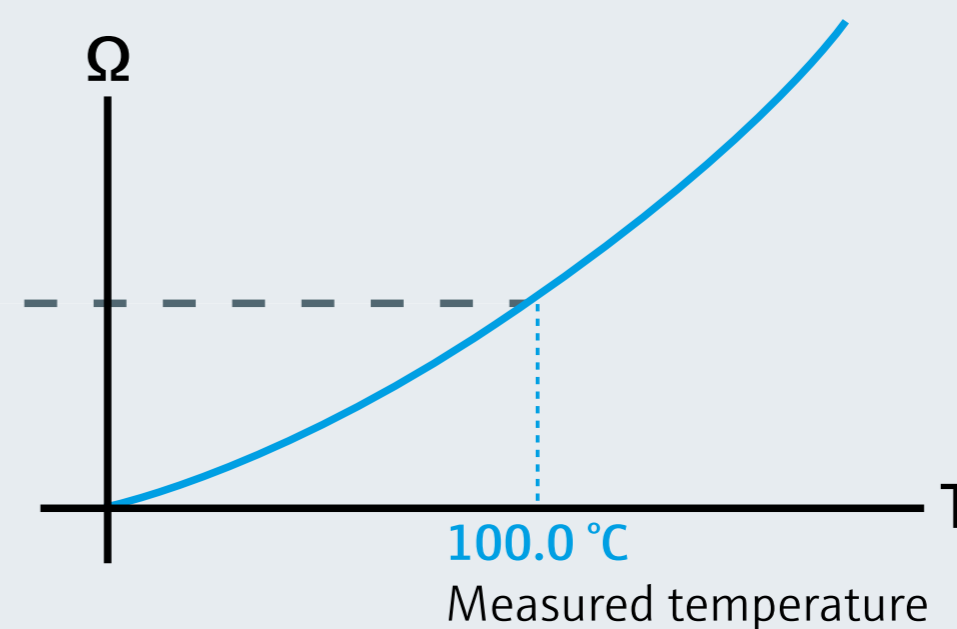
Ideal
Linearized curve in the transmitter



Real
Pt100 sensor



Real
Linearized curve in the transmitter



People for Process Automation



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