FAQ: Rosemount Pipe Clamp RTD Sensor

1) What is the 0085 Pipe Clamp Sensor?

The Pipe Clamp Sensor is a robust, non-intrusive temperature measurement designed for pipes of various sizes. It can accommodate pipe sizes ranging from ½" to 48".

2) How does a surface temperature measurement work?

The process medium heats or cools the pipe wall, while the surface measurement tracks the temperature of the pipe exterior.

3) Does the ambient temperature affect the measurement?

Surface temperature measurement is based on a difference between the ambient temperature and the surface temperature so the influence of the ambient temperature is significant. It is important to try and isolate the surface measurement as much as possible from ambient conditions by using insulation.

4) What is the thermal response time of the Pipe Clamp Sensor compared to a standard intrusive sensor?

The thermal response time is influenced by the wall thickness of the pipe and the insulation surrounding the sensor. The thermal response time of a non-intrusive measuring probe can't be tested according to IEC 751, as the sensor is not exposed directly to the process medium like an intrusive sensor.

5) What needs to be considered during installation of the Pipe Clamp Sensor?

Proper insulation and protection from ambient effects like sunlight, wind, or rain are crucial to achieve the most accurate temperature measurement. Also the bolts must be tightened and secured so the pipe clamp sensor doesn't move due to pipe vibration. For better accuracy it's also recommended to remove all paint and corrosion protection on the pipe where the sensor tip is placed.

6) How can the ambient temperature effects been reduced?

The ambient effects can be reduced by insulating the pipe clamp according to current customer standards. The insulation should be done in a way to prevent water build up between the pipe surface and the sensor tip and keep the surface temperature unaffected from the ambient temperature. Rosemount is gradually accumulating best practices on insulation, but the customer is currently in the best position to make recommendations and decisions.

7) What temperature transmitters can be used with the Pipe Clamp Sensor?

The Pipe Clamp Sensor can be used with all wired and wireless Rosemount temperature transmitters. The assembly supports field mount, head mount, and remote mount.

8) What needs to be considered to avoid corrosion after installation?

To avoid corrosion between the clamp and the pipe, the clamp material should match the pipe material. If this isn't possible, request an NBR (Nitril Butadien Rubber) inlay for the clamp. This inlay helps prevent galvanic corrosion between the two dissimilar metals.

9) How can I order a Pipe Clamp Sensor?

The Pipe Clamp Sensor can be ordered as a standard senor using the 0085 model code.

10) How does the Pipe Clamp Sensor ensure constant contact to the surface?

The Pipe Clamp Sensor is equipped with a spring loaded measuring element.

11) Can I still use the old 0085RP model code?

The 0085RP model code is no longer in use. However, you can still submit an old code for cross-reference when requesting a new quote.

12) What approvals are available for the Pipe Clamp Sensor?

Currently there are no approvals available for the Pipe Clamp Sensor. ATEX, IECx, CSA, and FM approvals will be available in the near future. GOST approvals will be available shortly afterwards.

13) Why is the Pipe Clamp Sensor equipped with a silver or nickel measuring tip?

Silver has a very high thermal conductivity and reduces the response time of the Pipe Clamp Sensor significantly. However, silver measuring tips can only be used from -50 to 300 °C. Oxidation of the silver can occur at temperatures that exceed this temperature range, and to avoid oxidation of the measuring tip, a nickel tip is used for lower temperatures. Nickel has lower thermal conductivity than silver, however; a nickel tip still achieves a much better response time compared to the traditional stainless steel measuring tips.

14) What difference in accuracy and response time can the customer expect compared to a traditional intrusive measurement?

The accuracy of a non-intrusive measurement compared to an intrusive measurement is influenced by many variables like pipe wall thickness, process medium, process temperature, flow rate of the process medium, ambient conditions and many more. Rosemount does not have data available on the response time and accuracy difference but ongoing tests are being conducted to get the data in the near future.

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15) What are the main industries and applications that are using Pipe Clamp Sensor?

Pipe Clamp Sensors are widely used in the onshore and offshore oil and gas production, pipelines, chemical and petrochemical plants, and LNG applications. However, the Pipe Clamp Sensor should be considered in any application where an intrusive measurement is not ideal. For proven results and more applications, please visit www.rosemount.com/PipeClamp.

16) What other reference materials are available?

You can find reference materials such as proven results, and an introduction video on www.rosemount.com/PipeClamp.

17) Why would a user choose a Pipe Clamp Sensor over an intrusive sensor?

Intrusive temperature sensors have advantages regarding accuracy and response time, but it can lead to flow disturbance, corrosion, plugging, wake frequency vibration failure, cleaning problems, and other issues. For some applications these disadvantages can overwhelm the better accuracy and response time and make a pipe clamp surface measurement the preferred solution. An additional advantage of the Pipe Clamp Sensor is the ability to add measuring points during plant operation and without difficult tapping and welding procedures.

18) What is the difference between the actual process temperature and the surface temperature?

Tests are being performed to get an accurate correlation between the process temperature and the surface temperature. Preliminary models are showing differences between 4% and 16%, depending on the process conditions.

19) Are replacement sensors available or do I have to order the entire assembly?

Currently, the entire assembly needs to be reordered within the 0085 model structure. Separate replacement sensors can be ordered through the specials process. In the future, replacement sensors will be available for ordering within the 0085 model structure.

20) What is the maximum temperature rating of the NBR (Nitril Butadien Rubber)-based coating?

The maximum temperature rating of the NBR coating is 200 °C (392 °F)

21) What process do I follow if I have a deviation from the standard 0085 model?

Please follow the steps in the Pipe Clamp Sensor Quick Data Sheet.