

# Intermediate Chemical Manufacturer Improves Quality with High Density, Non-Intrusive Temperature Measurement

## RESULTS

- Improved quality
- Improved throughput
- Reduced maintenance cost
- Reduced energy cost

## APPLICATION

Pipe heating-system temperature monitoring on intermediate chemical (MDI) transport lines

## CUSTOMER

A Large Intermediate Chemical Manufacturer in Eastern Europe

## CHALLENGE

This chemical manufacturer had challenges keeping an intermediate chemical in a foam state during transport. The company needed to better control temperature along the transport pipe.

Conventional temperature measurement using surface sensors with strap-on clamps didn't provide the needed accuracy and were slow to respond to temperature changes. Maintaining effective temperature control without over and undershoot was difficult. The sensor design made sensor replacement difficult and time consuming.

The temperature needed to be maintained very precisely to keep the product in a foam state. Temperature variations caused a dramatic loss of quality and throughput. The feedstock would disintegrate above the target temperature, while it would crystallize below the target temperature, plugging the pipes. A shutdown was then required to clean the pipes. In addition, the slow response to temperature changes wasted energy used to heat the transport pipe and contents. Finally, the time required to replace a failed sensor increased the risk of product loss or a process shutdown if a temperature sensor failed.



*The Rosemount Pipe Clamp RTD Sensor and 848T Temperature Transmitter allowed the customer to better control chemical quality during transport.*



Figure 1. Rosemount Pipe Clamp RTD Sensor

**SOLUTION**

The manufacturer installed Rosemount Application and Industry Solution (AIS) sensors, which incorporated a non-intrusive pipe clamp design and Rosemount 848T Temperature Transmitters. The silver tip and spring loaded design of the sensors provided excellent thermal contact with the pipe and fast response to temperature changes. The use of RTD sensing elements provided a stable, reliable, and accurate temperature measurement. The easy-to-install sensor design combined with replaceable measurement inserts resulted in fast, easy installation and replacement of sensors when needed.

Utilizing the high performance pipe clamp RTD sensors and 848T Temperature Transmitters, more accurate temperature control was achieved. This improved the quality of the intermediate chemical and increased throughput. It also reduced maintenance costs by reducing the risk of feedstock crystallization in the pipe. In addition, better temperature control resulted in lower overall energy costs. Finally, the easy sensor replacement design reduced the risk of a shutdown if a sensor needed to be replaced.



Figure 2. Rosemount 848T Temperature Transmitter

**RESOURCES**

**Emerson Process Management Chemical Industry**

<http://www.emersonprocess.com/solutions/chemical/>

**Rosemount Temperature**

<http://www2.emersonprocess.com/en-US/brands/rosemount/Temperature/AIS-Sensors/Pages/index.aspx>

<http://www.emersonprocess.com/rosemount/products/temperature/m848t.html>

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