

# Furnace OEM Increases Throughput with Application and Industry Solution (AIS) Sensors

## RESULTS

- Reduced maintenance costs by reducing calibration cycles
- Improved throughput



## APPLICATION

Temperature measurement in a high tech annealing furnace

## CUSTOMER

A global furnace manufacturer

## CHARACTERISTICS

Oven temperature from 1000 °C up to 1270 °C, depending on batch material

- Frequent change of batches
- 20-30 measurements over an 80 meter long furnace

## CHALLENGE

This customer is an OEM of annealing furnaces and provides turnkey installation services. The temperature measurement of the annealing furnace is very critical for the quality of the stainless product that goes through it. Thermocouple performance checking should be fast, easy, and error-free.

Maintenance and operation personnel need full information at this rough environment, with ambient temperature ranging from 40 °C - 55 °C near the furnace. They used wire-direct rather than transmitters in temperature measurement. During maintenance, these thermocouples were removed from the furnace and calibrated in a bath once a month. When these thermocouples were reinstalled, sometimes the polarity was reversed, causing measurement errors and disrupting operations.

Due to these measurement errors the annealing furnace needed to be shutdown, affecting production. Maintenance costs also increased due to the frequent need to check the furnace performance and correct the reversed polarity problem.

*This solution is so successful, it's the standard way the OEM installs thermocouples on all their furnaces shipped worldwide.*



Figure 1. Rosemount AIS sensor

Rosemount Application and Industry Solution (AIS) High Temperature Type S Thermocouples ranging from 20 to 30 pieces were installed on two furnace units on top and bottom measuring points to improve temperature control. These thermocouples have ceramic protective tubes to increase their long-term stability in high temperature environments and have compensating cables and connector plugs. Two 644H with LCD (local display) were mounted remotely into a housing with socket available for the connecting plugs and housing close to the furnace. The connector plugs cannot be plugged in incorrectly, so reverse polarity occurrences when replacing the thermocouples were eliminated.

Rosemount AIS sensors helped improve the performance of the maintenance team. Less faults and less time consumption lead to reduced maintenance costs. It also made installation and commissioning easy. Throughput was increased due to eliminating the production time lost while fixing reversed thermocouples. This solution is so successful, it's the standard way the OEM installs thermocouples on all their furnaces shipped worldwide.



Figure 2. Connector Plug

### Rosemount Application and Industry Solution Sensors

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

### Rosemount 644 Head and Rail Mount Temperature Transmitters

<http://www2.emersonprocess.com/en-US/brands/rosemount/Temperature/Single-Point-Measurement/644/Pages/index.aspx>

The Emerson logo is a trade mark and service mark of Emerson Electric Co. Rosemount and the Rosemount logotype are registered trademarks of Rosemount Inc. All other marks are the property of their respective owners.

Standard Terms and Conditions of Sale can be found at [www.rosemount.com/terms\\_of\\_sale](http://www.rosemount.com/terms_of_sale)

Rosemount Division  
8200 Market Boulevard  
Chanhausen, MN 55317 USA  
T (U.S.) 1-800-999-9307  
T (International) (952) 906-8888  
F (952) 949-7001  
[www.rosemount.com](http://www.rosemount.com)

#### Emerson Process Management

Blegistrasse 23  
P.O. Box 1046  
CH 6341 Baar  
Switzerland  
Tel +41 (0) 41 768 6111  
Fax +41 (0) 41 768 6300

#### Emerson FZE

Jebel Ali Free Zone  
Dubai UAE  
Tel +971 4 811 8100  
Fax +971 4 886 5465

Emerson Process Management Asia Pacific  
Private Limited  
1 Pandan Crescent  
Singapore 128461  
T (65) 6777 8211  
F (65) 6777 0947  
[Enquiries@AP.EmersonProcess.com](mailto:Enquiries@AP.EmersonProcess.com)

**ROSEMOUNT**

For more information:  
[www.rosemount.com](http://www.rosemount.com)

  
**EMERSON**  
Process Management