

# Refinery Eliminates Shutdowns Caused by Lightning

## RESULTS

- Eliminated lightning-induced shutdowns over a three year period
- Improved signal reliability under heavy EMI conditions
- Increased production availability

## APPLICATION

Thermal reactor within a sulfur recovery unit where lightning-induced transients are prevalent

## CUSTOMER

Refinery in North America

## CHALLENGE

A North American refinery produces valuable light ends, hydrogen sulfide (H<sub>2</sub>S), and ammonia. They had been experiencing multiple trips of their sulfur recovery unit due to high readings (spikes) from grounded thermocouples and temperature transmitters. These transmitters were used as safety interlocks in the thermal reactor. Upon investigation, the root cause pointed toward EMI/lightning induced transients transmitted either from the grounded thermocouples or field wiring to the field mounted temperature transmitters. The net result was nuisance interlock trips, shutdowns and loss of production.

## SOLUTION

The refinery installed two Rosemount 644H Smart Head Mount Temperature Transmitters and the unit has not suffered any lightning induced shutdowns in over three years.

The Rosemount 644H incorporates a unique diagnostic algorithm designed to reduce or eliminate the effects of electrical transients, which can be induced via high voltage process equipment or lightning. The software solution that is available in every new 644H is called "Open Sensor Holdoff." The Open Sensor Holdoff option, at the normal setting, enables the Rosemount 644H to be more robust under heavy EMI conditions. This is accomplished by having the transmitter perform additional verification of the open sensor status prior to activating the transmitter alarm. If the additional verification shows that the open sensor



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condition is not valid, the transmitter will not go into alarm. This software diagnostic allows the 644 to maintain a good output through most electrical storms and transients without impacting operations and safety.

### RESOURCES

#### Rosemount 644

<http://www.emersonprocess.com/rosemount/products/temperature/m644.html>

#### Emerson Process Management's Refining Industry Web Page

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

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#### Emerson Process Management

Rosemount Division  
8200 Market Boulevard  
Chanhassen, 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

Heath Place  
Bognor Regis  
West Sussex PO22 9SH  
England  
T (44) 1243 863121  
F (44) 1243 867554

#### Emerson Process Management

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)

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