

Leading Producer of Fertilizer and Ammonia Reduces Production Interruptions in Syngas Gasifier Process

RESULTS

- Increased gasifier availability
- Decreased risk of off spec product
- Lower operation and maintenance costs



APPLICATION

Temperature measurement in a Syngas Gasifier

CUSTOMER

Bulk chemical producer in Europe

CHALLENGE

This leading producer of fertilizer, ammonia, and other bulk chemicals had a challenge controlling the temperature within its Syngas Gasifier. The gasifier converts super heavy waste oil into syngas.

Process conditions in the gasifier were very severe with temperatures greater than 1600 °C (2912 °F), a corrosive environment, and toxic gases. These conditions caused frequent and premature failure of the thermocouples that were previously used for gasifier temperature control. Hydrogen penetration into the thermocouple wire caused embrittlement and carbon penetration led to electrical shorts. Temperature cycling and thermal shocks also resulted in mechanical failure.

Frequent thermocouple failures resulted in several negative business impacts. Swapping thermocouples required the gasifier unit to be shutdown thereby causing reduced availability. Unreliable gasifier temperature measurements increased the risk of off spec product. Finally, routine thermocouple replacement led to high operations and maintenance costs.

SOLUTION

The problem was solved by installing a customized Rosemount Application and Industry Solution (AIS) Sapphire Temperature Sensor in the Syngas Gasifier. Sapphire sensor technology was better suited for the very high temperatures in this application. The sapphire sensor technology protected the thermocouple from the corrosive atmosphere with its protective tube and redundant seal system. The hermetic sealing of the sapphire protecting tube helped double the operational lifetime over the previously used thermocouples from 12 to 24 months and decreased the danger of environmental pollution.

The Rosemount Sapphire Temperature Sensors provided reliable performance in this high temperature, high pressure and corrosive environment.



Rosemount Sapphire technology protects the temperature sensor against corrosive atmospheres in high pressure and high temperature applications.

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The innovative Rosemount sapphire thermocouple sensor led to several positive business results for this bulk chemical producer. The AIS sensor increased gasifier availability and lowered maintenance costs by reducing the need to frequently replace unreliable thermocouples ill-suited for the severe application. The customer decreased the risk of manufacturing off spec product with improved gasifier temperature control.

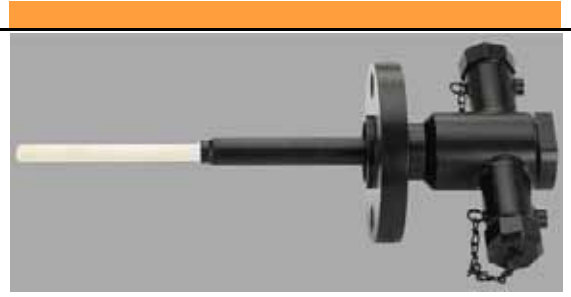
RESOURCES

Rosemount Temperature

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

Rosemount Temperature Sensors and Accessories

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



The redundant seal system prevents toxic emissions from being released into the environment in high temperature and high pressure applications.

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