

Fiberglass Manufacturer Improves Maintenance Cycle and Product Quality with High-Temperature Thermocouple

RESULTS

- Improved fiberglass quality
- Increase process availability
- Decreased energy cost

APPLICATION

Temperature measurement in a high tech annealing furnace

CHARACTERISTICS

- Air temperature of 2372 to 2912 °F (1300 to 1600 °C)
- Molten glass temperature of 2372 to 2912 °F (1300 to 1600 °C)

CUSTOMER

A leading fiberglass manufacturer in Asia

CHALLENGE

This fiberglass manufacturing plant needed to control temperature of hot air to maintain smooth flow of molten glass in the glass furnace. Proper temperature of hot air is crucial to achieve desired quality of end product. Exposed to a highly corrosive environment, the temperature sensors usually start to fail, sending out unstable temperature reading. Operators needed to frequently change sensors to ensure that the temperature of hot air and molten glass was within range.

Due to sensor failure, the process needed to be stopped, causing delay to production and unavailability of the glass furnace. Unstable temperature reading caused increased fuel consumption as the glass furnace was adjusting to the incorrect temperature measurement. Furthermore, molten glass temperature was not maintained leading to defects in the final product.



Rosemount high-temperature thermocouple is better protected for extremely harsh process conditions reducing maintenance cycle and limiting unplanned shutdown due to sensor failure.



Rosemount 1075 High Temperature Thermocouple

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SOLUTION

The plant installed two Rosemount 1075 high temperature thermocouples to replace the failed sensors. The first element is measuring the natural gas temperature at about 1440 degrees C and has ceramic protective tubing. Meanwhile, the second element has a platinum protective tube used for the molten glass temperature measurement at about 1370 degrees C. This provided a highly accurate and stable temperature reading over along period of time, improving the sensor replacement cycle. The expected life span of the sensor is above seven years.

With the temperature of the molten glass properly maintained, the end product quality desired is achieved. And since the Rosemount high-temperature thermocouple is better protected for extremely harsh process conditions, the frequency of replacing failed sensors was decreased, leading to an improved maintenance cycle and limiting unplanned shutdown. Finally, the plant was able to save on fuel consumption of the glass furnace due to better temperature control brought by accurate and reliable temperature measurement.

RESOURCES

Rosemount Application and Industry Solution Sensors

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

Rosemount 1075 High-Temperature Sensors

<http://www2.emersonprocess.com/en-US/brands/rosemount/Temperature/AIS-Sensors/1075-High-Temperature/Pages/index.aspx>

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