

Mitsubishi Gas Chemical Co., Inc. Decreases Costs and Increases Performance with Rosemount™ 3051S ERS™ System

RESULTS

- Improved performance by 20% due to reduced temperature effects
- Reduced monthly batch process interruption
- Decreased operations and maintenance costs
- Enhanced overall safety and efficiency of application

APPLICATION

Plastic monomer production process

APPLICATION CHARACTERISTICS

Operating pressure: 36 kPa

Temperature range: 41 to 104 °F (5 to 40 °C)

CUSTOMER

Mitsubishi Gas Chemical Co., Inc. (MGC)

CHALLENGE

MGC used a differential pressure transmitter with capillary system to measure level on 10-meter tanks. Due to the long capillaries, the measurement reading fluctuated from changes in ambient temperature. If no action was taken, the measurement variance was around 5% between day and night and up to 20% difference between peak summer and winter seasons. These inaccuracies were larger than the plant's acceptable allowance and since the plant uses a batch process, the operators could not proceed to the next step in the process. As a result, engineers needed to readjust the zero point to accommodate for temperature changes prior to the change of seasons. Some of the capillaries had direct exposure to sunlight on the low side of the tank. This caused an expansion on the fill fluid in the capillaries which resulted in a decrease of tank level. As a result, engineers would have to make visual confirmation on site that there were no leakages causing the tank level to change. In addition, visual confirmation by an engineer was very time consuming and posed a safety risk.



“Traditional capillaries gave us many problems due to temperature effects. With Emerson’s ERS System, we are very happy because the measurement is very accurate and it allows us to focus on other parts of the plant.”

Koichi Sakaguchi

Instrumentation Leader & Maintenance Engineer



Rosemount 3051S ERS System

Initially, MGC tried to engineer their own system of measuring the bottom and top pressures separately with two pressure transmitters and performing calculations in their DCS but it proved to be a difficult and expensive solution. To install a second transmitter, 200 meters of cabling and an additional I/O point was required in the DCS. After installation, it was difficult to zero the two-transmitter system and to verify the actual performance.

SOLUTION

Emerson™ Process Management introduced the Rosemount 3051S Electronic Remote Sensors (ERS) System. The ERS System is a flexible, 2-wire, 4-20 mA HART® architecture that calculates differential pressure using two pressure sensors linked together digitally. The ERS System allows traditional capillaries to be completely removed and thus eliminates challenges such as temperature effects and slow time response. Ideal applications for the Rosemount 3051S ERS System include tall vessels and distillation columns that have traditionally required excessive lengths of impulse piping or capillary.

MGC installed the first system three years ago in a 10-meter full vacuum column with a process temperature around 104 °F (40 °C). After six months of continuous run time without any disruptions, the measurement given by the ERS System was observed to be stable and highly accurate. Following the successful installation, MGC has expanded to a total of nine systems: seven full vacuum columns and two final product tanks. The ERS System has eliminated the need for maintenance activities due to temperature changes and allows MGC the ability to focus on other areas of the plant.



Rosemount 3051S ERS System

RESOURCES

Emerson Process Management Chemical Industry

www2.emersonprocess.com/en-US/industries/Chemical/Pages/index.aspx

Rosemount 3051S ERS System

www2.emersonprocess.com/en-us/brands/rosemount/pressure/dp-level-products/3051s-ers/pages/index.aspx

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