Power Plant Reduces Risk of Incurring Higher Maintenance Costs with Reliable Guided Wave Radar

RESULTS

- Reduced risk of higher operations and maintenance costs
- Lowered risk of reductions in facility throughput
- Minimized risk of outages

"The Guided Wave Radar surpassed our expectations and demonstrated that it is both reliable and accurate in this application."

Per Lundmark
Maintenance Engineer

APPLICATION

Condenser

APPLICATION CHARACTERISTICS

Presence of steam and turbulence. Temperatures between 50 to 105 °C (122 - 221 °F), pressure between 0.3 to 1.2 bar-a (4 - 17 psia), and measuring range of 803 mm (32-in.)

CUSTOMER

E. ON in Örebro, Sweden

CHALLENGE

A Maintenance Engineer at E. ON Power Plant was tasked with improving the reliability of facility equipment. Due to aging equipment on two large condensers, he saw an opportunity to improve the system's reliability and accuracy. If the water levels get too low in the condenser, pumps risk being damaged. If the water levels get too high, there is risk of water backing up into the turbine which risks turbine damage and halts electricity generation and heating water production.

Previously E. ON used a pneumatic displacer for level control of the condensers. Their displacer technology was over 30 years old, and it had become increasingly difficult to find suppliers of spare parts or new instruments of this type. They needed to find a reliable level technology for its replacement. The level measurement controls the outlet valve for the condensate by sending a pneumatic signal to a control valve downstream from the pumps. They needed a level transmitter that was not affected by steam or turbulence and could follow very rapid changes in the water level. Reliability of the level measurement is critical for efficient control of the condensate levels.

Figure 1. Rosemount 5301 replaces a displacer on chamber for condenser level control.

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If this customer did not replace the old technology with a compatible continuous level measurement, they risked high operations and maintenance costs associated with obsolete displacer parts. Without a reliable level measurement, the plant risked process instability, potential equipment damage, and potential outages.

SOLUTION

As a solution to this problem, E.ON installed a Rosemount 5301 Guided Wave Radar (GWR) with rigid single lead probe. The Rosemount 5300 was installed in a chamber and tested against a new electronic displacer. During testing, the GWR outperformed the displacer as it was unaffected by temperature changes and had a faster response time to the rapid level changes. Furthermore, the strong signal enabled by direct switch technology allowed the Rosemount 5300 to accurately measure in turbulent conditions.

E. ON was pleased with the performance of the Rosemount 5301 and eventually replaced the electronic displacer with another Rosemount 5301 transmitter. Business results included a reduction in maintenance costs for both labor and parts. Since the Guided Wave Radar does not need calibration and provides a reliable measurement, they were able to maintain process stability thereby minimizing the risk of reduced power generation, outages, and equipment damage.

Figure 2. A second Rosemount 5301 replaces the electronic displacer.

RESOURCES

Emerson Process Management Power Industry

http://www.emersonprocess.com/solutions/power/

Rosemount 5300 Series Guided Wave Radar

http://www.emersonprocess.com/rosemount/products/level/m5300b.html

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