

Heat Exchanger Health Monitoring for Improved Reliability, Performance, and Energy Efficiency

BENEFITS

- Smart Wireless solution easily and cost-effectively enhances visibility into the health of heat transfer equipment
- Easily monitor long term heat exchanger performance at a glance to maximize energy efficiency and lower costs
- Increase unit utilization and consistent product quality



CHALLENGE

There are hundreds of tube and shell heat exchangers in a refinery operating on a continuous basis that are key to operational efficiency. Loss of exchanger efficiency will necessitate an increase in fuel to the crude heater. Eventually the crude heater will reach its maximum capacity to provide heat to the process limiting refinery production. Even though most process heat exchangers are installed with a margin of design heat exchange capacity, gradual fouling of the exchanger surfaces reduce the effectiveness of heat transfer, requiring more fuel to be burned in the process heaters and more heat rejected to the environment. In some cases, such as crude oil exchanger trains, severe fouling can result in increased exchanger pressure drop reducing the capacity of the unit by reaching hydraulic limits of the crude pump.

SOLUTION

Adding wireless instrumentation to regularly monitor the effectiveness of process heat exchangers is economical and easy to implement. Many process heat exchangers were installed with only thermowells rather than temperature measuring elements. Now the refinery has the opportunity to add wireless temperature measurements easily and cost effectively to monitor long term heat exchanger performance at a glance. By monitoring and trending the inlet and outlet temperatures and the hot and cold side process flows, operators have a better view to heat exchanger performance. Emerson's Smart Wireless solutions can also monitor process pressure and track hydraulic limits.

RESULTS

Smart Wireless solutions easily and cost-effectively give operators visibility to long term heat exchanger performance. Greater insight enables operators to attain maximum energy efficiency for lower fuel usage and energy costs. Operating within heat transfer and hydraulic capacity limits ensures greater unit utilization and product quality.

HEAT EXCHANGER SMART WIRELESS STARTER KIT

Monitoring heat exchanger health has never been easier. Emerson has developed a complete wireless solution ideally suited to monitor heat exchanger health that you can order today. The Heat Exchanger Smart Wireless Starter Kit includes the following components:

Field Instruments

You can start with the wireless multi-point temperature transmitter to capture missing temperature measurements. You can grow your field network by adding any combination of wireless pressure, differential pressure, motor and pump vibration, or auxiliary seal oil system discrete level and pressure switches that satisfy the needs for additional measurements to improve energy efficiency, process unit utilization and reliability.

Gateway

A secure, robust Smart Wireless Gateway.

Configuration and Asset Health

AMS[®] Device Manager predictive maintenance software delivers powerful diagnostics from your wireless devices. Easily manage your wired and wireless networks from a single application.

Services

Smart Start[™] Services help you with your first startup, including full network health assessment to ensure robust communications plus verification of device functionality through your chosen output (Modbus, OPC, Ethernet, etc.), with the alerts properly configured. Emerson's technician will not leave the site until the wireless network is successfully communicating with your control system – connectivity of your network guaranteed!

Expansion is Easy and Cost Effective

Start with your critical heat exchanger services and add other process unit measurements to provide reliability enhancing views to the health of rotating equipment such as pumps and air cooled condenser fans and motor vibration at your own schedule with additional field devices using the same gateway and asset health software.



The Heat Exchanger Smart Wireless Starter Kit may include: CSI 9420 Wireless Vibration Transmitter, Rosemount[®] 702 Wireless Discrete Transmitter, Rosemount 3051S Wireless Pressure Transmitter, Rosemount 848T Wireless Temperature Transmitter, Smart Wireless Gateway, and AMS[®] Device Manager.



WirelessHART

WirelessHART[™] encompasses evolutionary enhancements that build on the solid foundation of HART technology used in more than 24 million installed devices worldwide.

www.EmersonSmartWireless.com/FieldKit

©2009 Emerson Process Management. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. AMS, Rosemount, and Smart Start are marks of one of the Emerson Process Management family of companies. All other marks are property of their respective owners.

The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or service described wherein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

Emerson Process Management

12301 Research Blvd.
Research Park Plaza, Building III
Austin, TX 78759
USA