Emerson's Smart Wireless Network Improves Carbon Reactivation Process at Calgon Carbon

BENEFITS

- Wireless temperature transmitters attached to a rotating kiln deliver continuous information for instant response to process changes, enabling better heat control
- Smart Wireless network was easily installed at a reduced cost over a wired solution
- Temperature measurements are integrated in a host PLC

CHALLENGE

As the world's largest manufacturer and supplier of granular activated carbon, Calgon Carbon operates several reactivation plants to prepare carbon for reuse by removing chemicals picked up in previous filtering of air, gases, water, and other liquids. They were looking for a way to make process improvements through providing continuous temperature measurements from a rotating catalyst kiln where spent carbon particles are reactivated. The reactivation process involves passing recycled carbon through the kiln where it is dried and chemicals it has absorbed are "cooked off" at temperatures ranging between 1400°F and 1800°F. Measuring the temperature at each zone in the kiln is important to ensure proper heat transfer for each step in the process.

SOLUTION

Six Rosemount® wireless temperature transmitters were installed to monitor temperatures in the kiln and transmit a steady stream of data, giving operators more information for controlling heat levels in each zone. The wireless transmitters mounted on raised platforms on the surface of the kiln were simply connected to the existing thermocouples, and the *Wireless*HART self-organizing mesh network was set up with a single Smart Wireless gateway. The six transmitters monitor temperatures in five zones of the kiln and at the outlet, communicating data reliably from the rotating kiln to the gateway, which then integrates the measurements in a host PLC.

"We used WirelessHART because of the ease of installing the network, the reduced cost of installation, and the ability to communicate in spite of the constant rotation of the kiln. Non-wireless methods were too expensive, and other wireless line-of-sight systems could not handle the kiln's movement."

Jeremy Dolan
Site Manager, Calgon Carbon

For more information:
www.EmersonProcess.com/SmartWireless

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RESULTS

Smart Wireless was chosen because of the ease of installing the network, the reduced cost of installation, and the ability to communicate in spite of the constant rotation of the kiln. Non-wireless methods were too expensive, and other wireless line-of-sight systems could not handle the kiln's movement. The effects of process changes on heat transfer are now readily apparent, and trending can be used to improve process efficiency. This was not possible previously with the limited amount of information generated every two hours through manual viewing of readouts on devices connected to thermocouples in the kiln. By contrast, other carbon reactivation plants employ a conduit through the center of the kiln with thermocouple "spiders" going out into each zone. This method "very expensive to install and difficult to maintain."

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