

Emerson Smart Wireless Technology Increases Productivity at Wheeling-Pittsburgh Steel Corporation

BENEFITS

- Wireless transmitters provide cost-effective measurements where wired devices would have been too difficult to install and maintain
- Unscheduled downtime is nearly eliminated
- Productivity improved by as much as 10%



CHALLENGE

Wheeling Pittsburgh Steel needed a cost-effective solution for measuring how much water was being sprayed over the surface of steel traveling down the run-out table. Previously, the volume of water applied was determined by look and feel with the adjustment of a manual valve. Installing conduit and wiring for any of these applications would have been very time-consuming. An easy-to-install technology was needed that could handle the steel mill environment while providing information critical to improving operations.

SOLUTION

The initial wireless installation included four Rosemount® wireless DP flow meters with Annubars and one 1420 gateway that were communicating in “less than 24 hours.” The resulting data enabled the operators to get firm control of the volume of water being sprayed onto the hot steel surfaces on the run-out-table in order to achieve specified coiling temperatures. This wireless system has delivered high returns, supplying flow data to optimize and improve strip cooling and nearly eliminate coiling temperature rejects.

In another finishing mill application, two Rosemount wireless pressure transmitters are monitoring the run-out-table greasing system, providing an alarm in case of a system failure threatening to starve bearings of lubricant and cause a roller lock-up that could damage steel on the table. This wireless early warning system makes it possible for maintenance personnel to prevent unscheduled downtime by making system repairs before a bearing seizure can occur.

“We are building an infrastructure that opens up opportunities for more and more applications. Wireless transmitters are being installed farther and farther away from the gateway without a loss of signal quality. The result is better information from difficult-to-reach areas of the mill, and this is helping our personnel prevent unscheduled downtime, meet customers’ quality requirements, and optimize productivity.”

Gary Borham
Operations Manager, Wheeling-Pittsburgh Steel

A third wireless application involves the use of two wireless pressure transmitters to monitor the pressure of cooling water supplied to work rolls in the roughing mill. If the water pressure should drop suddenly, an alarm is raised so action can be taken to prevent roll overheating. After only one of the wireless pressure transmitters was installed, operators were surprised to see two pressure devices show up on the control system. The second device was sitting on the floor of the maintenance shop two buildings away, communicating through concrete walls.

RESULTS

Easily installed wireless transmitters are delivering previously unattainable data on conditions in the 80-inch hot strip mill in Mingo Junction, Ohio, enabling operating personnel to improve product quality and increase productivity.

Emerson's Smart Wireless network is operating reliably in both the roughing and finishing sections of the hot strip mill, where transmitters can be installed and operating in just a few hours with very little manpower. This innovative self-organizing network automatically adapts as device points are added or removed so installing more transmitters has become common since the initial installation proved to be so effective. The transmitted signals are received through a single gateway and delivered directly to the Pi data historian for trending and alarming. The operators therefore have continuous access to the data which they are using to improve operations and maintenance. The operators learned very quickly that the actual flow rates of spray water to the run-out-table were far different than assumed. As soon as the necessary adjustments were made to the water supply, coil rejections disappeared.

“We previously had no way of knowing how much water was being sprayed over the surface of any given piece of steel traveling down the run-out table. The volume of water applied was determined by look and feel with the adjustment of a manual valve. Now, the actual water flow is known, making it possible to always attain the optimum coiling temperature. The guesswork has been taken out of the cooling process and replaced with science.”

Gary Borham
Operations Manager, Wheeling-Pittsburgh Steel

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