SUCCESS STORY 61
ROLLING OF COILED STEEL

Q How can you accurately measure the temperature of rolled products of varying sizes?

A

Situation and background

In a rod and bar mill, steel is reduced from larger ingots or billets into multiple shapes. In this application, the customer was making stainless steel rods that were 9 meters (30‘) long and varied in diameter from 6–38mm (¼–1½ inches). In addition, the positioning of the rods was somewhat random, making it impossible to keep a sensor acurately targeted. An infrared sensor from another manufacturer was installed, but did not provide accurate measurements. The customer wanted a unit that would make a more reliable measurement despite the large variation in size and position of the target. Temperature was measured at several steps in the process: 1. Reheat exit, 2. Sizing block entry, 3. Sizing block exit, 4. Quench, and 5. Coiler.

The winning solution

- The Modline 5R is the best solution for this application. A key feature of a ratio pyrometer, such as the Modline 5R, is that it will accurately report the temperature of the object even if it does not fill the entire field-of-view. After it was installed and targeted, the unit was deliberately defocused, thereby increasing the spot size and removing the random location as a factor in making an accurate temperature reading. In addition, the analog output of the Modline 5R was used to control cooling sprays to achieve the correct temperatures.

Savings made

- Temperature measurement at each of the reducing sections of the mill is critical to achieve product size and metallurgy. With the Modline 5 installed, as mentioned above, the customer was able to improve product metallurgy, thereby improving quality and reducing scrap.

KEY FACTS

Industry
Metals

Customer’s End Product
Coiled Steel

Wire rod coils

Process Temperatures
815-1093°C/1500-2000°F

PRODUCT AND BENEFITS

Modline® 5R

- Effects of size and location of target minimized by using a ratio pyrometer, the Ircon® Modline 5R
- Analog output easily utilized to actuate water spray
- Rugged design suited to harsh environment of steel plant