

Quenching of Ribbed Steel

Temperature Measurement in the Production of Steel Reinforced Bars (Rebar)



Q

Question

How can you monitor the quenching process of moving steel bars accurately?



A

Answer

Situation Analysis

Ribbed steel is normally used in the production of reinforced concrete. On the cooling bed of the rolling mill, the glowing steel bars are transported through long ducts. At the same time, the bars are being quenched by water cooling. Up to 3 bars can be transported simultaneously in one duct. Inside the duct, the bars can change their positions, as they cross over and also vibrate in each direction. A defined quenching process is of vital importance for the quality of the reinforced steel bars or rebar. It is absolutely necessary to monitor the temperature of the bars continuously. To control the water quenching in real time, an analog output is required. To display the temperature measurement, an OPC-output is also necessary.

- Temperature measurement range: 550 to 800 °C (1022 to 1472°F)
- Steel bar diameter: 10 mm (.4 in)
- Distance to measurement object: 0.5 m (20 in)
- Process speed: 20 m/s



MP150 CF Linescanner
CF = Close Focus

Glowing steel bars in
the ducts

MP150 CF Linescanner
CF = Close Focus

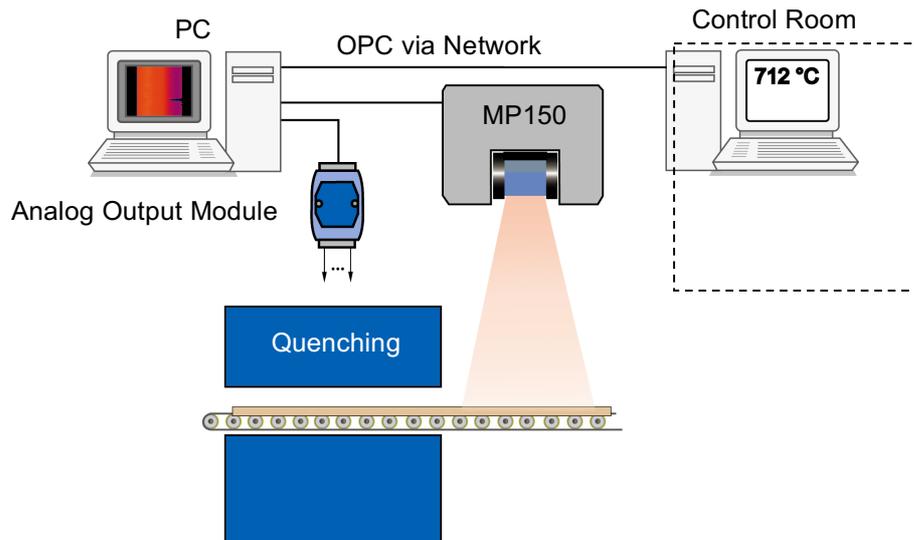
ES150 System with MP150 Linescanner monitors the glowing steel bars**

A

Answer

Solution and Improvements

The ES150 System consists of the MP150 CF (Close Focus) Linescanner and the DataTemp® ES150 software (OPC-server included). With a distance-to-spot ratio of 100:1 and a bar diameter of 10 mm, a 1 pixel image of the steel bar can be measured at a distance of 50 cm. Stationary standard sectors of the ES150 software cannot be used, due to the moving bars, so “generic sectors” have to be established instead. These are not fixed by a consistent position, but will be generated with each new scan line. In this way, they are following the position of the steel bars.



Installation sketch ES150 System for Temperature Monitoring

Raytek Product

ES150 System includes:
MP150MT Linescanner with
Close Focus Optics, DataTemp
ES150 Software with OPC-Server

Accessories

- Line Laser Sighting
- Adjustable Mounting Base
- Digital Output Module
- Analog Output Module

Benefits

- Improved Quality of Steel Bars
- Increased Productivity

References

- Mittal Steel, USA

For customized solutions to your process, please contact:

www.flukeprocessinstruments.com

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