

# SUCCESS STORY 56

## SPECIAL HARDENING OF HEAD RAILS



### KEY FACTS

**Industry**  
Steel processing

**Customer's End Product**  
Railway manufacturing

**Process Temperatures**  
450 to 900°C/842 to 652°F

**Ambient Conditions**  
200°C (392°F) ambient temperature,  
water steam

**Distance to Object**  
600mm/24in

### PRODUCT AND BENEFITS

#### MI32M sensing head with air purge



- Ensures required product quality for the grade of hardening
- Avoids curved rails during heat treating

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How can the hardening of railway head rails be measured?

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#### Situation and background

After a rail is formed, the rail head is hardened to significantly increase the wear resistance of the head. As a first step in this process, the rail has to be heat-treated, which is typically done by induction heating. After reaching a certain temperature, the rail head is cooled very fast with water or compressed air. Measuring the temperature is critical in this application to optimize hardening and yield high quality product.

#### The winning solution

- Small sensing head with laser sighting
- Multiple head installation on one communication box
- Profibus interface to the machine's control system
- Air streams of standard air purges are typically blown in the direction of their mounting axes, which can affect the process temperature. The Raytek MI32M with air purge uses a cross stream flow to eliminate that risk. The customer requested a minimal air volume of 0.4 l / min (0.015 foot<sup>3</sup> / min), which the Raytek system is able to provide. It also protects the head cable mechanically.

#### Savings made

- Cost reduction from improved monitoring of rail heads
- Reduced scrap rate due to improved production quality