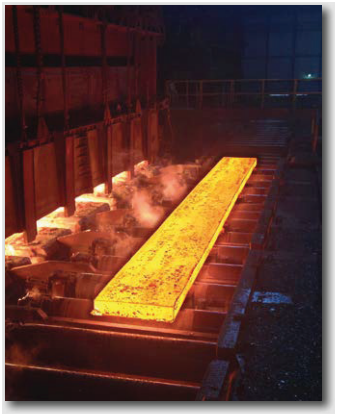
PROCESS SENSORS
CORPORATION
a KPM brand

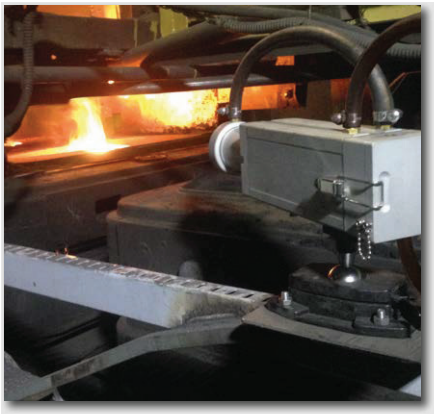
Non-contact Temperature Monitoring in the Steel Industry

Infrared Temperature Measurements in Harsh Environments

Pyrometers for Casting, Rolling and Steel Mill Applications

- Metis 1 or 2-color Heavy Duty, Fiber Optic System
- 2-color Sensor with Video Output
- Line Scanning Systems
- Rugged Portable IR Thermometers (2-color / 1-color versions)
- Protective Cooling, Purging and Mounting Accessories





Flexible Pyrometer Measuring Systems

Process Sensors pyrometers are modern infrared measuring devices for industrial applications that use state-of-the-art processor technology and fully digital signal processing to measure with the highest accuracy, even measuring objects with low emissivities. They are used for temperature monitoring or control of heating or cooling.

Many model variants with useful equipment are used:

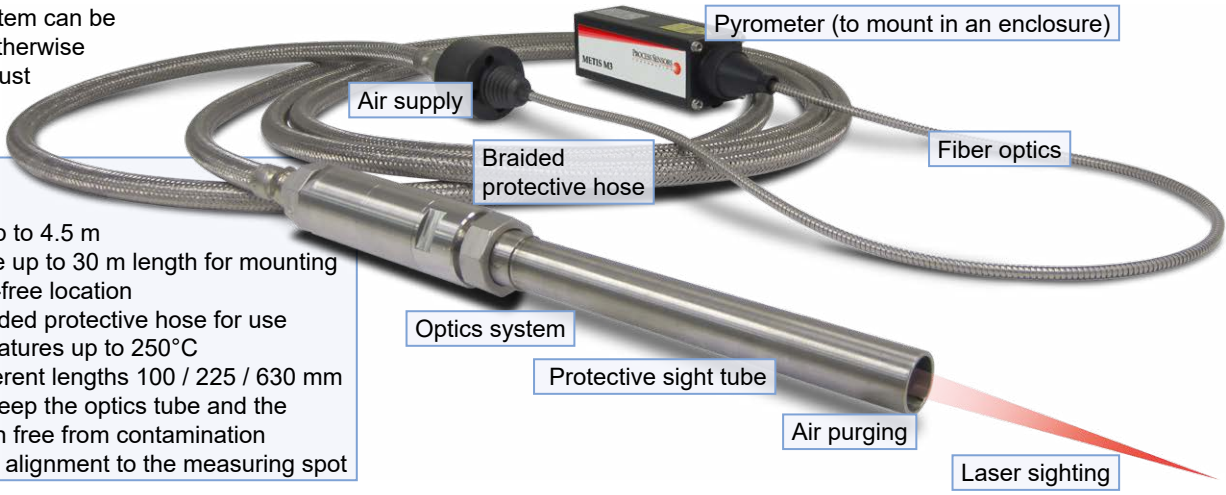
Advantages
- 2-color or standard radiation pyrometer models adaptable for all application conditions
- Minimum and average storage, peak picker for highest temperature of scale-free points on metal surfaces
- 2 high resolution 16 bit analog outputs (0/4 to 20 mA) for high accuracy temperature measurement
- High-speed digital serial interface (up to 921 kBaud) for communication to a PC or PLC
- 3 configurable inputs / outputs for remote control or alarm output functions
- Bright red LED temperature display / menu

For use in harsh conditions, the pyrometers are integrated into heavy-duty housings, allowing them to perform difficult measurements in the steel industry.

Heavy-Duty Stainless Steel Measuring System

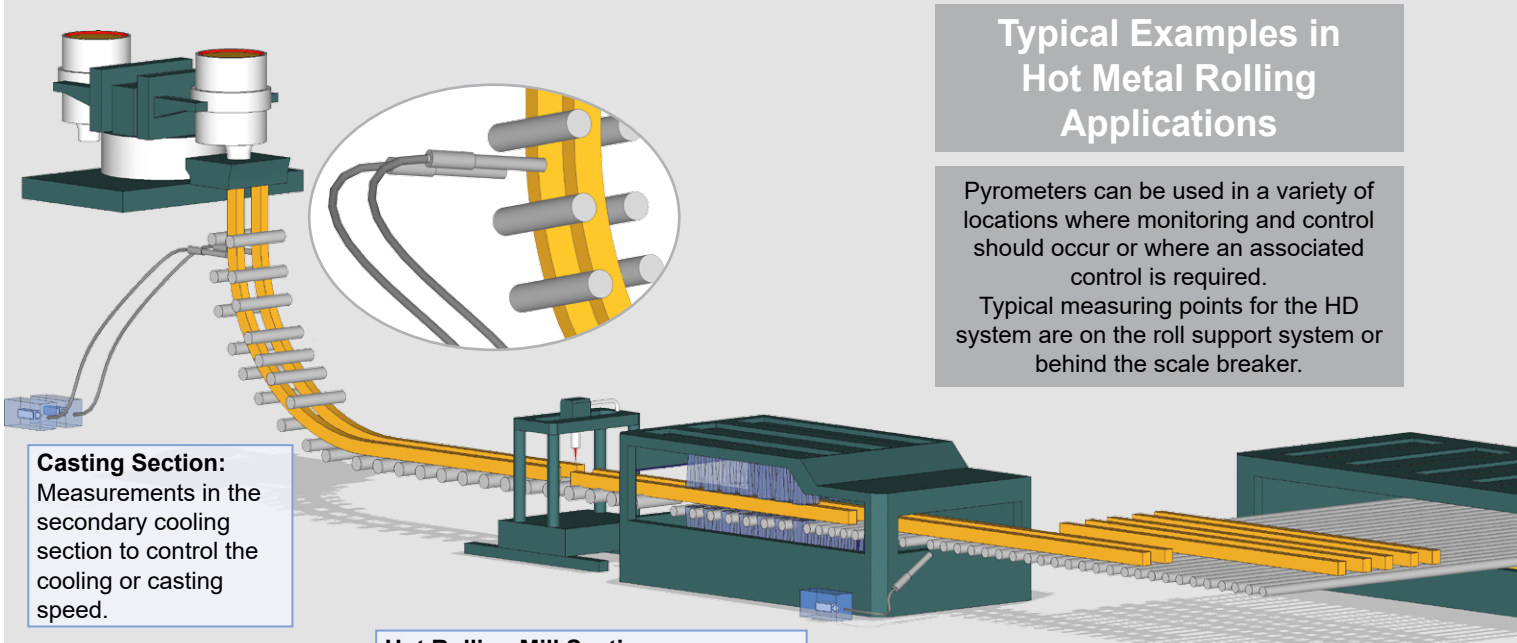
The fully encapsulated system can be installed in places where otherwise heat radiation, water and dust make it difficult to measure precisely.

Advantages
- Customizable long measuring distances up to 4.5 m
- Braided protective hose up to 30 m length for mounting electronics in a hazard-free location
- Optics system and braided protective hose for use in high ambient temperatures up to 250°C
- Protection tubes in different lengths 100 / 225 / 630 mm
- Air purging system to keep the optics tube and the pyrometer field of vision free from contamination
- Laser targeting light for alignment to the measuring spot



Typical Examples in Hot Metal Rolling Applications

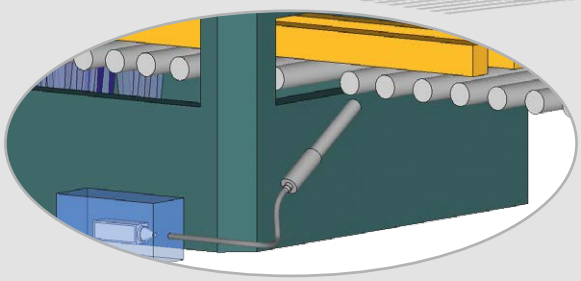
Pyrometers can be used in a variety of locations where monitoring and control should occur or where an associated control is required.
Typical measuring points for the HD system are on the roll support system or behind the scale breaker.



Casting Section:
Measurements in the secondary cooling section to control the cooling or casting speed.

Hot Rolling Mill Section:
Bottom side strip measurement through the roller table on slabs, strips and billets.

Measurement result is not affected by scale or water accumulation after blasting by the descaling unit.



Line Scanner

Suitable for many industrial applications, line scanners with laser sighting feature measure and detect product surface profiles. Line scanners equipped with pyrometers continuously scan the measuring field in order to record all temperatures of the entire target profile on a production line. Along with the pyrometer's peak picker, it will display the maximum value of a target being scanned. Accurate temperature readings are captured despite possible development of cold scale or target movement.

Scan angle and scan frequency adjustable

Laser sighting

Advantages

- Peak temperature measurements over a wide scan area are attainable
- Measurement of very thin oscillating wire is possible
- Temperature detection of scale-free points on scaled metal surfaces are captured
- Hot spot temperature measurement is readily detected
- Peak temperature detection of slabs, billets and steel strips is achieved

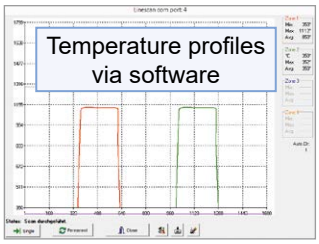
Zone Line Scanner

Zone line scanners are continuously panning the pyrometer's measuring field back and forth and create a temperature profile of the material to be measured. This can be displayed as a temperature graph. The scanner can be set to up to 4 measuring zones, used to detect multiple billets or measure temperatures in the center or at an edge of a passing slab.

Laser sighting

Air purging

1, 2, 3 or 4 adjustable measuring zones



Temperature profiles via software

Protective housing

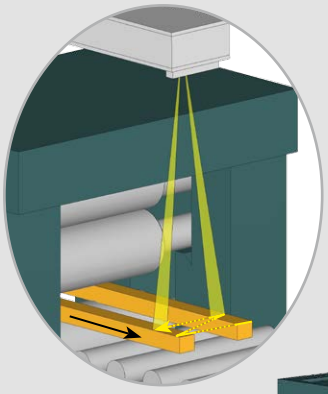
Water cooling

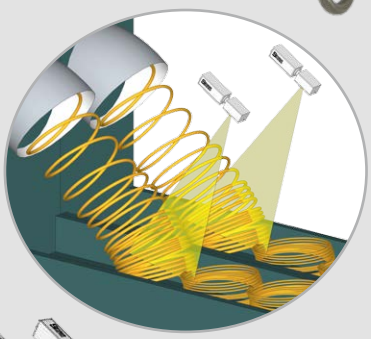
Advantages

- Up to 4 individually adjustable measuring zones according to the angular position and scanning speed required
- Separate information of maximum, minimum or average measured temperatures is provided
- Equipped with adjustable scanning speed and sighting path angle designed for continuous 24/7 operation
- Multiple analog and digital signal outputs provide separate temperature profiles of each zone

Typical Examples in Hot Metal Rolling Applications

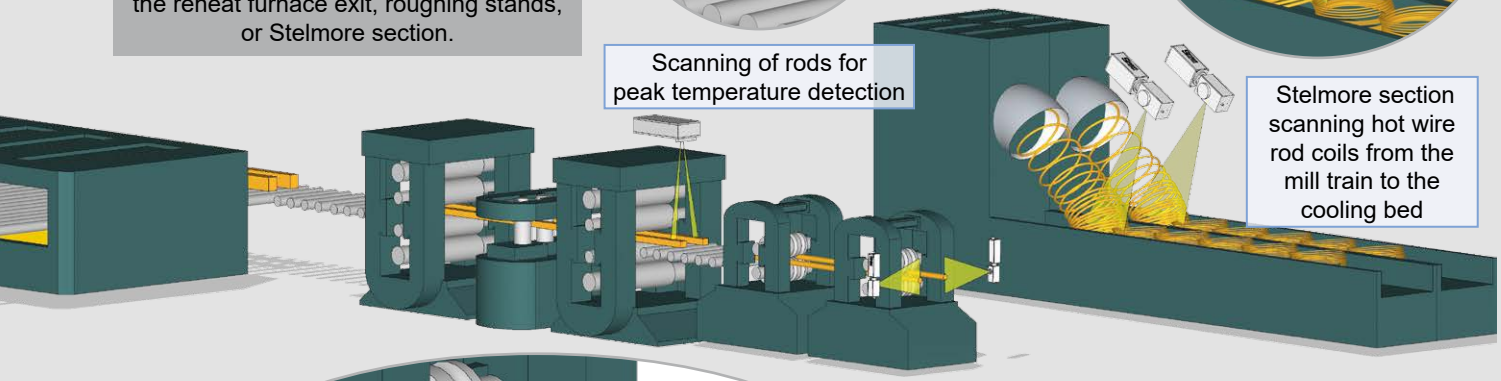
Pyrometers can be used in a variety of locations where monitoring and control should occur or where an associated control is required.
Typical scanner measuring points are at the reheat furnace exit, roughing stands, or Stelmore section.

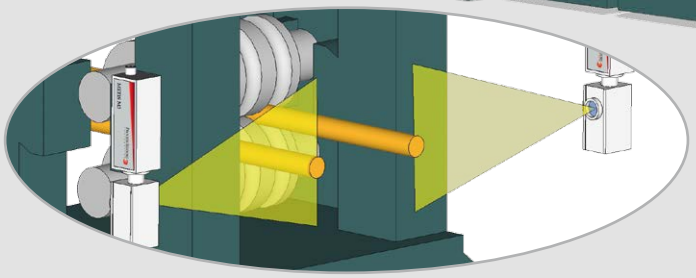




Scanning of rods for peak temperature detection

Stelmore section scanning hot wire rod coils from the mill train to the cooling bed





Scanning of wires for peak temperature detection

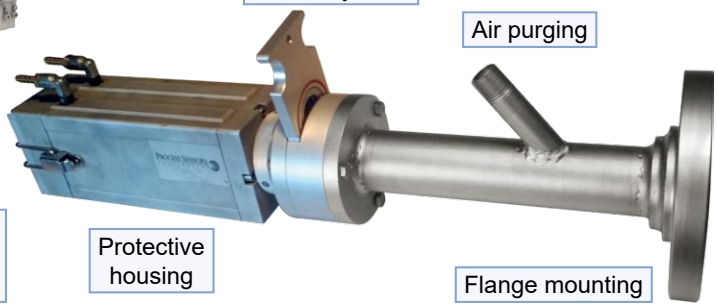
Heavy Duty Protection

Depending on the ambient conditions, a protective cooling housing can be cooled with air or water, thus enabling the use of the pyrometer in much higher ambient temperatures. It can be mounted directly via a mounting flange, pipe adaptor or heavy-duty swivel base mount.

Water cooling

Removable sealed window assembly

Air purging



Protective housing

Flange mounting

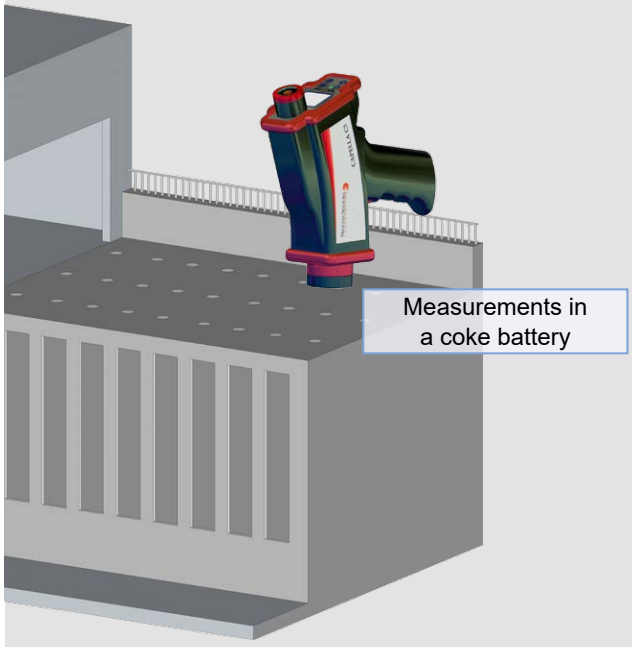
- Pyrometers can be used in ambient temperatures up to 250°C
- Air purging systems keep the optics clean and the pyrometers' fields of vision free from contamination

Handheld, Battery Operated Infrared Portables

Process Sensors' new Capella 1-color/2-color handheld thermometer is ideal for accuracy verification of stationary production line pyrometers and for fast measurements on moving targets. The integrated measurement value memory allows the retention and evaluation of the temperature data.

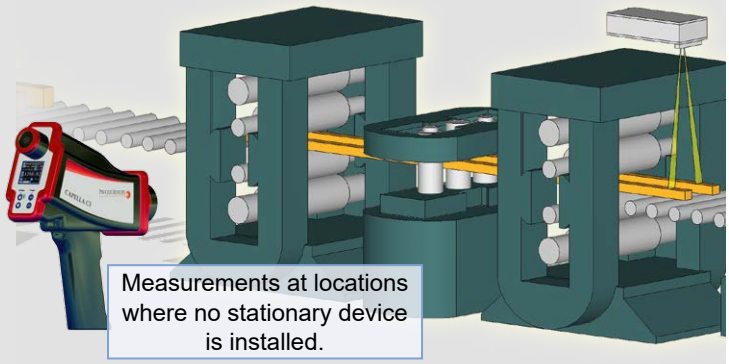
Advantages

- Adjustable focus from 380 mm (1.25 ft) to 10 m (33 ft).
  Target under measurement can be at a greater distance than the focus range
- 2-color or 1-color radiation pyrometer models adaptable for all application conditions
- Switchable laser to thru-lens view finder sighting
- Bright green laser targeting light highly visible on hot glowing targets
- Robust aluminum housing with rubber bumpers designed for long term durability
- Huge data storage capacity for up to 32000 points of measurement
- Minimum and average storage, peak picker for highest temperature of scale-free points on metal surfaces
- Bluetooth and USB connectivity for battery charging and easy data transmission to a PC
- Modern Lithium-Ion technology for long duration operation
- Fast response speed of 1 ms
- Ultra-small spot size



Measurements in a coke battery

Portable infrared thermometers also measure temperature over long distances and can be used to verify accuracy of fixed, online process pyrometers.



Measurements at locations where no stationary device is installed.

Process Sensors reserves the right to make changes in scope of technical progress or further developments.

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