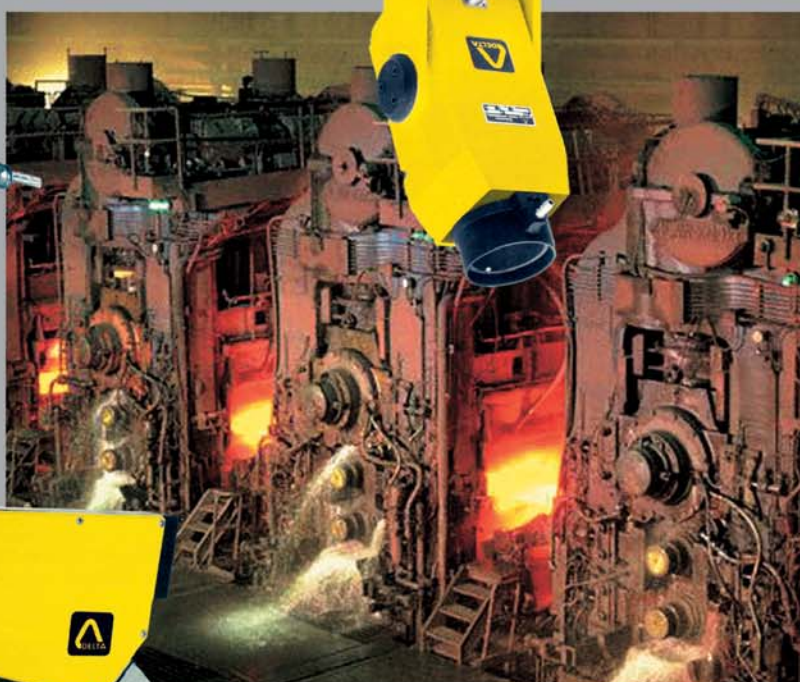
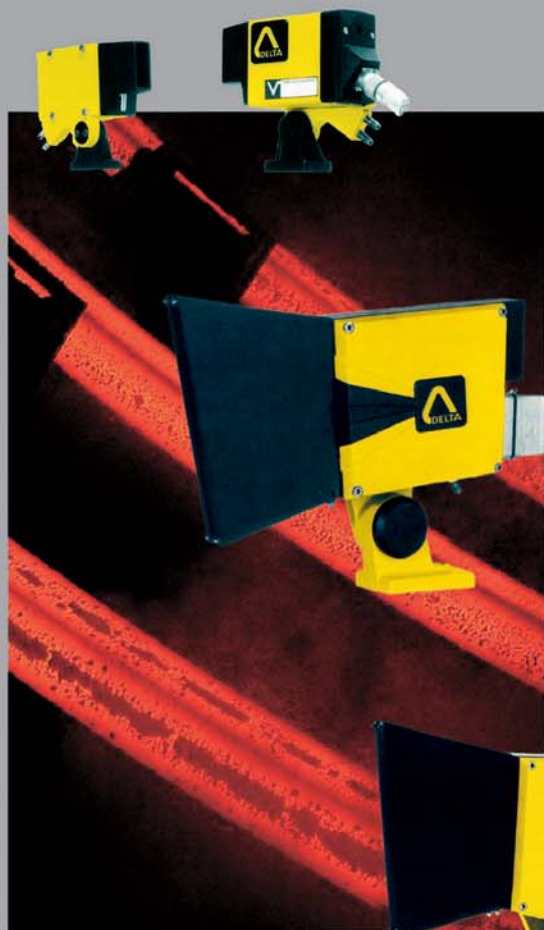
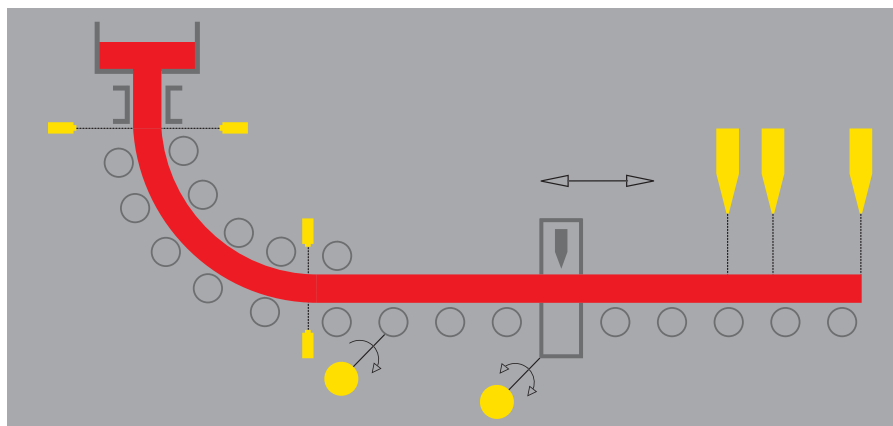


SENSORS AND SYSTEMS

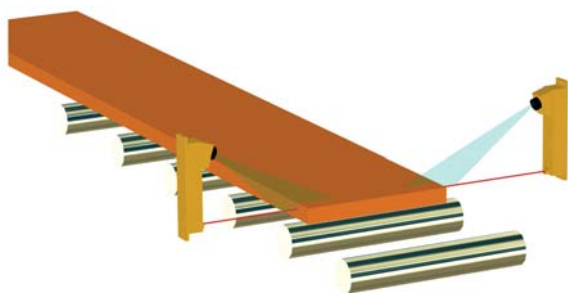
FOR THE
STEEL INDUSTRY



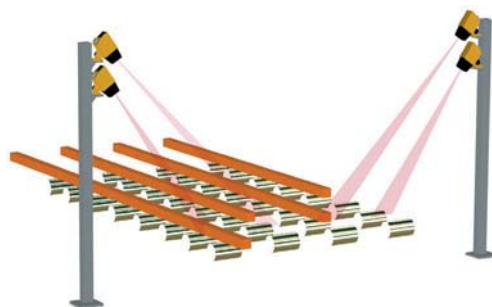
● CONTINUOUS CASTER



- Length measurement - cut to length with Scanning Hot Metal Detectors ROTA-SONDE DC and heavy duty pulse generator GDC or GDP
- Detection of slab/bloom/billet with ROTA-SONDE DC
- Detection for positioning in front of deburring machine and marking machine with ROTA-SONDE DC
- Detection of dummy bar with laser optical barrier VL/VRG or V5

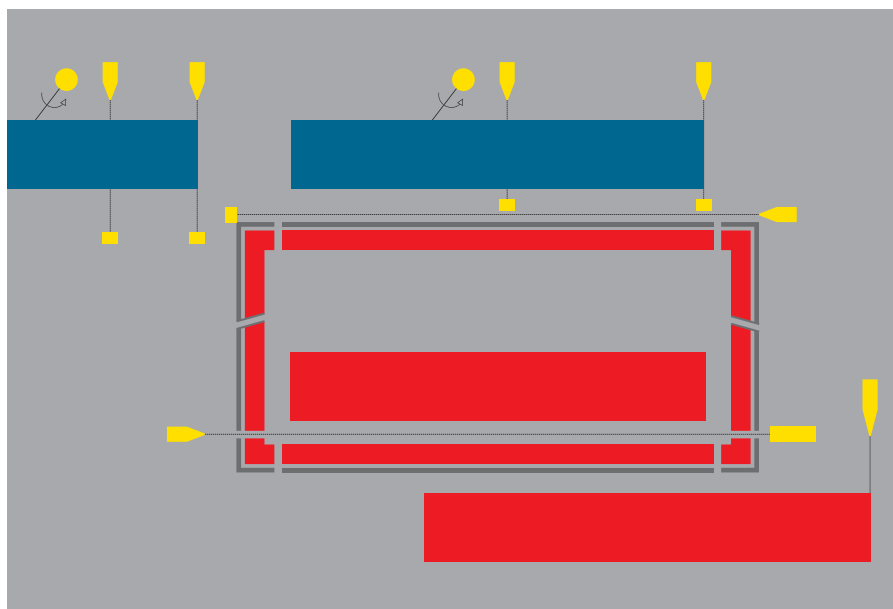


- Width measurement with laser sensor TRILAS-TL
- Length measurement with laser sensor TRILAS-TL or DILAS-FT
- Control of the position of the torches with DILAS-FT

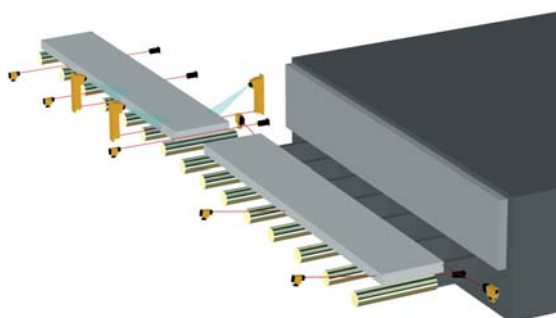


- Detection of bloom or billet for cut to length with ROTA-SONDE DC. The scanning principle of the ROTA-SONDE enables a very accurate detection even with the sensor placed several meters away from the product

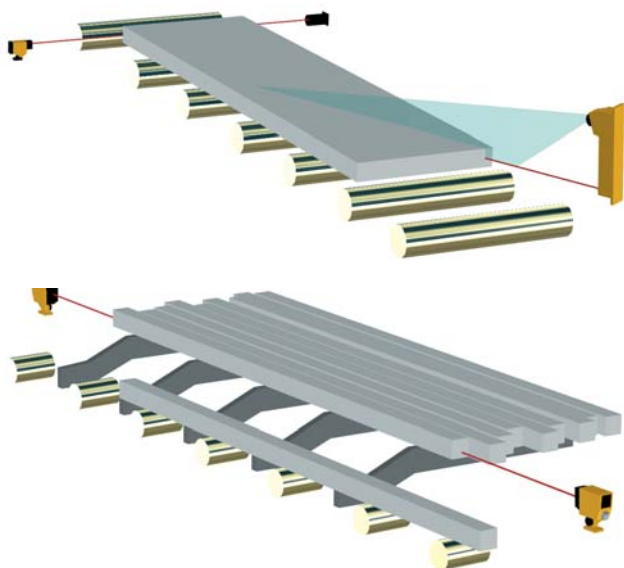
● REHEAT FURNACE



- Detection with optical barrier V3 or V5, and high temperature reflector
- Positioning with laser barrier V5 and pulse generator GDC or GDP
- Detection at the entry of reheat furnace with laser barrier V5 or VL/VRG
- Detection of billet with long range proximity switch IG or IW
- Detection inside reheat furnace with laser barrier ELM/VRF
- Tracking of hot product with ROTA-SONDE DC



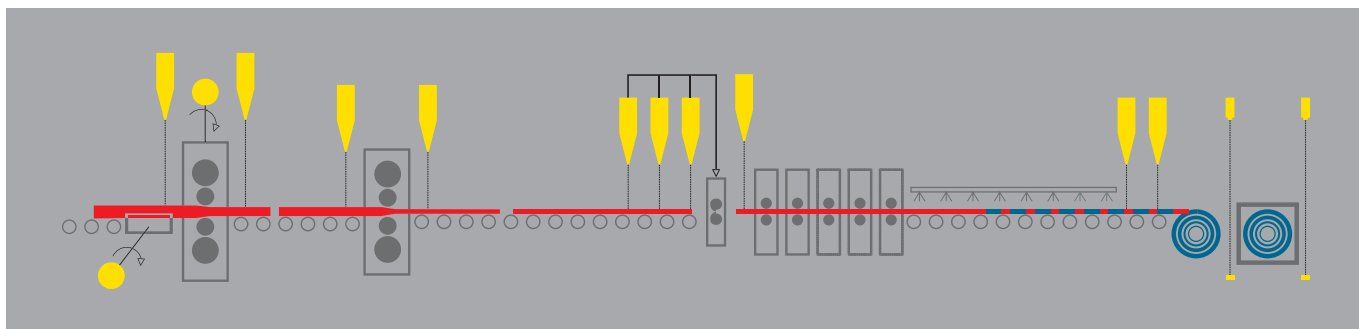
- Detection with optical barrier V3 or V5
- Width measurement with laser sensor TRILAS-TL
- Positioning with laser sensor TRILAS-TL or DILAS-FT



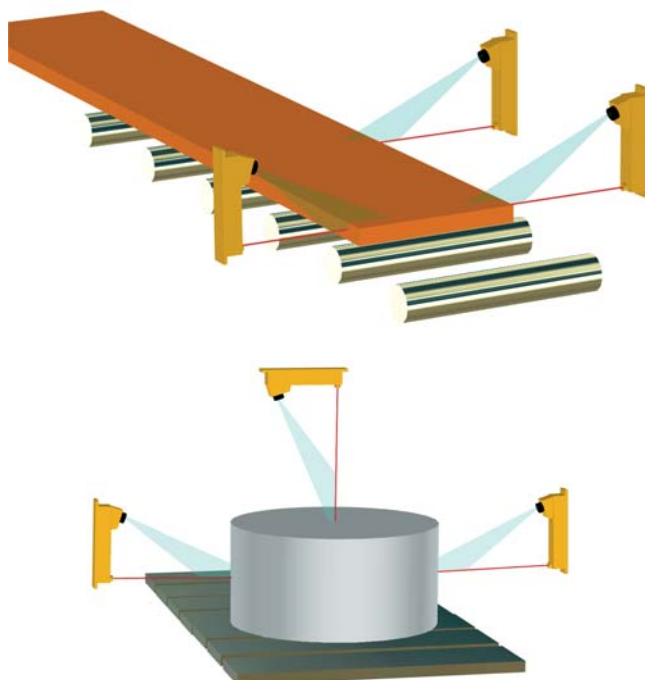
- Slab length measurement with TRILAS-TL and laser barrier V5

- Billet length measurement with DILAS-FT

● HOT STRIP MILL



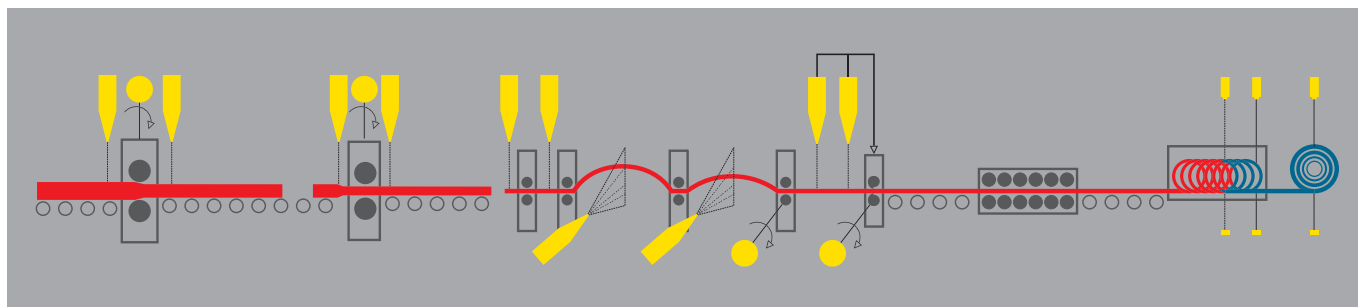
- Centering control with ROTA-SONDE TS
- Reliable rolls gap control in spite of heavy shocks and vibration with heavy duty pulse generator GDC or GDP
- Guide position control with heavy duty pulse generator GDC or GDP
- Tracking of hot strip with ROTA-SONDE DC
- Tail / head detection for cropping control with ROTA-SONDE DC
- Detection of coil with optical barrier V3 or V5



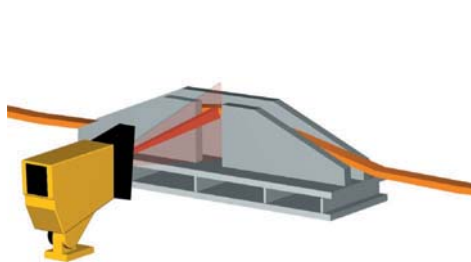
- Width measurement after rehear furnace or roughing mill with laser measurement sensor TRILAS-TL

- Coil diameter measurement,
- Coil centering - Position control,
- Coil height measurement with laser sensor TRILAS-TL

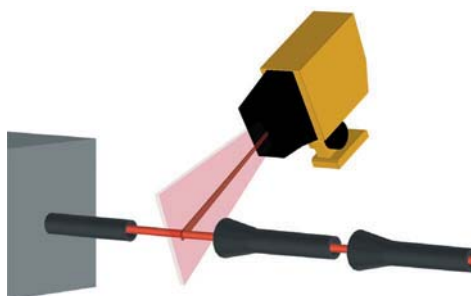
● BAR WIRE MILL



- Tracking of hot product with ROTA-SONDE DC
- Rolls gap control with heavy duty pulse generator GDC or GDP
- Cropping control with high accuracy ROTA-SONDE DC

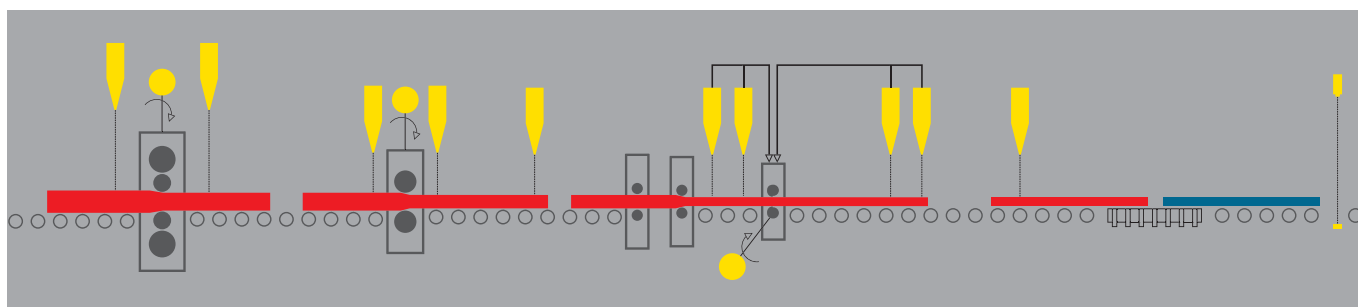


- Vertical and horizontal loop control with ROTA-SONDE TS

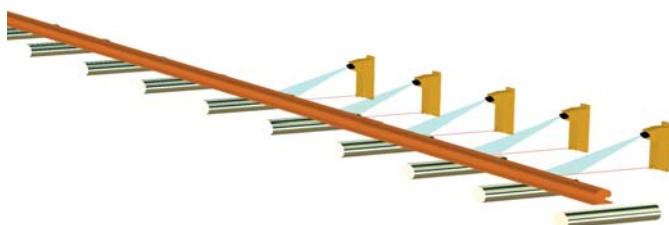


- Detection after quenching with high sensitivity ROTA-SONDE DC.
The ROTA-SONDE DC3000 and DC6000, have two sensitivity ranges, 250 °C and 400 °C. The range can be remotely selected. This feature makes the ROTA-SONDE DC well adapted for the application where the change in the process or the type of material results in a significant variation of the temperature of the product or a variation of its emissivity factor.

● SECTION MILL

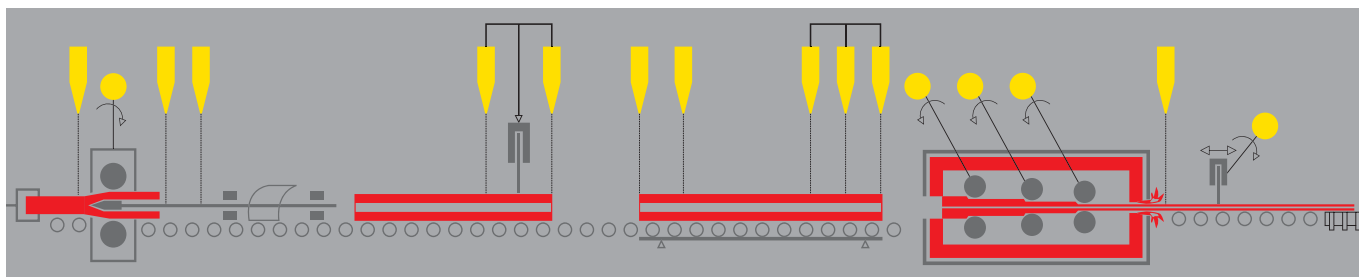


- Tracking of hot product with ROTA-SONDE DC
- Rolls gap control with heavy duty pulse generator GDC or GDP
- Length measurement on the fly of hot product with ROTA-SONDE DC
- Tail and head detection for cropping control with ROTA-SONDE DC
- Shear control with pulse generator GDC or GDP
- Detection after cooling bed with optical barriers V3 or V5



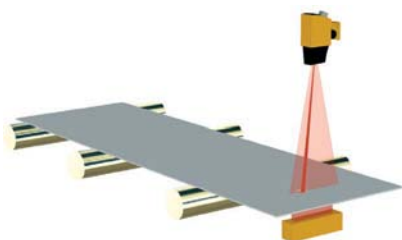
- Inline straightness measurement with laser sensor TRILAS-TL

● TUBE MILL

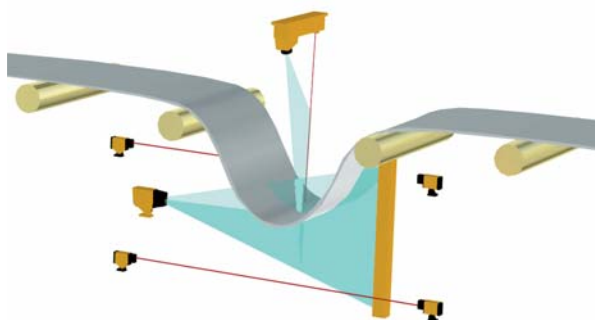


- Tracking of tube with ROTA-SONDE DC
- Cropping control with ROTA-SONDE DC
- Length measurement on the fly with ROTA-SONDE DC
- Roll gap control with pulse generator GDC or GDP
- Speed control with pulse generator GDC or GDP
- Detection with optical barrier V5 or V3

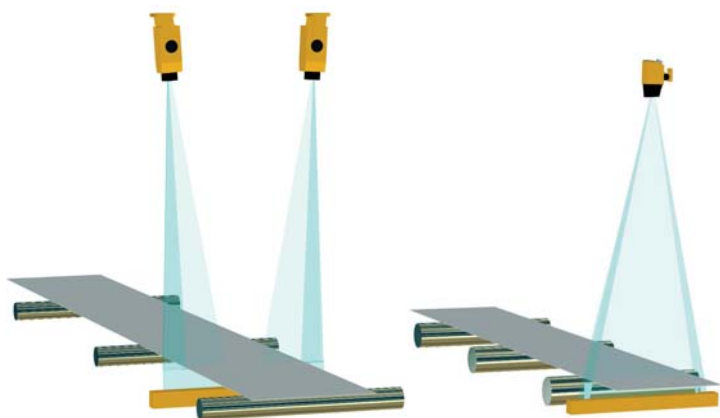
● COLD ROLLING MILL



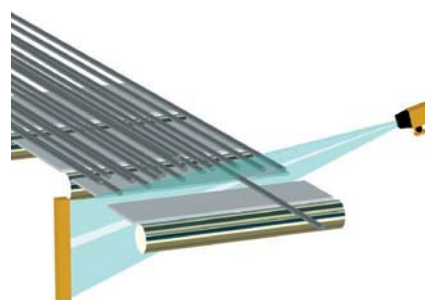
- Weld hole detection with infrared sensor DTS130



- Loop control with laser measurement sensor TRILAS-TL or TSP camera
- Maximum and minimum loop detection with laser barrier VL/VRG



- Width measurement,
- Centering,
- Edge position control with TSP or TPP camera



- Detection of small cold bar on a wide table with DR3000

HIGH PERFORMANCE OPTICAL SENSORS FOR STEEL MILL AUTOMATION END RESULT OF DELTA'S 45 YEARS OF EXPERIENCE.

DELTA's state-of-the-art features include :

- Special designs to withstand the severe steel mill environmental conditions
- Rugged construction with cast metal housing, water cooling and air purging
- Sensors designed for easy installation, operation and maintenance

HOT METAL DETECTORS

The scanning system, in association with state-of-the-art IR photocell technology, is the optimal solution for accurate, fast and reliable detection of product, whatever the size and the temperature. It works under adverse conditions such as water, steam, dust or scale. It is particularly well adapted to applications where the change of the process results in a significant variation of the temperature of the product or a variation of its emissivity factor.

The **ROTA SONDE DC 6000** is a programmable model with serial line. All information, including alarms, operating parameters and infrared radiation level can be remotely checked and the sensitivity level adjusted.



LOOP SCANNER

The **ROTA SONDE TS 2006** optically scans the field to be controlled and does not need any optical adjustment. It accurately measures the size of the loop on wire, rod and profile mills, even for special metals, and in the presence of steam and fumes.

DELTA Loop Scanners with analogue output can control loops, center hot strip and provide positioning information for a wide range of other applications. For cold product, an auxiliary IR source is used in conjunction with the **TS 2006**.



LONG RANGE AND HIGH TEMPERATURE PROXIMITY SWITCHES

The long range proximity switches **IG 120** and **IW 100** are housed in sturdy fiberglass cases and are completely sealed from dust and moisture. They have a sensing range up to 120 mm and a sensing field up to 1200 mm.

The high temperature inductive proximity switches **IH** can work in ambient temperatures up to 180 °C.



PHOTOELECTRIC BARRIERS

DELTA Optical Barriers have been designed with aluminium cast housing and optional air purge and water cooling for use in harsh steel mill environments.

Laser Barriers **V5**, **VL/VRG** and **ELM/VRF** are used in applications where steam, dust or fumes are heavy, as in the case of a water spray chamber, a scarfing machine or a reheating furnace.

High temperature reflectors are able to work in ambient temperature up to 400 °C.



MEASURING AND POSITIONING SENSORS

TRILAS TL is a digital, high resolution, non-contact laser triangulation sensor.

DILAS FT is a digital, high resolution, non-contact laser distance meter sensor.

The target may be hot (up to 1200 °C) or cold, stationary or moving.

By combining several sensors, dimensional measurements and shape readings can be achieved.

Typical applications include slab width and length measurement on continuous caster ; slab, bloom, billet positioning ; measurement on forging machine ; bloom, billet length ; diameter measurement; strip loop control.



SMART LINEAR CAMERAS

DELTASCAN provides solutions for measurement in all strip process industries including cold and hot steel mills, for applications such as : width measurement, edge position, centerline deviation.

DELTASCAN is a modular equipment based on high-resolution cameras.

TSP is a high-resolution linear camera for non-contact, on-line measurement.

TSP directly delivers an analogue signal proportional either to the position of the edge or the centerline, or to the width of the product.

DR 3000 can detect any small section product in a large field of view.



HEAVY DUTY PULSE GENERATORS

The heavy-duty incremental encoders **GDP** and **GDC** are used to control motor speed, to measure length or position on casters and rolling mills, in harsh environments with shocks, vibrations, water and high temperatures.

The water cooling option allows for use in applications with ambient temperatures up to 120 °C.

