During the rolling process of slabs in heavy plate mills, the shape of the slab changes with every pass. At the end, the geometrical dimensions of the plate must correspond with the target values. It is essential to have information about the actual geometrical dimensions of the rolled material for the rolling process.

A tool to measure the shape of hot material on the roller table after the stand between passes is needed in order to evaluate the exact geometrical parameters of the plate.

**YOUR CHALLENGE**

For quality purposes plate records must be archived. The rectangularity must be optimized during the rolling process and the plate geometry must be documented. Maintenance efforts must be low, remote maintenance should be possible via modem or network and the tool must be easy to adjust and calibrate in order to meet the requirements of the plant operator.

Due to disturbances like steam, water and scale, a high availability of shape measurement is also required. At hot rolling mills, even good rolling models are often overstrained by obtaining accurate strip profiles and flatness. Among others, the camber (mainly at the roughing stand) and the position of the strip between the finishing stands are important parameters for obtaining a high repeatability of the strip geometry. High temperatures, high speeds as well as cooling water and water vapor at the rolling mill make it difficult to take accurate measurements.

**OUR SOLUTION**

An optical sensor based on the self-radiation principle is installed safely above the roller table at a height where it disturbs neither the rolling process nor the movement of the crane. When passing the field of view, the sensor automatically detects the plate and starts the measurement procedure. The results are visualized and transferred to Level 1 and/or Level 2 for use in rolling process optimization. This system can also be used for camber measurement at roughing mills and centre line measurement at finishing mills.

ShapeMon sensor: simple and robust solution

**SHAPEMON**

**PRECISE INLINE SHAPE MEASUREMENT FOR HOT STRIPS**
ShapeMon constantly collects pictures of the plate. Depending on the length of the plate, it operates in two modes:

**Block mode:** For blocks and plates smaller than the field of view. The shape is measured with one single image of the sensor.

**Plate mode:** If the plate exceeds the length of field of view, the sensor collects several images of the strip during its pass through the field of view and combines them to form a complete shape.

**Additional features for hot strip mill (HSM):** This system optimizes measurement results for rolling process improvement and enables redundant measurement with high availability even under the influence of cooling water and steam.

**FEATURES**
- Sensor 2,400 x 2,000 pix
- In PM: working distance 17-24m
- In HSM: working distance 5-10m
- In PM: field of view 6x9m
- In HSM: field of view 2,5x2m
- Up to 50 measurement per second
- Temperature range > 700°C edge temperature

**ADVANTAGES OF EDGEMON**
- Minimization of crop losses through crop and camber geometry optimization (in combination with PT rolling model)
- Increase in throughput thanks to rolling control optimization (avoidance of cobbles in combination with PT rolling model)
- Reduced scrap at head and tail end