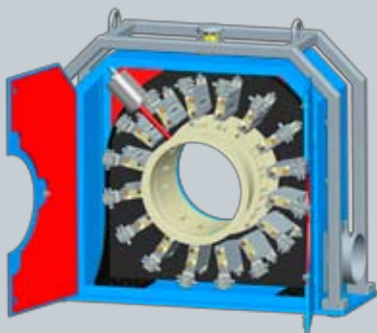


HotProfiler

True measurements of bars & tubes



- *Full cross section and shape*
- *Mill set up time dramatically reduced*
- *Improve product quality & yield*
- *Improve safety*
- *Measure all part of profile*
- *Immediate product and process feedback*



Design for harsh conditions

LIMAB has many years experience in manufacturing and supplying precision laser measuring systems for use in harsh environments found within steel plants. This knowledge is engineered into the HotProfiler to ensure high accuracy with very low maintenance. The system is supplied with a high performance air cooling system

to ensure complete reliability of operation in the hot and dirty conditions that are normal for hot bar and tube mills. The system will meet customer mechanical and electrical requirements for a perfect integration into any rolling mill.

Design for accuracy

High precision sensors are at the heart of the HotProfiler but to ensure an accurate system the design details of all the supporting components and equipment need to be carefully considered. This is where LIMAB's experience counts by paying close attention to the overall design.

Furthermore, the HotProfiler uses our patented algorithm that eliminates errors due to bar movement in the measurement field.

HotProfiler

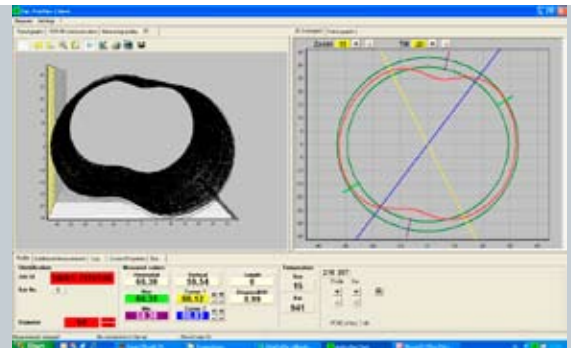
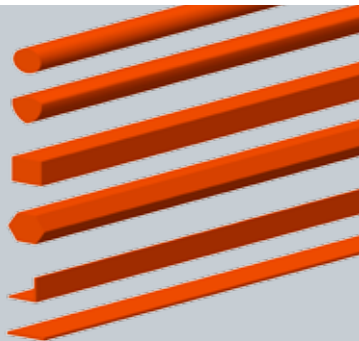
System for accurate measurement of diameter, ovality and shape of bars and tubes.

The HotProfiler uses up to 18 synchronized laser triangulation sensors mounted on a circular base plate with the lasers directed to the centre of the wheel. The mounting angle between the lasers is 20 degrees and the wheel oscillates through an arc of ± 150 degrees. Each laser precisely measures the distance to the hot bar. The software incorporates a patented algorithm ensuring that the movement of the bar in the measuring field does not affect the measuring accuracy. This method gives a high number of highly detailed cross sections which provides a much more detailed analysis of the shape than a typical 4 or 6 axis shadow based measuring system. Furthermore this principle detects all concave and convex surface defects. The system incorporates an automated self centring mechanism to adjust the height of the measuring wheel to suit the mill pass line. A pyrometer measures the material temperature for hot to cold conversion of the measurements. A large remote display shows key measured values.



Benefits

- Full cross section shape measurement using high performance laser sensors which measures up to 18 points around the circumference of the bar.
- Highest measurement rate available today with up to 36kHz for the maximum detail even on the fastest mills.
- Complete cross section profile measured with no missed areas
- Instant recognition of rolling errors such as underfill, overfill, roll misalignment, concave and convex surfaces, allowing operator to take immediate action reducing scrap.
- Mill setup time dramatically reduced between product changes, eliminating need for manually measuring of bars.
- Continuous through bar measurement and tolerance monitoring eliminates production of out of specification material increasing mill yield and reducing scrap.
- Process trend and data logging for 100 % quality control and process documentation.
- Compact design makes it easy to install in new or existing rolling line. Can be easily relocated to new measuring locations if required.
- Improve safety. Eliminates manual inspection of hot bars by operators.



Applications

The HotProfiler is a multi-axis non contact mill gauge providing high accuracy cross section profile and shape measurement on hot or cold bars. Suitable for small or large sized steel products the system will display the true cross section profile and provide min, max diameter, ovality, length waviness, length and other size information.

Suitable for measuring:

Rounds, squares, rectangles, flats, triangles, hexagons and angles.
Also for tubes and pipes.

Software key features

- 2D, 3D and trend graph presentation
- Numerical presentation of key figures
- Tolerance and Alarm limits with on screen warnings
- System set-up
- Calibration
- Data logging for quality control
- Communication with level 2
- Remote service and supervision

Technical specifications

HotProfiler

Measurement objects	Hot/Cold bars & tubes
Product range	Round, square, rectangular, flat several models for different sizes; 5–650 mm
Sampling rate	36 kHz
Profiles per second	5
Measurement system accuracy	from $\pm 0,03$ mm @ 2σ (depending on bar size)
Operating temperature	0-40°C (without cooling system)

Cabinet and PC

Size	2000x600x600 mm
Protection class	IP54
Operating system	Windows XP
Processor	Core 2 Duo
Interfaces	TCP/IP, RS232C, Digital I/O

Laser sensor

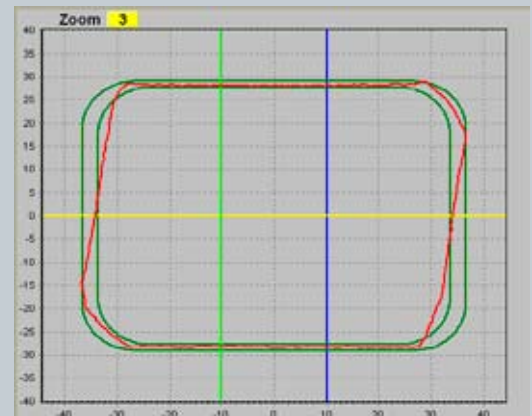
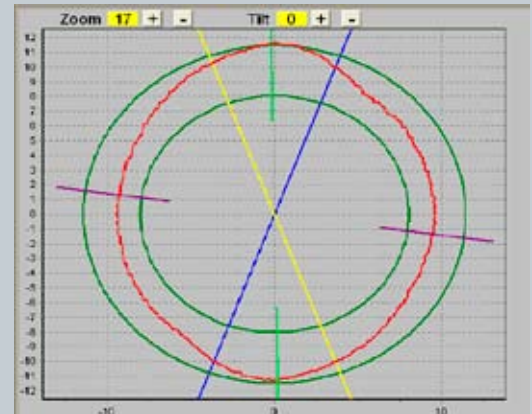
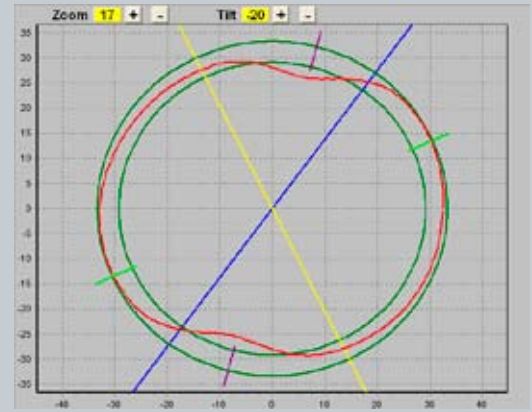
Size	PreciCura SR
Laser class	162x108x42 mm
Protection class	3b (hot application)
Interfaces	IP65, NEMA 4X
	CanBus, RS232, Analogue

Sensor mounting frame

Installation	1500x1500x600mm (typical)
Encoder	Floor mounted
Lifting table	Incremental, CAN-Bus ± 50 mm vertical movement

We reserve the right to introduce modifications without prior notice

Profile examples



LIMAB were founded almost 30 years ago and have a long tradition of producing laser sensors and non contact measuring systems to meet the needs of the industry. Headquarters and manufacturing plant is located in Gothenburg, Sweden. LIMAB have regional offices in USA, UK, Germany and Finland and with distributors to cover other areas. LIMAB has over 20 years of experience in steel installations.



LIMAB North America Inc.

9301 Monroe Road, Suite B
Charlotte, NC 28270
USA
Tel: +1 704 321 0760
www.limab.com

LIMAB Oy

Henry Fordin Katu 5K
FIN 00150 HELSINKI
Finland
Tel: +358 (0)947 80 36 68
www.limab.fi

LIMAB GmbH

Mitterlangstr. 28
D-82178 Puchheim
Germany
Tel: +49 (0) 89 84058320
www.limab.de

LIMAB UK Ltd

Unit 1J Chelston Business Park
Wellington
Somerset, TA21 9JQ UK
Tel: +44 (0) 1823 668633
www.limab.co.uk

LIMAB®
CONTROL BY MEASUREMENT

Exportgatan 38 B
SE-422 46 HISINGS BACKA, Sweden
Phone +46 (0)31 - 58 44 00
Fax +46 (0)31 - 58 33 88
sales@limab.se - www.limab.com