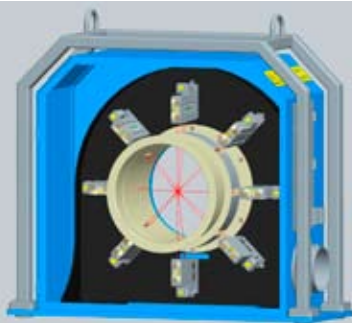


TubeProfiler

True measurements of Tubes



- *Diameter, ovality and shape measurement*
- *High accuracy*
- *Measure all surface parts*
- *Detection of material twist*
- *Non contact – low maintenance*
- *Oscillating – Non oscillating frame*



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 TubeProfiler 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 tube mills. The system will meet customer mechanical and electrical requirements for a perfect integration into any tube mill.

Design for accuracy

High precision sensors are at the heart of the TubeProfiler 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 TubeProfiler uses our patented

algorithm that eliminates errors due to bar movement in the measurement field.

TubeProfiler

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

The TubeProfiler 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. Each laser precisely measures the distance to the tube. The software incorporates a patented algorithm ensuring that the movement of the tube 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

Cross section measurement with 18 sensors display the true shape and dimension of the tube.

High measurement speed. 36.000 measurements per second, which gives a complete product shape information.

No missed surface area.

Laser based optical triangulation measurement ensures accurate and reliable measurement data.

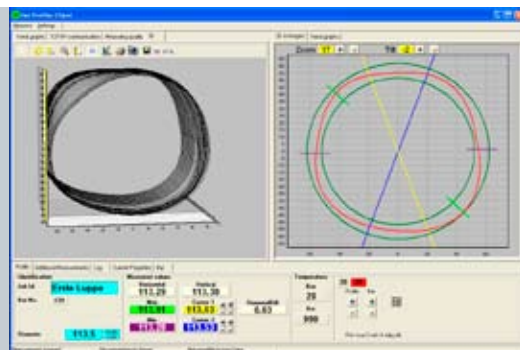
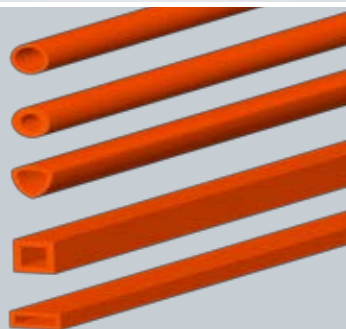
Immediate product and process feedback. Allows for quick recognition and response to out of tolerance features.

Reduces costs caused by non-conforming production.

Mill setup time dramatically reduced between product changes.

Easy to install in new or existing rolling line. The design permits easy relocation of the TubeProfiler.

Robust design with a minimum of maintenance.



Applications

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

Suitable for measuring various shaped tubes including round, square, rectangle.

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
- Communication with level 2
- Remote service and supervision

Technical specifications

HotProfiler

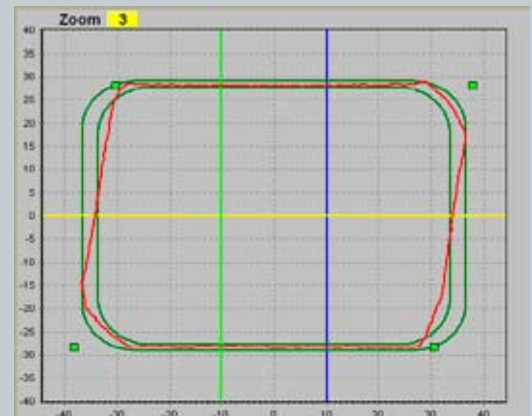
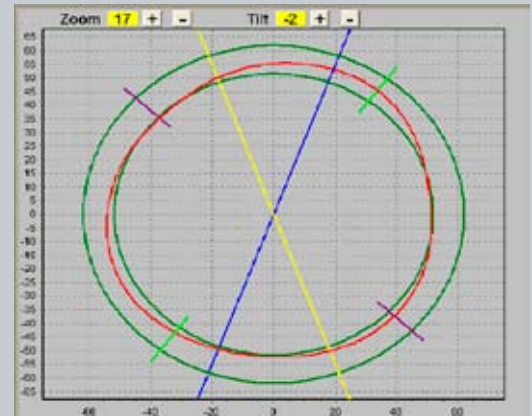
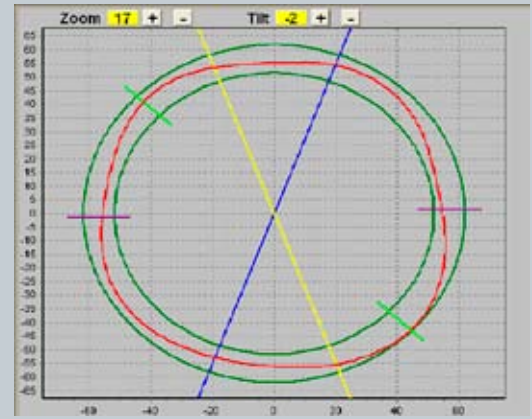
Measurement objects	Hot/Cold tubes
Product range	Round, square, rectangular several models for different sizes; 5 – 1800 mm
Sampling rate	36.000Hz
Profiles per second	20
Measurement system accuracy	from +/- 0,03mm @2s (depending on tube size)
Operating temperature	0-40°C

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	PreciCura SR
Size	162x108x42 mm
Laser class	3b (hot application)
Protection class	IP65, NEMA 4X
Interfaces	CanBus, RS232, Analogue
Sensor mounting frame	1300x1300x500mm (typical)
Installation	Floor mounted
Encoder	Incremental, CAN-Bus
Lifting table	200 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 15 years of experience in steel installations.



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