

HIPROFILE LITE

Laser Profile Gauge
for hot & cold long products

DANIELI AUTOMATION

HiPROFILE LITE

Applications

- > Hot and cold long products
- > Wire rod & bar mills
- > Light section mills
- > Rebar or TMT mills

HiPROFILE LITE is a laser based 3D measurement instrument providing non-contact on-line profile shape inspection and dimension measurement for either hot or cold rolled products.

From small rounds, squares and flats through rebar, HiPROFILE LITE provides the optimum solution to improve production performance and quality.

Principle of operation

The HiPROFILE LITE system is based on laser-sectioning optical measurement techniques and image processing algorithms. Geometries, components and design solution of the 3 laser-sectioning heads and of the whole system are optimized to fulfil the requirements of hot steel detection and measurement.

The three measuring heads are synchronized to acquire, at high sampling rate, the contour of an extremely thin slice of the hot-rolled bar. This feature guarantees for a superior blur-free behaviour in presence of the vibrations and transversal bar movements typical of the hot rolling process.

The image of the profile is then real-time processed by sophisticated recognition techniques and software algorithms to obtain the desired shape and dimensional data. The thermal expansion due to the material temperature is compensated by a parametric model linked with steel and product properties, to provide on the fly measures on the hot bar as it will be in cold conditions.

The design of the system is focused to face all the side effects that the measuring of a 1000°C-steel bar involves.

Disturbances due to infrared radiation that comes from the bar are avoided by a specific optical design, to obtain minimum-noise measures.

The lean system architecture that doesn't require installation of additional automation cabinets in control room, can be configured with variable number of accessories like additional operator supervision station, giant display, traffic light and more. Operating and installation costs are very low: the electrical supply is the only utility required to customers for gauge operation.

A wireless connection is available nearby the gauge to aid during periodic maintenance.

Features

- > Blur-free profile acquisition and minimum-noise measuring
- > No need for water and compressed air (electric power is the only utility required)
- > Fully synchronized laser triangulation heads
- > Specific algorithms for real profile measurement of rebar and Kocks-like sections
- > Alarms in case of out of tolerance products
- > Continuous real time production control & tracking
- > Control points on the profile configurable by operator
- > No moving parts
- > Historical database for quality control purposes
- > Statistical Process Control (SPC) to analyze production trends
- > User friendly operator interface (Numerical & Graphical visualization)
- > Easy system diagnostic interface
- > Integration via TCP/IP with existing customer network
- > Dedicated software to export CAD files of the measured product

Benefits

- > Immediate on-line dimension measurements
- > In-line calculation of Adherence Index for rebar
- > Improved rolling tolerances
- > 100% product Quality monitoring
- > Fast return on investment
- > Reduction of scrap and second choice products
- > Faster reaction in case of out of tolerance products
- > Faster Startup time after production changeover
- > Reduced production downtime
- > Automatic calculation of weight per meter
- > High accuracy with excellent repeatability
- > No physical contact with rolled product
- > Good tolerance to material position changes
- > Immunity to product vibration
- > Small footprint (only 300 mm in material flow direction)
- > Low maintenance required
- > Low operating cost (only electric power is needed)



HiPROFILE LITE
plant installation



HiPROFILE LITE
user-friendly
HMI interface



HiPROFILE LITE - Technical specifications

Product dimensions	from 4 to 70 mm
Accuracy	down to 0.015 mm
Resolution	≤ 0.005 mm
Points per profile	2,250 points/profile every profile acquisition: 1,125,000 points per second
Profile sampling rate	up to 2,000 complete sections per second

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