

## **Revolutionary, rotating in-line dimension measurement with STEELMASTER SMR from ZUMBACH - for 100% Quality inspection**

**ZUMBACH Electronics, the Swiss manufacturer of inline measuring and monitoring systems, has developed a rotation-based laser scanning process that maps round and polygonal shapes up to 6000 times per second - a first for the industry.**

To make production processes as efficient as possible, modern in-line measurement devices are required not only to measure parameters such as diameter, ovality, width and height at very high speed, but also to instantly detect shape deviations and rolling errors. Some suppliers claim that in steel production, mechanical solutions are more than adequate for these purposes. But not all manufacturers in the industry agree. ZUMBACH Electronics has been an innovation leader on the market since 1957, and its experience has shown that it pays to continually develop new technologies and solutions that deliver more precise measurements and thus contribute to higher productivity. ZUMBACH also believes in user-friendly operation and close-to-zero maintenance.

These very standards were applied to the Swiss manufacturer's latest product series, the STEELMASTER SMR. STEELMASTER units have been used in steel production for many years as a tried-and-tested solution to improve the monitoring of hot rolling and cold processes. Until now, dimensional measurement and error detection have always been carried out by static or oscillating devices, depending on the application. These devices can measure with great accuracy the outer dimensions and diagonals of both round and non-round products such as squares, hexagons and flat products, regardless of twist and angle of twist. But until recently the level of precision achievable in manufacturing processes involving high rolling speeds and short lengths left much to be desired. The new STEELMASTER SMR product generation, comes with sophisticated technology in the shape of an innovative and much faster rotational measurement system. With its superior performance, STEELMASTER SMR opens up a whole new range of applications. The system is based on up to three fully synchronised high-tech laser measuring heads of the ODAC® series, which use an innovative rotational principle to measure outer dimensions, diagonals, diameters and cross-sections with 360° coverage. Each ODAC® laser measuring head rotates at a speed of 100 rpm and maps the scanned products up to 2000 times per second to create a precise product profile. In this way up to 600 profiles can be generated every minute. This allows manufacturers to significantly reduce scrap while maintaining stricter tolerances of ½ and ¼ DIN.

There are no longer any restrictions as to the shapes the system can cope with. The STEELMASTER SMR models can handle any asymmetrical, polygonal and irregular shapes made of steel and metal up to a diameter of approximately 135 mm and temperatures of up to 1200<sup>0</sup> C.

The innovative rotary movement isn't the only technical refinement, because there is also the unique, non-contact transmission of power and signals within the measurement unit. The STEELMASTER SMR software is very flexible, allowing data statistics, numerical and graphical displays, logs and so on to be freely configured in line with requirements and working practice in the production environment.

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**September 2012**

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ZUMBACH developed a novel method, EPM (Enhanced Profile Measurement, pat. pend.) for geometries with irregular or asymmetric shape aberrations (e.g. asymmetric overfill or underfill). In particular it is also able to capture and calculate polygonal shapes, which can occur in certain rolling processes or after subsequent peeling / grinding operations. For any shape it will measure at high accuracy not only min., max. and mean diameters but also the true out-of-round deviation RONt as defined by ISO / TS 12181-1 as well as the inscribed circle MICI and the circumscribed circle MCCI.

An optional module named FPS, especially for 3-roll blocks, calculates accurate values corresponding to the diameter values which would be found by manual 3-point micrometer screws (if both readings are related to room temperature). This FPS module additionally calculates the "Touch" and "Gap" diameters which are essential for the initial roll setting.

The dynamic regression analysis included in the software package means that twist and angle of twist no longer influence the measurement result. This results in lower scrap rates and ensures compliance with strict tolerances. The technology also performs regardless of position, vibration, material temperature and light intensity.

STEELMASTER SMR measuring units have the same tried-and-tested architecture as the proven static and oscillating systems. ZUMBACH delivers 100% quality inspection with virtually 0% outlay for repairs and maintenance. The fully contact-free transmission of power and signals also ensures maximum operating safety. An efficient air flushing and cooling system keeps the unit functioning reliably and can be supplemented if necessary by a water circuit.

All STEELMASTER systems can be extended to include up to four measuring units with a single data acquisition and processing system. Any combination of static, oscillating and rotating SMR measurement units may be used.

By opting for the STEELMASTER measuring system, manufacturers can benefit from high-precision measurements and the resulting competitive advantages, such as faster start-up, less downtime and lower personnel requirements. This results in new quality standards and opens up new, multiple applications.

#### *Applications:*

- Hot and cold rolled products:
  - Wire
  - Steel bars
  - Steel sections
  - Seamless tubes
- Continuous casting / rolling
- Extrusion of steel, lead, aluminium, non-ferrous heavy metals

*See the video about STEELMASTER SMR →*



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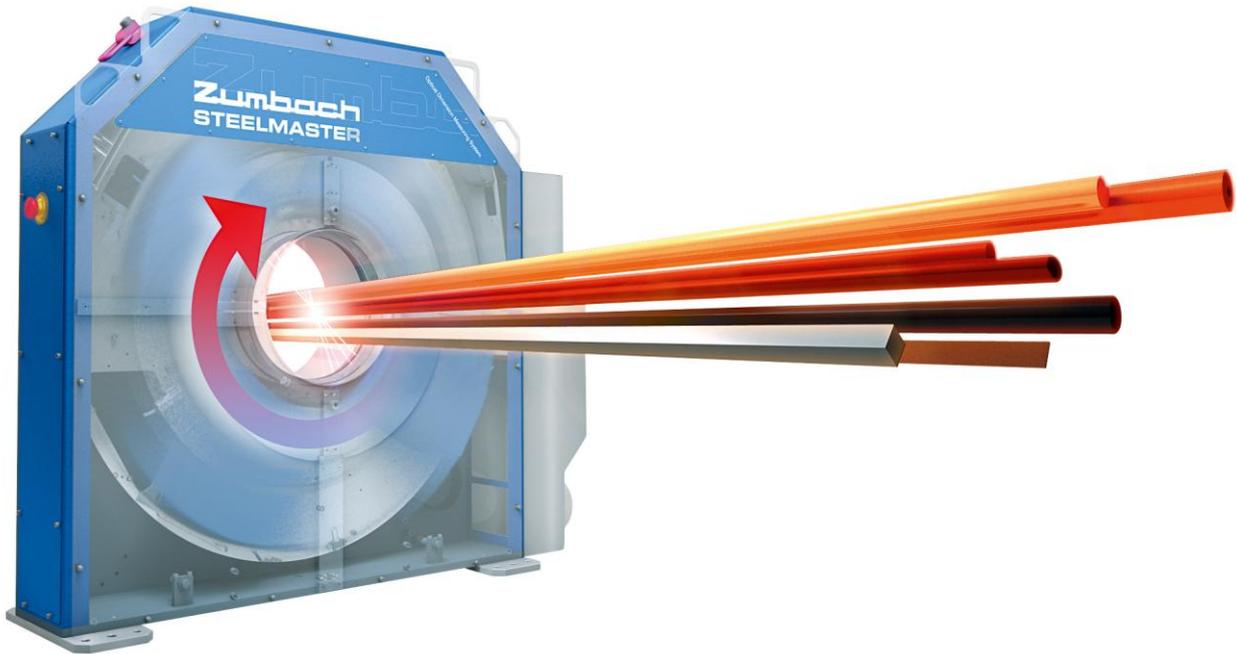
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STEELMASTER SMR measuring unit

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