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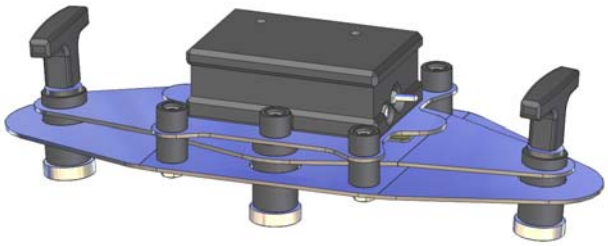
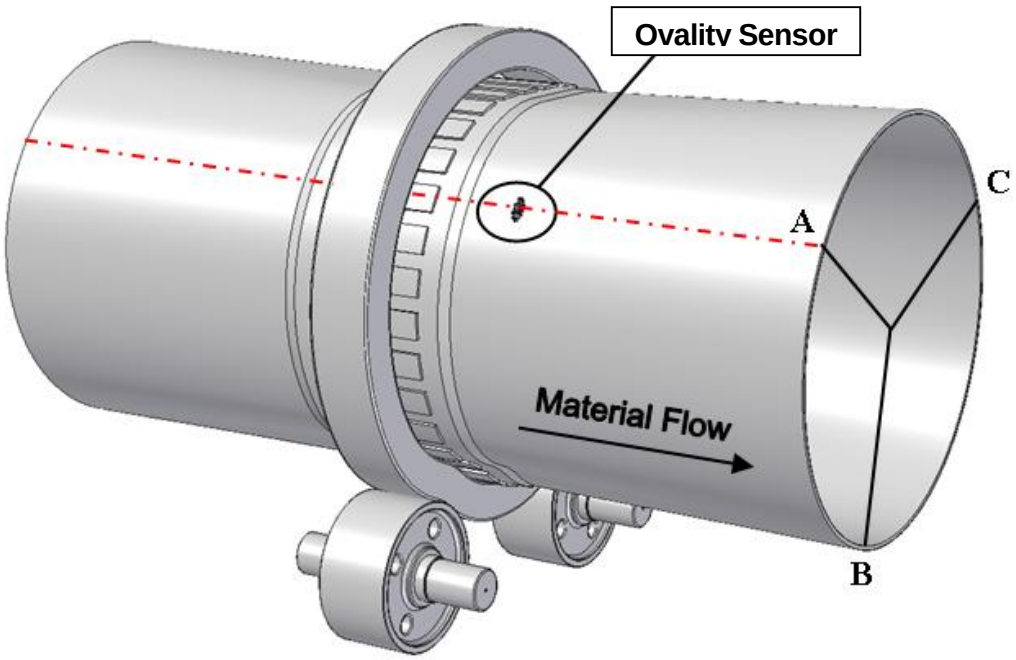


Product Description:

OVALITY SENSOR

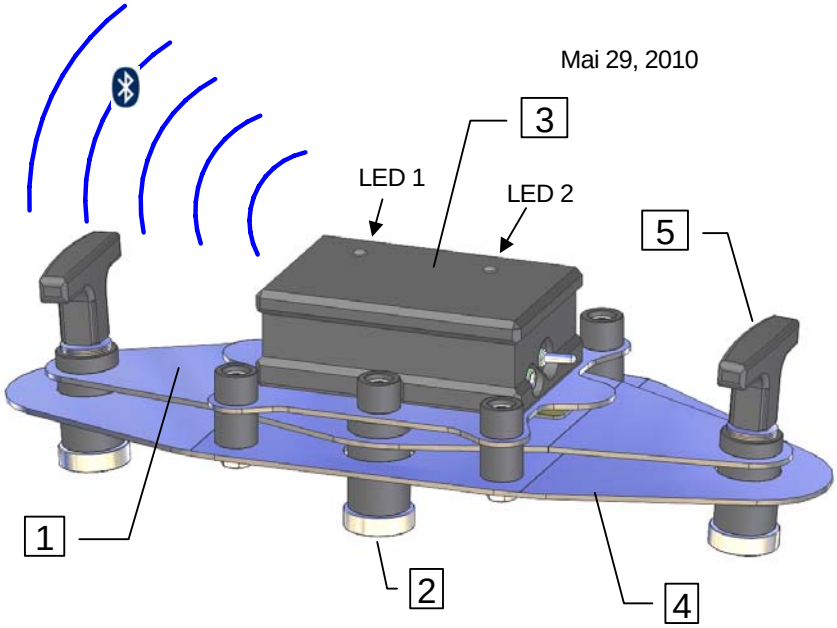
Introduction:
The Ovality Sensor is a measurement tool for rotary kilns, which measures the changes of the roundness / curvature in the kiln shell during operation. This elastic deformation is called Ovality and is primarily present in the area of a kiln tire. The measurement gives accurate information about the degree of mechanical loads in the refractory / kiln shell and allows defining the countermeasures in advance to increase the lifetime of the kiln components.
The Ovality Sensor is small, easy to use and comes along with a tough transport case.

Measuring Principle:
The Ovality Sensor consists of a Deflection Plate, which will be attached with heat resistant magnets to the kiln shell close to a tire. Due to the strong magnetic connection, the deflection in the Deflection Plate follows the deflection of the kiln shell below. Strain gauges are measuring the deflection in the Deflection Plate. The electronic converter is amplifying and conditioning the signals from the strain gauges and sending them together with the values of the angle position sensor via Bluetooth connection to a laptop.
The software **TomTom-Tools Measurement Studio** (for Windows), which comes together with the measurement tool is made to receive, store and process the values from the Ovality Sensor.
During the measurement, the values are displayed and calculated directly in real time.
There are different display, zoom and report printing options available.



Components:

1. **Deflection Plate**
2. **Heat Resistant Magnet**
3. **Converter**
4. **Heat Shield**
5. **T-bar Handle**



Advantages

- Measurement during operation
- High accuracy
- Small size (mostly pass easily between heat shields or thrust roller and kiln shell)
- Small weight (Sensor: ~1.5kg / Total incl. Case ~3.5kg)
- Convenient for travelling
- User friendly software
- Measurement directly displayed on computer

Disadvantages

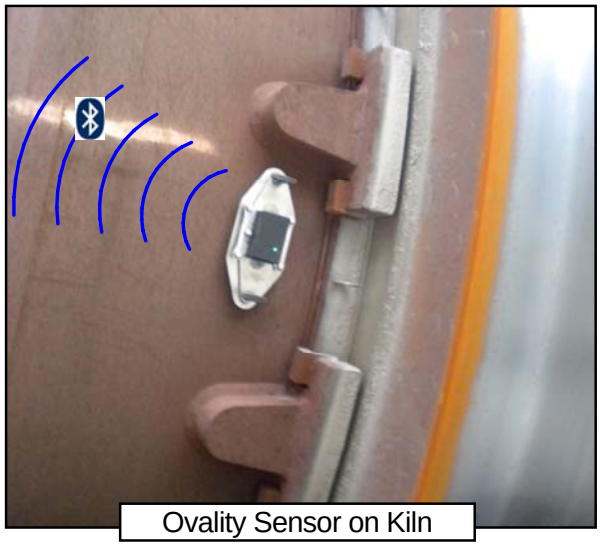
- Kiln need to rotate
- Laptop required

Tool Kit includes

- Ovality Sensor
- Battery Charger with different plug adapters (100…240VAC)
- Bluetooth USB Adapter (high range)
- Tough transport case (Dimensions: 340x300x150mm)
- Software (TomTom-Tools Measurement Studio)
- Manual

Application:

- Ovality Sensor attached to the kiln shell

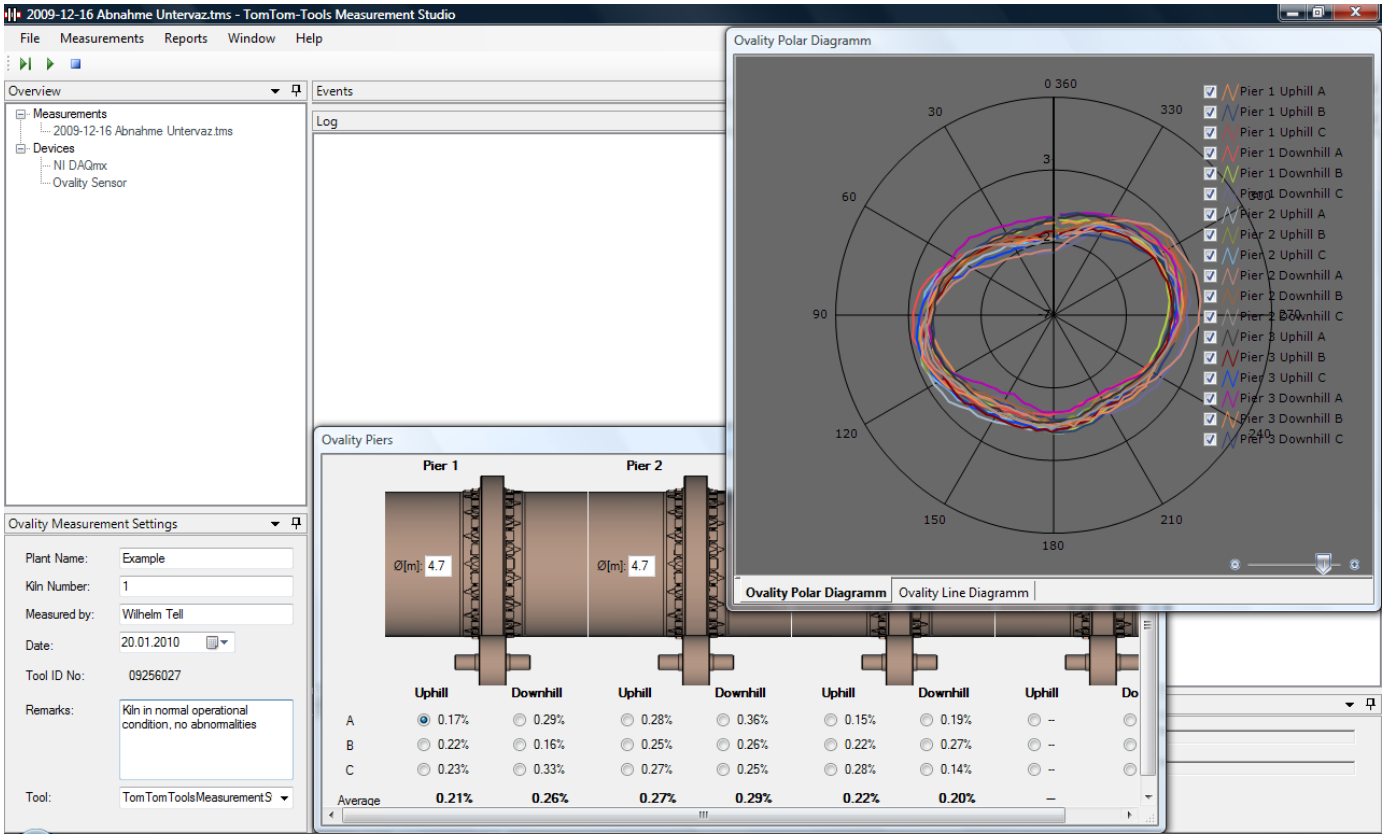


Ovality Sensor on Kiln

Ovality Sensor ready to measure

Software:
The software (**TomTom-Tools Measurement Studio**), which is used for the Ovality Sensor comes along with the equipment and can also be free downloaded from www.tomtom-tools.com
It is self upgrading via internet, whenever a new version is available.

Working Surface:



Software features:

- Graphical kiln model with piers
- Real time graph of measured points
- Calculation of individual ovality values and average
- Measurement of kiln shell surface temperature via magnet
- Online display of sensor status / condition
- Sensor temperature monitoring / high temperature warning
- Measurement information and remarks stored together with results
- Easy display / hide of graphs
- Switching from point to line graphs
- Switching from linear to polar graph
- Free zoom and window arrangement function
- Easy to connect via Bluetooth
- Pdf report generation
- Free and automatic internet upgrade
- Measurement tool **Rotary Inclinometer** is also implemented
- Implementation of further tools in progress
  (e.g. IDM Tool Kit, Disto from Leica Geosystems)

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