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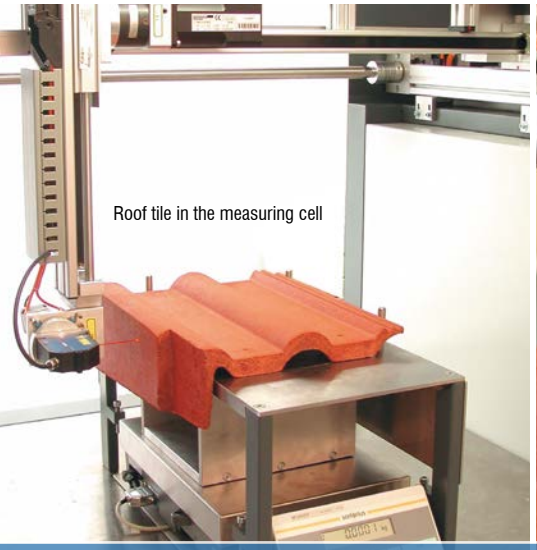
Laser sensors
optoNCDT



Roof tile in the measuring cell

Sensor on traversing device

Total view measurement system

3D inspection and surface assessment of roof tiles

Photograph: ifak Institut für Information und Kommunikation e.V. Magdeburg

The production of roof tiles places high demands on measurement and testing methods for ensuring constantly high product quality. In the DASTOKON semi-automatic measurement and test system and in the BSPK pilot plant a laser triangulation sensor of the ILD 1700 series is used for the 3D inspection and for surface assessment.

The laser-based optical sensor optoNCDT 1700-50 is mounted on a rotating, movable fixture. The profile of the roof tile in the longitudinal and transverse directions is acquired by moving along defined measurement lines over the x and y axes in order to check the complex size accuracy specifications.

For the roughness measurement, the sensor is brought via the z-axis into an optimum distance position to the surface of the roof tile, achiving the smallest diameter of light spot. From the large number of measurements, certain measuring points are extracted by appropriate algorithms (40 measuring points per mm) and the roughness determined. Since optoNCDT sensor operates with a semiconductor laser of Class 2, no special protective precautions are needed against laser radiation.

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Advantages

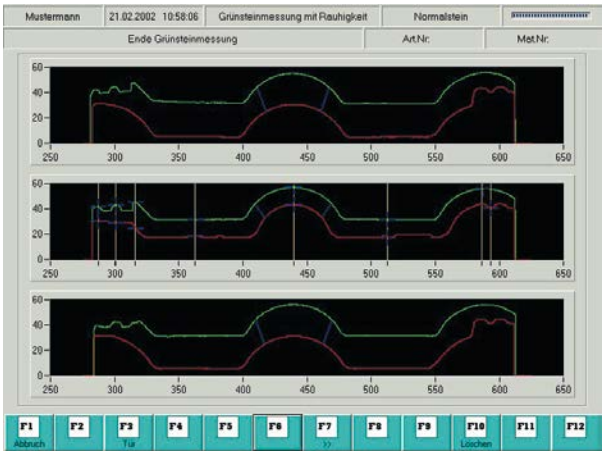
- New, previously untestable parameters such as surface roughness can be acquired objectively and directly included in the production process.
- The inspection of individual roof tiles in the central laboratory with long waiting periods until the test results are available can be completely omitted.
- The inspection rate is increased substantially.
- Systematically occurring faults are detected within the shortest time

Requirements for the measurement system

- Large measurement range (> 40mm) in order to be able to acquire the roof-tile profile in one working step without sensor tracking
- High measuring rate (5000 measurements/s) for a short inspection period
- High accuracy (linearity better than 60µm) for the profile measurement with simultaneously high resolution (< 3µm) for the surface roughness
- Independence form colour for constant measurement accuracy for different roof-tile materials

Sensor for the measurement and surface assessment

- Laser-based displacement sensor optoNCDT 1700-50
- Measuring range 70 ±25mm
- Integrated sensor cable suitable for trailing chains
- Controller with RS232 interface



Screenshot of profile measurement