

Surface Finish Instrument

Key words

Concrete surface, coating- and repair systems, surface finish measurement in accordance to RL SIB and ZTV ING

Fields of application

Measurement of the roughness (surface finish) R_t on surface profiles of arbitrary orientation as substitute to the standard procedure by filling the surface with a measured volume of sand in accordance to special terms of the contract (ZTV ING) and the directives of coating and repair systems (RL SIB)

Methodology and instrumentation

Local surface laser check (triangulations laser) of concrete surfaces with automatic recording

Definition of the median roughness (surface finish) R_t in correlation with roughness R_z :

Measuring of the roughness profiles by movement of the transducer of the specimen geometry oriented over the measuring line on the surface of the specimen

- Constant chart speed of 5 mm/s in x-direction and recording of the transducer signal every 10 ms (computation of the position in x-direction based on the measuring time)
 - ➔ Resolution in x-direction: 0.05 mm
- Resolution in z-direction: 0.03 mm
- 10 000 x-z-value combinations for the normally chosen measuring distance of 500 mm

Several measurements are recorded in a straight line in parallel to the main measurement.

Items tested

Concrete surfaces, plaster surfaces, natural stone surfaces, other surfaces

Quantities / characteristics tested

Median roughness (surface finish) R_t of the horizontal surface of the assay object over correlation with roughness R_z

Exposition of a roughness profile

Uncertainty / reliability of results

± 0.05 mm in z-direction in the middle of the measuring line and ± 0.05 mm in x-direction

Qualification and quality assurance

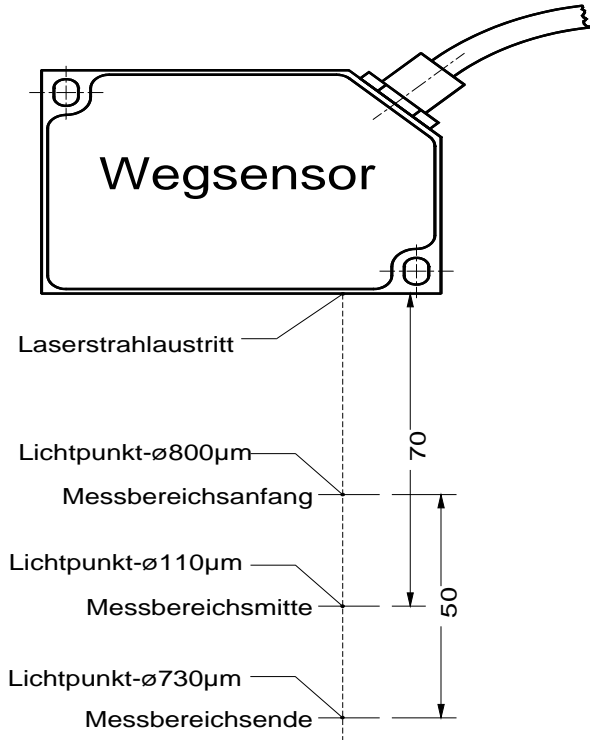
World wide unique test unit designed by BAM (currently laboratory apparatus), exceeding with its high accuracy under the aspect of handling and reproducibility the quality of the standard sand procedure by far.

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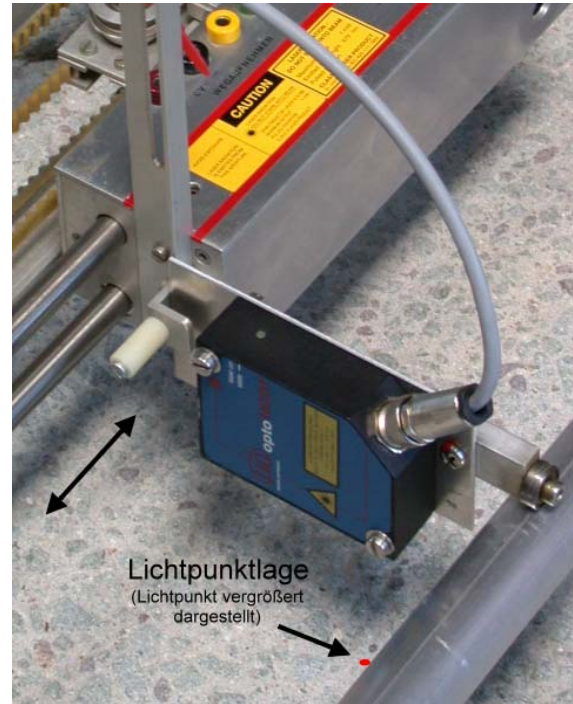
Further information

The procedure and the facility was built and designed by use of a commercial laser transducer. The correlation to the standard sand procedure that allows an estimated median value of roughness in horizontal surfaces was proved. The procedure can test surfaces with every orientation and delivers furthermore quantified information over non-uniform roughness allocation of the surface facility, as well as the peaks and troughs. The high deviation that is implemented by the standard sand procedure is excluded.

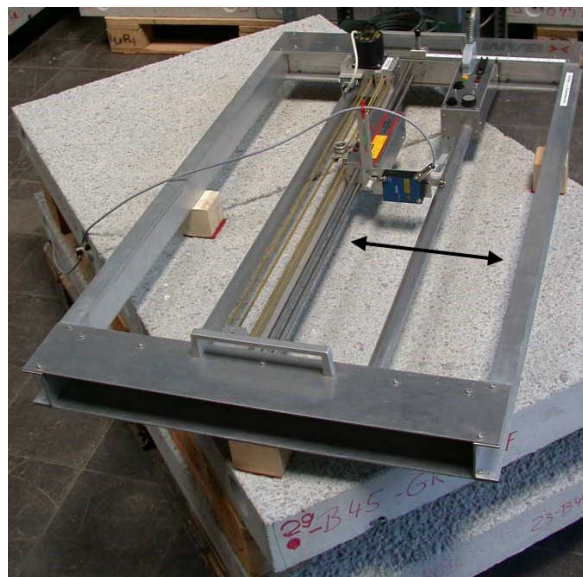
Maximum measuring distances are 650 mm in x-direction, 260 mm in y-direction (sliding carriage is in 10 mm engage steps relocatable) and ± 50 mm in z-direction.



Trail of the triangulations lasers



View on the laser transducer fixed on the sliding carriage



Measuring instrument while measuring a surface profile of a concrete slab