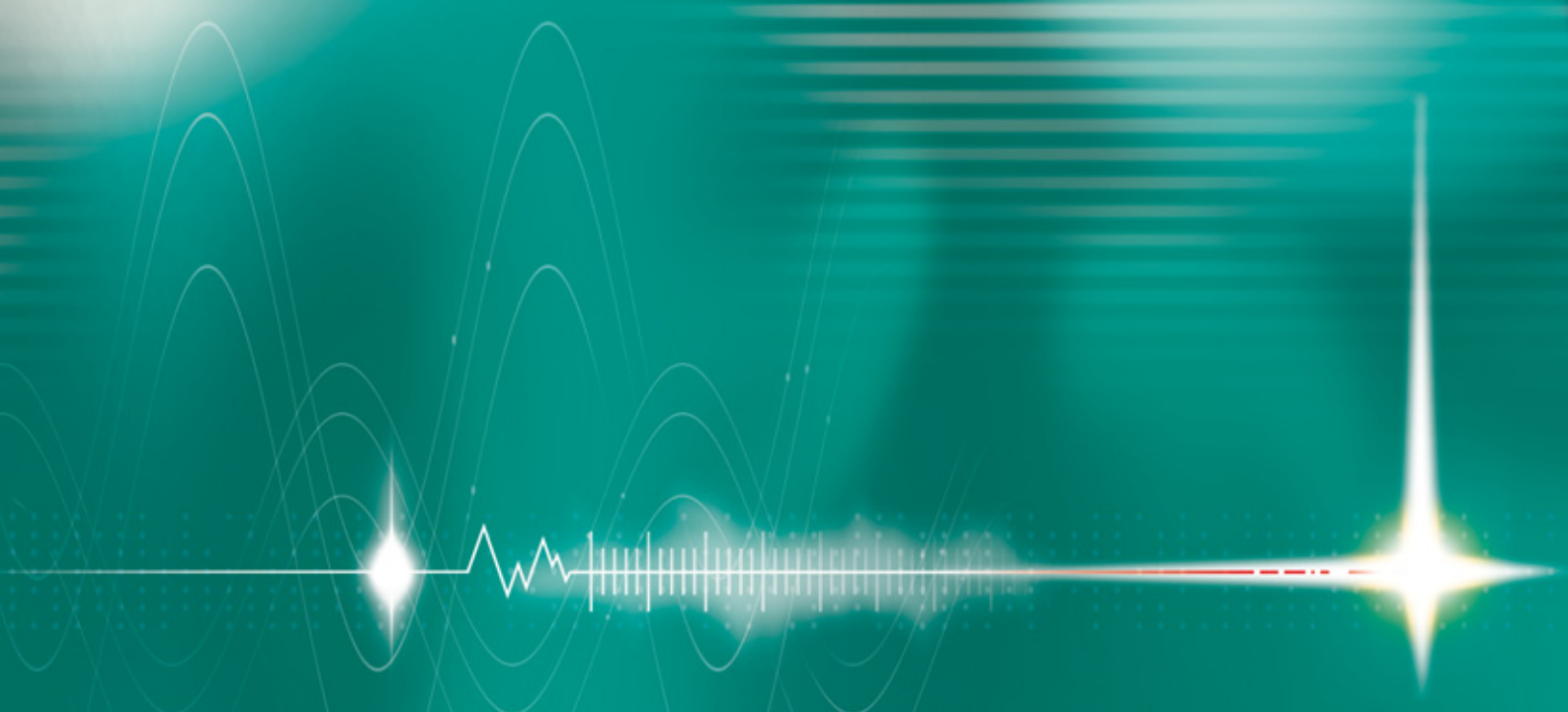
MICRO-EPSILON
SYSTEMS DIVISION

Inspection Systems

Measurement of geometrical quantities



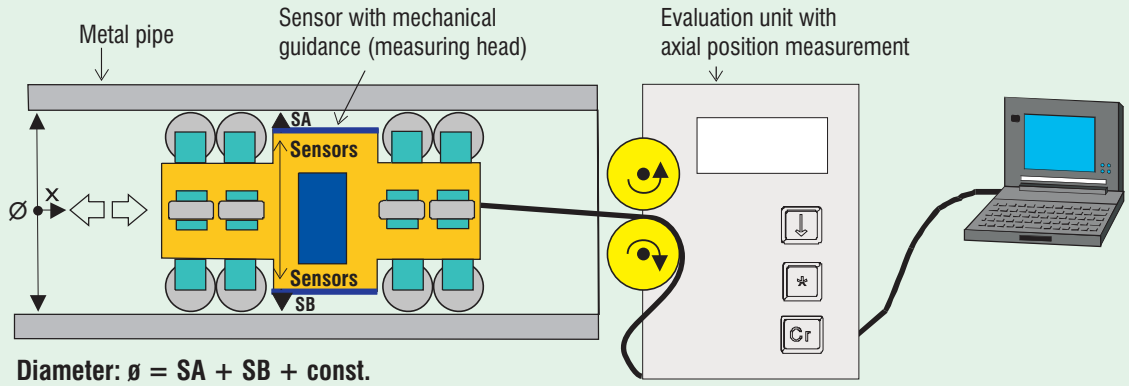
idiamCONTROL

Non-contact inspection of extruder bores

The housing-bore measurement device, idiamCONTROL, acquires the wear in the rear holes of extruder machines by measuring the internal diameter.

An important criterion for the quality or the wear of tubes in industrial applications is the dimensional conformance of the internal diameter over the complete length. The measurement system, idiamCONTROL, carries out the measurement process inside the tube with very high accuracy, detecting possible points of wear extremely quickly. The integrated capacitive displacement sensors measure the actual bore diameter over the complete length of the process section. Through the additional acquisition of the axial sensor position with a cable-length measurement system, local deviations in diameter are found quickly and reliably. With the cable-length measurement system each sensor position on the longitudinal axis of the hole is assigned a diameter. The result gives the diameter longitudinal profile in six tracks and an axial spatial resolution of 5 mm. The wear is calculated from the respective diameter values by the evaluation software. This enables accurate planning of the maintenance and replacement intervals of the individual housing parts without having to disassemble the processing section.

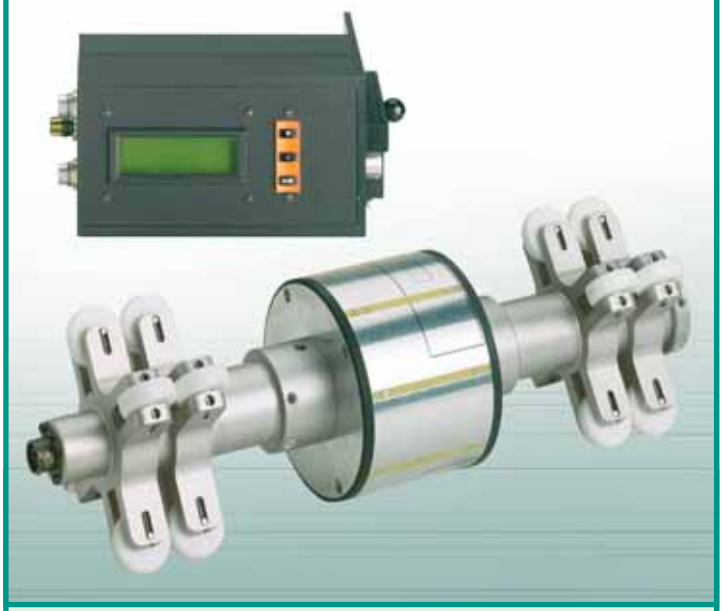
Principle



Diameter: ø = SA + SB + const.

Measurement process

The measuring head is first introduced into one of the two rear bores and pushed using guide rods till it stops at the extruder gear box. The diameter values and the distance passed are acquired and recorded during the return process. The signal is represented as the diameter over the complete length of the hole. Measurements beyond the tolerance are immediately displayed on the evaluation unit. Individual sections can be extracted or enlarged by computer for more precise observation. The profile is saved and printed out for documentation purposes. Based on the resulting diameter profile, it is possible to replace specific damaged segments.



Technical data

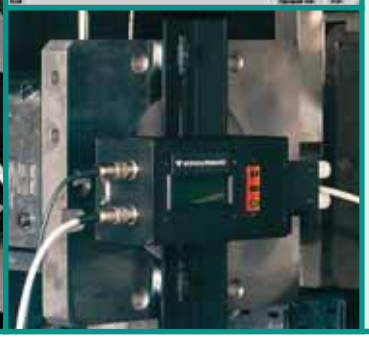
- Sensor units for housing-hole diameter:
  From 50 to 140 mm
- Measurement range: 10 or 20 mm diameter variation
- Accuracy: 0.04 mm
- Resolution: 0.02 mm
- Axial spatial resolution: 5 mm
- Max. speed: 5 m/s
- Bandwidth: 100 Hz

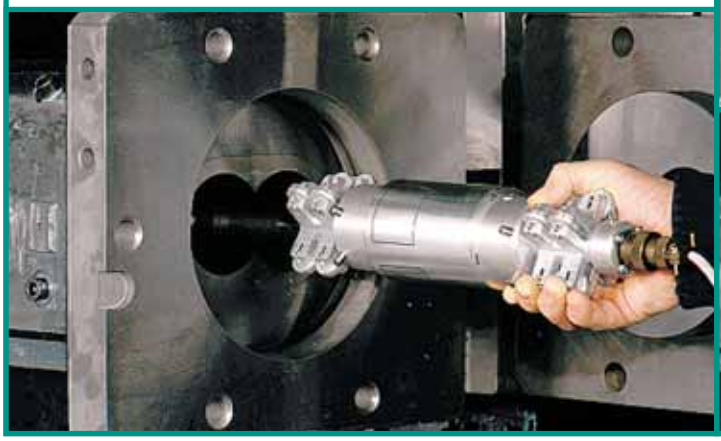
Ambient conditions

- Temperature: 5 -60 °C
- Medium: Air
- Interference fields: To IEC 1000-4-1

System properties

- Non-contact and wear-free measurement technique
- Suitable for all metals without additional calibration
- On-site evaluation
- Exact, non-destructive inspection
- Industrial, rugged mechanical construction
- Easy to use





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