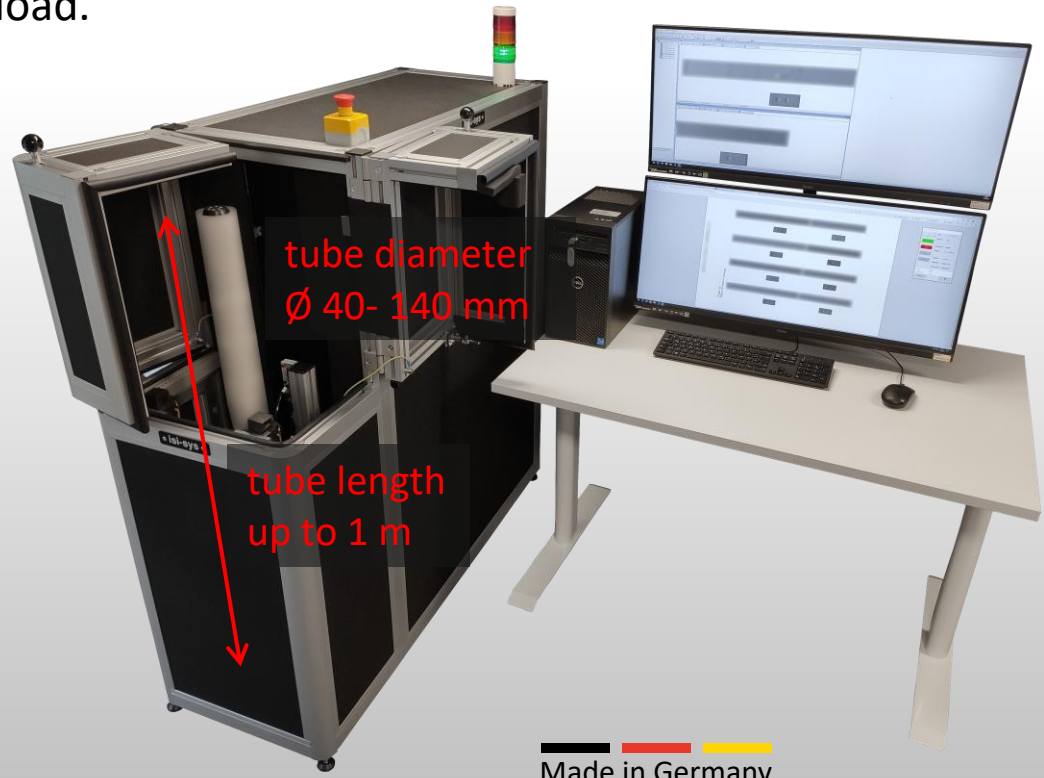
Automated NDT System for Tubes and Tanks

based on SE4 Shearography Sensors

This automated system detects structural defects of filament wound tubes by their local inhomogeneous deformation under internal pressure load.

- ✓ **Easy system adjustment** for different sized tube samples within the specified range (see right image).
- ✓ For samples outside this range, the system can be **custom-designed**, including horizontal tube handling.
- ✓ The **software layout** can also be adapted to the specific requirements of the application.
- ✓ **Automated image analysis** is possible, depending on the specific application and detection requirements.
- ✓ **Automated tube insertion** or **integration into production lines** can also be implemented where appropriate.



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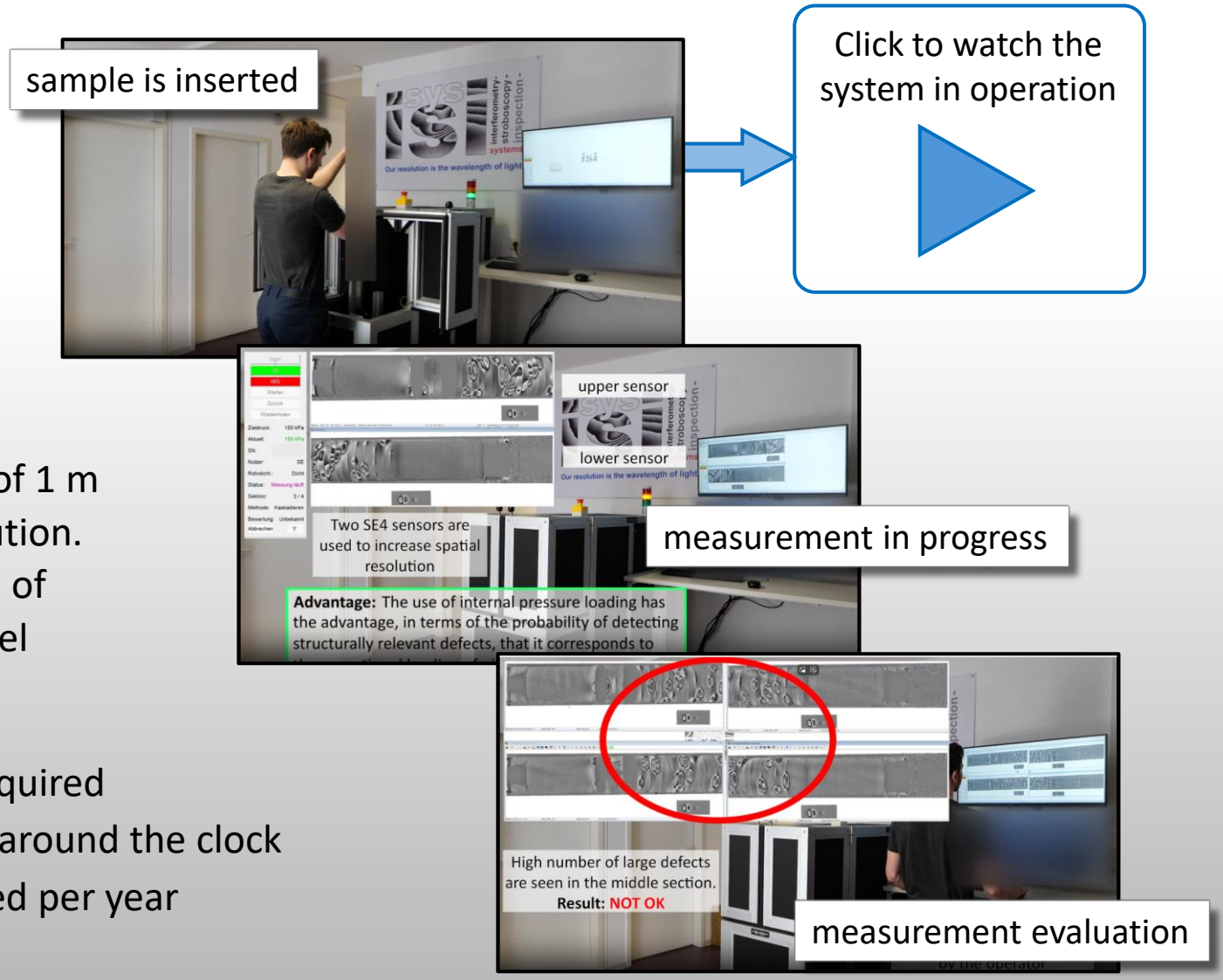

Operating principle:

After inserting the tube, the ends are automatically sealed and internal pressure is used as the loading method. The tube is rotated in 90° steps around its axis to monitor four circumferential segments. Two SE4 sensors with 8.9 Mpx are applied per segment. For a tube of 1 m length this leads to 125 µm / px spatial pixel-resolution. Due to the high deformation sensitivity (nm range) of the SE4 sensors combined with the high spatial pixel resolution even smallest defects can be detected.

- ✓ Only a fraction of the operational pressure is required
- ✓ The system is reliable for continuous operation around the clock
- ✓ Several thousand tubes have already been tested per year without problems and maintenance