



ROV (Remotely Operated Vehicle) for pipeline inspection

To meet safety regulations, the inspection of the internal parts of pipelines is mandatory, as any defects can lead to cracks, which could result in complete pipe failure or, in the worst case, in personal injury. The critical factor is the weld seam. DEKRA developed a fully automatic vehicle that solves this task by using a combination of visual inspection and geometrical measurements performed by a scanCONTROL laser scanner from Micro-Epsilon.

To make the vehicle suitable for all types of pipeline, it is protected against sand, dust and ambient temperatures of up to 100°C. In combination with the fifth wheel on the top of the vehicle pressed against the top of the pipeline, the ROV can travel up a high gradient of $\pm 45^\circ$.

All data can be output for further use or, if desired, trigger an alarm as soon as an anomaly occurs in the geometry (roundness, defects, welds, etc.).

The vehicle is suitable for diameters from 16-36" (approx. 40-86 cm). However, it is possible to adapt the ROV to smaller and larger pipe diameters.

Vehicle information

- Dimensions: 700 x 280 x 280 mm
- Weight: 26 kg
- Travel speed: 600 mm/s

Advantages

- Automatic detection and protocol feature
- Mobile application independently of the ambient conditions by robust design
- Travels up gradients of $\pm 45^\circ$ without any additional protection

Requirements for the measurement system

- Inspections in ambient temperatures of up to 100°C
- Scanning time (2000 measurements, 24" pipe) < 1 min.
- Laser profile resolution < 0.05 mm
- Developed for operation in the desert - seals protect sensitive parts from dust/sand

System design

- scanCONTROL LLT2700-50 (integrated into existing software development)
- Inspection camera: Full HD 1920 x 1080 pixels, 10x optical zoom
- Displacement control by inspection camera
- Rotating unit
- Cooling system
- Cable length 100 m (extendable)