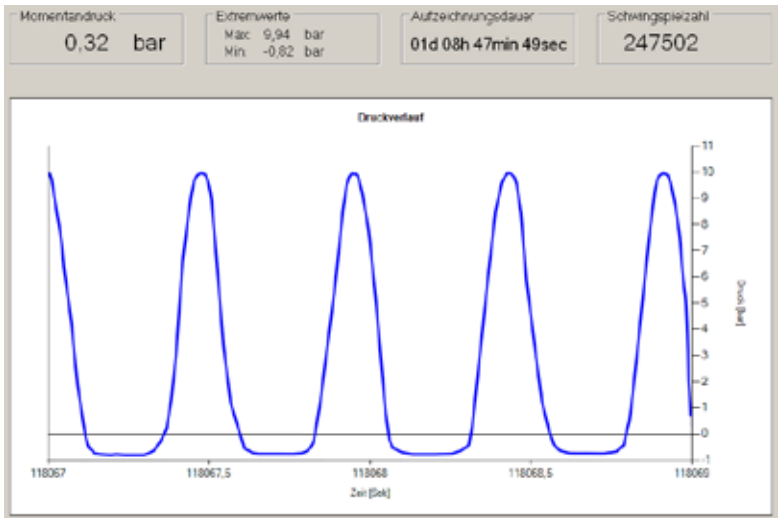
Stress test for pressure pipes

Dynamic-Load-Test facility of Siebert + Knipschild: dynamic analysis on pressure pipeline components

DYNAMIC LOAD TEST (DLT)

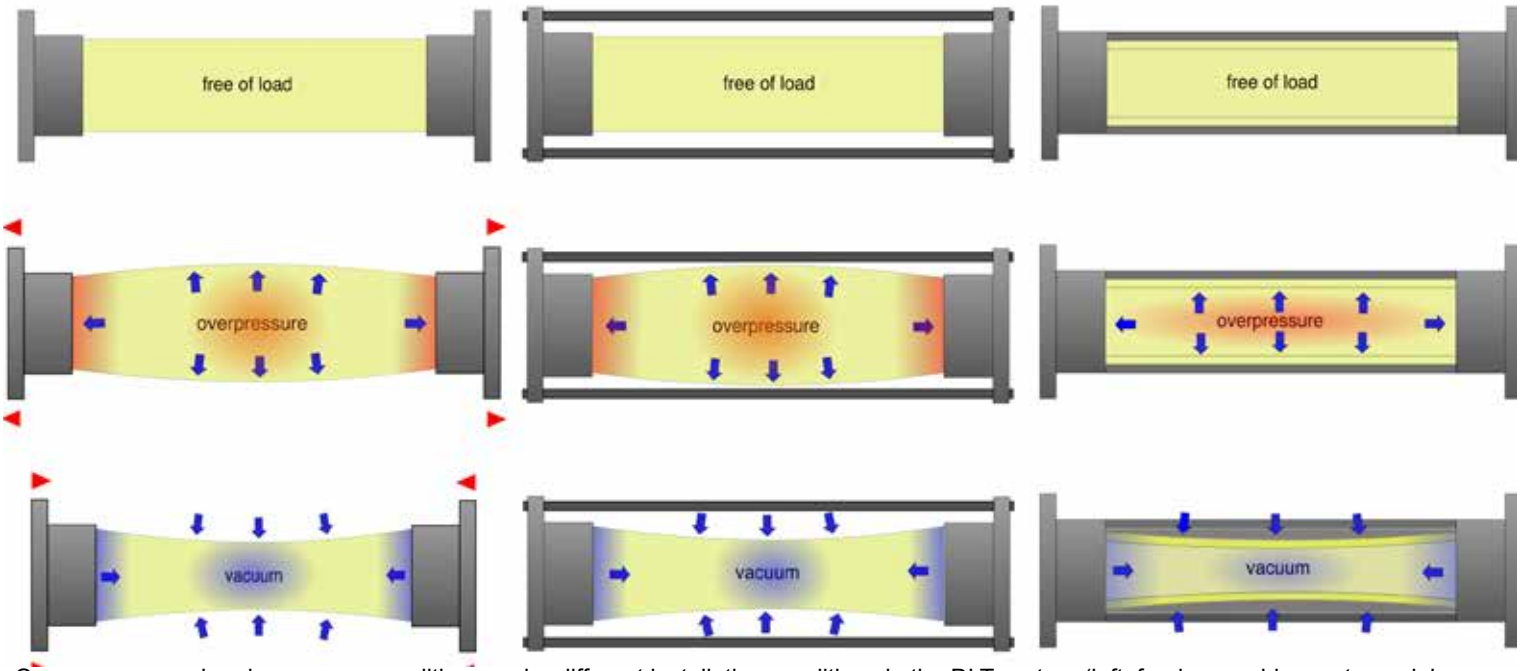
- The dynamic component test was developed at the testing facility of Siebert + Knipschild. Using our testing procedure it is possible to examine renovated pressure tube systems as an entire module under real working conditions for their permanent load-bearing capacity.
- The worst-case-scenarios tested in the pipe are a reflection of the reality: the system creates **changing pressure conditions** as measured in underground sewage pressure pipes under operating conditions.
- During the long-term test, material changes are continuously monitored. This is used to detect any incipient **damage**.



In the DLT system the operation conditions in pressure line are simulated with a frequency of 2 Hz

CHARACTERISTICS

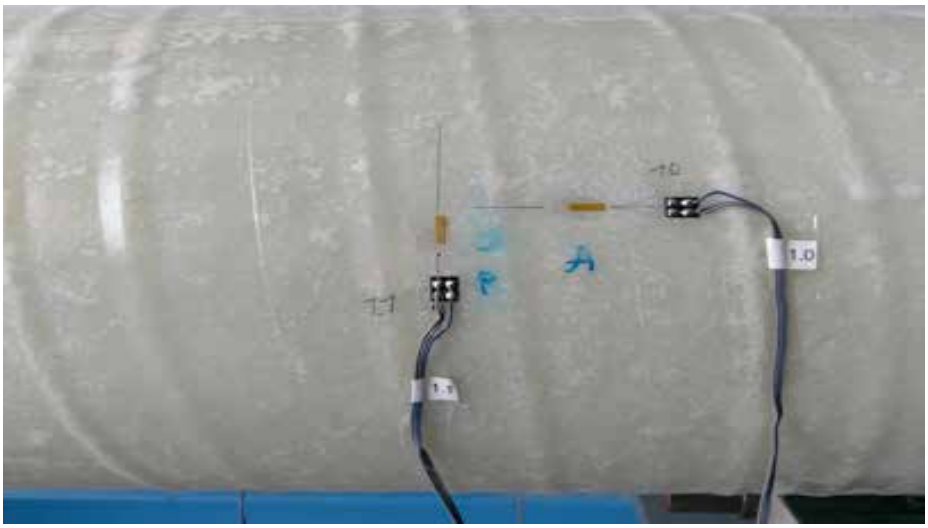
- Testing procedure according to ISO 15306 and DIN 50100
- Free adjustable test pressures, currently 10 bar overpressure / -0,9 bar vacuum
- Lay-out for continuous operation of 10^7 cycles with 2 Hz
- Components are installed sliding on one side or force-fit on the other side
- Test liquid: drinking water
- strain gauge captures changes in the material stretching (longitudinal and peripheral direction)



Overpressure and underpressure conditions under different installation conditions in the DLT system (left: freely movable, centre: axial expansion blocked, right: with cladding tube)

ELEMENTS OF THE DYNAMIC TESTING

- Compliance with the requirements of ISO 15306 (determination of the resistance towards cyclical internal pressure), variable setting of test parameters (cycles, intensity, frequency)
- Testing on the basis of DIN 50100 on the entire component instead of on the wall cut-out: procedure allows conclusions to be drawn about connections and the system as a whole
- Proof of suitability: certificate after a damage free testing period of 10^7 cycles, confirmed by material tests
- Accompanying investigations: Mechanical tests, structure analyses by microscopy, examinations for possible layer detachment
- Statements: analyses of failure behaviour, estimates of expected service life, information on system development
- DLT is acknowledged by approval bodies as proof of suitability for pressure hose liner systems and has already proven itself in practice



Strain gauges constantly capture changes in the material stretching in longitudinal and peripheral direction.

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SCOPE OF APPLICATION

The DLT-system is suitable for the following specimens:

- Pipe systems of load pipe networks (drinking water, waste water)
- Connectors, e.g. flanges, sleeves, bondings
- Hose liner siystems
- Pressure Pipes in general
- Variable diameters from about DN 100 to DN 500
- Sample length about 2,0 m
- Further areas of application and testing are possible

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