

SoMIT® - TECHNOLOGY FOR GAS TIGHTNESS TESTS



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AREAS OF APPLICATION

The SoMIT® tool is a logging and sonar tool specially developed by SOCON for carrying out gas tightness tests in cavern wells. The SoMIT® technology (Sonar Mechanical Integrity Testing) has been patented by SOCON. The SoMIT® technology not only reduces the testing time compared to conventional MITs but also offers greater precision and accuracy.

MEASURING PRINCIPLE

The SoMIT® tool is usually used as part of a gas tightness test to verify the integrity of the cavern well. For this purpose, brine and nitrogen (alternative test media such as hydrogen, oil or LPG can also be used) are pressed into the cavern until the planned test pressure is reached and the nitrogen-brine level is a few metres below the casing shoe.

The pressure and temperature profile along the borehole and the depth of the nitrogen brine interface level are required for the subsequent test evaluation. This data is measured using the SoMIT® method with the specially developed SoMIT tool that is fixed in the well and enables continuous and high-precision measurement of the distance to the interface using ultrasonic.

SURVEY PROCEDURE

The tightness test is usually carried out in collaboration with an engineering service provider, who coordinates the preliminary work and analyses and evaluates the measurement data.

At the start of the measurement, the pressure and temperature in the borehole or in the cavern neck area are measured as part of a logging run.

TECHNICAL SPECIFICATIONS

Diameter:	50 mm (incl. clamping section: 56 mm)
Length (without cable head):	Type A: 2.76 m / Type B: 2.83 m
Max clamping ID:	Type A: 11 3/4" / Type B: 17 1/2"
Weight:	22 kg
Resolution interface depth:	0.1 mm
Accuracy:	+/- 1.0 mm
Temperature (up to 90°C):	resolution: 0.01 K; accuracy: +/- 0.1 K
Pressure (up to 300 bar):	resolution: 0.001 bar; accuracy: +/- 0.03 bar (HighPrecision: up to 400 bar)
Further measured values:	M-CCL/CCL
Potential test fluids:	N ₂ , H ₂ , Oil, LPG, possibly more on request

In addition, all casing collars are recorded using the M-CCL (Multiple Casing Collar Locator). Once this has been done, the depth is corrected at the depth reference point using M-CCL. The acoustic velocity in nitrogen is then determined by sounding from different depths down to the interface.

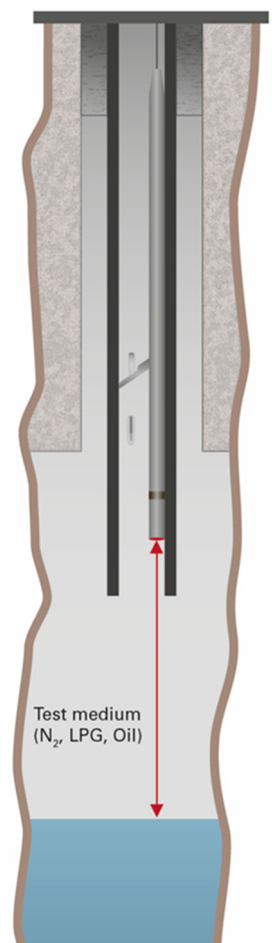
The SoMIT® tool is then fixated in the casing using its clamping arm. This prevents falsification of the measurement, which can otherwise occur due to stretching of the cable during the test phase, which usually takes several days.

During the test phase, pressure, temperature and interface depth are continuously measured and recorded in the wireline truck. These data can be used to calculate interim analyses during the test, which provide an initial indication of the test result.

After the test phase, the clamping arm is retracted and a new depth verification is carried out at the reference point.

Finally, another pressure and temperature log is run from the surface to the casing shoe so that the measurements before and after the test provide comparable data.

All recorded data is sent to the client or his engineering partner for evaluation.

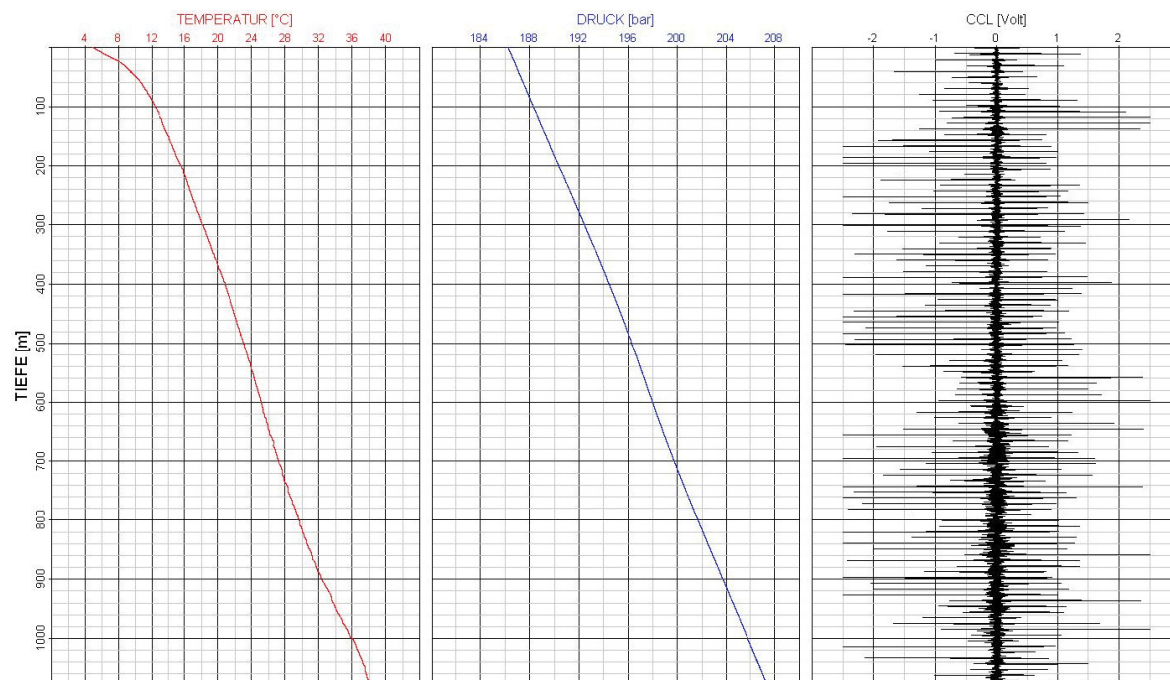


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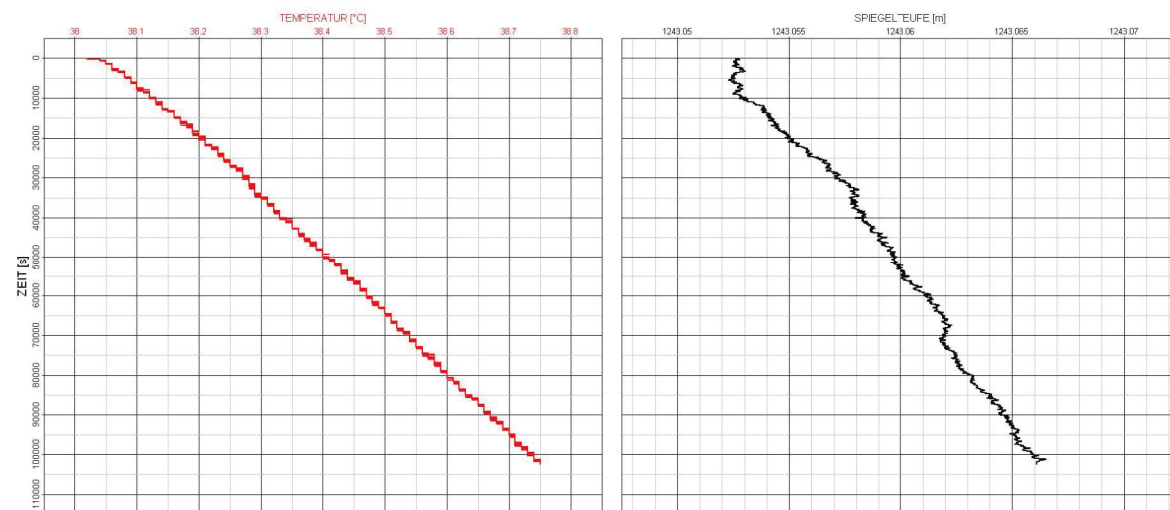


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EXAMPLES OF LOGGING AND SOMIT® MEASUREMENTS



Representation of temperature, pressure and CCL in the well measured using the SoMIT® tool



Representation of temperature and interface level measured using the SoMIT® tool

