SoMIT® - TECHNOLOGY FOR PROCESSING GAS TIGHTNESS TESTS IN CAVITIES

AREAS OF APPLICATION

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

MEASURING PRICIPLE

A specially developed tool installed at a fixed depth continuously measures the depth of the interface by means of sonic distance measurements.
At the same the temperature and pressure are recorded with high accuracy in the test section – and if required also at the cavern head.

SURVEY PROCEDURE

In the first place the pressure and temperature are measured during a log run along the survey axis from the Earth's surface to the depth reference point. At the same time all the casing collars are detected by an M-CCL (Multiple Casing Collar Locator).
A depth adjustment is then made by referring to the depth reference point determined using the M-CCL. Subsequently the acoustic velocity in nitrogen is calculated by making soundings from different depths down to the interface.

The SoMIT® tool is pressed against the casing string by its clamping arm to prevent that any cable stretching effects which might occur during the measurements (which usually last several days) distort the survey results.

TECHNICAL SPECIFICATIONS

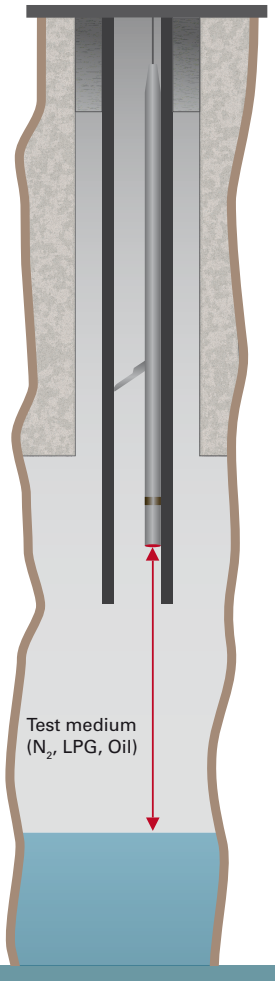
Diameter:	50 mm	
including clamping ring section:	56 mm	
Length (without cable head):	2.76 m	*(Typ A)*
	2.83 m	*(Typ B)*
clamping ID of maximum:	11 3/4"	*(Typ A)*
	17 1/2"	*(Typ B)*
Weight:	22 kg	
Sonic determination of interface level:	Resolution:	0.1 mm
	Accuracy:	+/- 1.0 mm
Temperature (90°C max.)	Resolution:	0.01 K
	Accuracy:	+/- 0.1 K
Pressure sensor (HighPrecision, 400 bar max.):	Resolution:	0.001 bar
	Accuracy:	+/- 0.03 bar
	Measuring range only up to 300 bar	

M-CCL, CCL

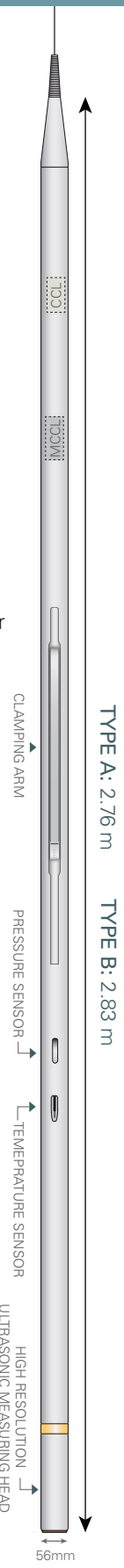
After the test the clamping arm is retracted and another check is carried out at the depth reference point. Finally another pressure and temperature log is run from the Earth's surface down to the last casing shoe so as to enable the results measured before and after the leak test to be compared.

RESULTS

The survey results can be accessed as ASCII data at any time during the entire test period and made available to the customer for a direct interpretation.



SoMIT® - principle sketch:
(Example with no brine extraction string installed). The test medium is injected directly into the inner string and the interface is set below the cemented casing shoe, but also below the casing shoe of the inner string (test string or the previously installed production casing).



CERTIFIED ISO 9001 ISO 9001:2015 SCC**

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State: April 2018

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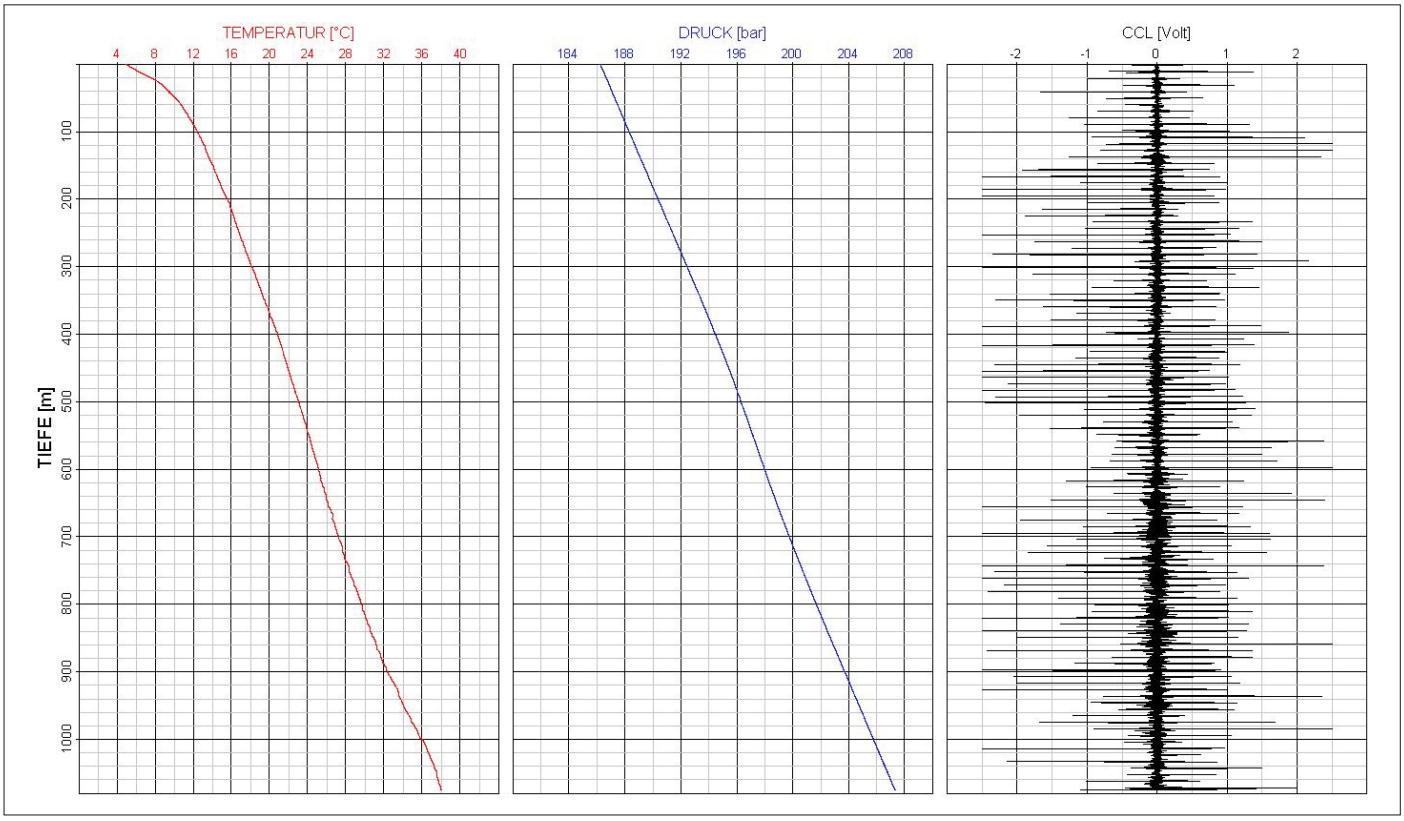
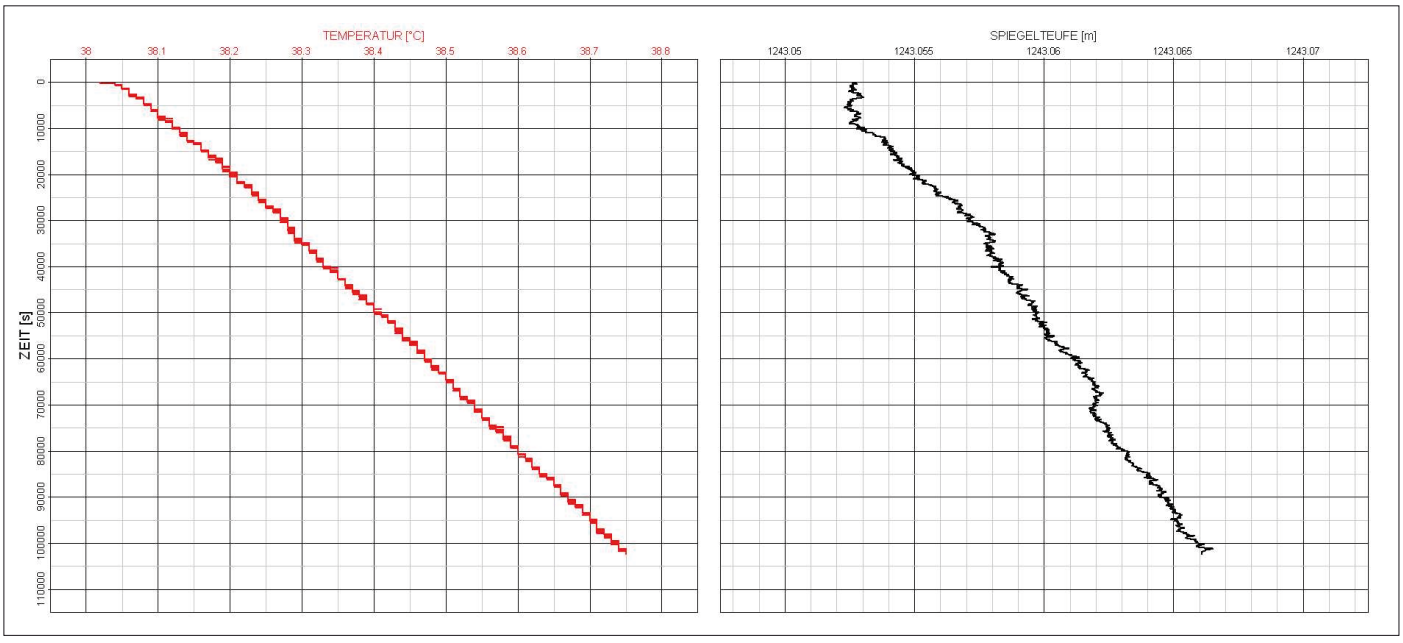
EXAMPLES OF LOGGING AND SOMIT® - MEASUREMENTS



Display of temperature, pressure and CCL in the hole measured using the SoMIT® tool



Display of temperature and interface level based on SoMIT®

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