Focus and areas of application of the new department

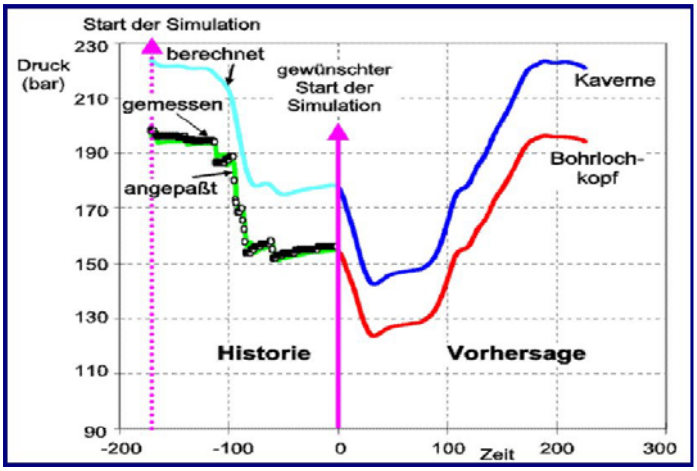
⇒ Scientific consulting and support of customers regarding gas cavern surveying as well as the evaluation and analysis of the sonar survey results

⇒ Further development of the thermodynamic cavern software CavBase Gas Storage :
- Calculation of predictions on hourly basis
- Inclusion of realistic hydrate formation conditions and estimation of optimized inhibitor quantities
- Calculation of pressure and temperature losses in the surface pipelines and at installation

⇒ Further development of and project-specific add-ons for the rock mechanics program module, e.g. with reference to CDM (Continuous Damage Mechanics)

⇒ Consulting and support services relating to thermodynamic and rock mechanics simulation in the planning, construction and operation of storage caverns

⇒ Development of optimized concepts for the operation mode of storage caverns

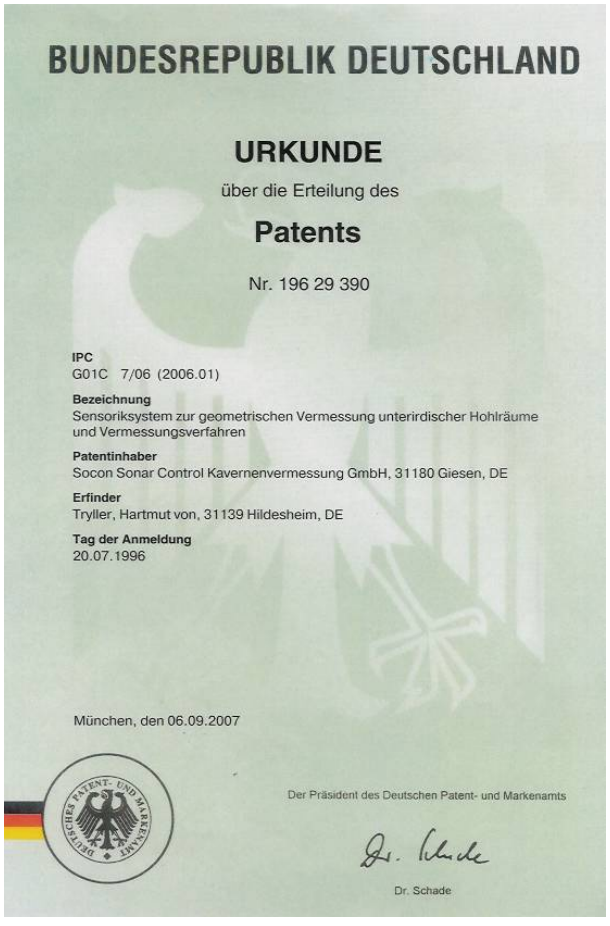


SOCON obtains yet another patent

In September 2007 the German Patent and Trade Mark Office, Munich, granted SOCON Sonar Control Kavernenvermessung GmbH a patent entitled “Sensor system for geometrically surveying underground cavities and surveying technique“.

One of the features of the patented sensor system is that the tool has several sonic sensors fitted on a rotatable sensor carrier which cover a 360°-area and owing to its receiver characteristics can to a certain extent achieve spatial superposition. By slightly rotating the sensor carrier and repeatedly emitting the survey signal it is possible to significantly increase the spatial resolution by applying mathematical correlation techniques. The resolution of a multi-sensor system therefore no longer depends on the number of receiver sensors but instead on the amount in degrees the sensor carrier turns with each step. Here the survey signal can be emitted either from an omni-directional sensor or from a segmented impulse transmitter.

Dr. A. Reitze



BUNDESREPUBLIK DEUTSCHLAND

URKUNDE

über die Erteilung des

Patents

Nr. 196 29 390

IPC
G01C 7/06 (2006.01)

Bezeichnung
Sensoriksystem zur geometrischen Vermessung unterirdischer Hohlräume und Vermessungsverfahren

Patentinhaber
Socon Sonar Control Kavernenvermessung GmbH, 31180 Giesen, DE

Erfinder
Tryller, Hartmut von, 31139 Hildesheim, DE

Tag der Anmeldung
20.07.1996

München, den 06.09.2007

Der Präsident des Deutschen Patent- und Markenamts

Dr. Schade

Permanent pressure and temperature test

At the spring 2007 meeting of the Solution Mining Research Institute (SMRI) in Basel, Enterprise Products Operating LP, Houston, was contracted to carry out research work for the SMRI “Deep Cavern Sealing & Abandonment Test“ project. Within the framework of this project it is required to measure the temperature and pressure within a closed cavern, and SOCON developed a special tool to do just this. This P/T monitoring tool will be suspended in the cavern at a depth of about 1000 meters for the entire planned test period of about four years and will continuously record the temperature and pressure values. The tool is connected with a data acquisition system/control unit at the surface via the borehole cable, which passes through a pressure-tight cable outlet connector at the cavern head.

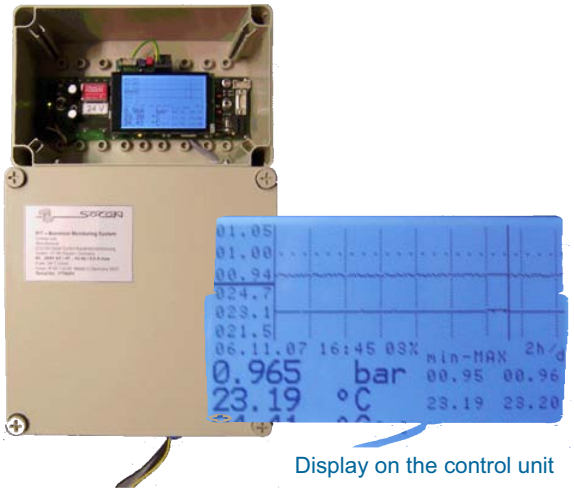
Hajo David

Technical specifications of the tool :

Diameter:	42 mm ∅
Length:	1300 mm
Drucksensor:	Keller PAA33X , Measuring range: 0 - 300 bar, Measuring accuracy: ± 0,06 bar, Resolution: 0,006 bar, stainless steel membrane with special protection against corrosive brine, digital output
Temperature sensor:	Pt1000 class A, Measuring range: 0 > + 100°C, Measuring accuracy: ± 0,05 K, Resolution: 0,01 K
CCL:	Standard CCL available during installation of tool when operating from SOCON cable truck
Cable head:	Standard SOCON tool connection or Gearhart-Owen
Power supply /	1-wire connection
Data transfer:	DC 40...120V, DIN-Messbus (SOCON Standard)
Operating temperature range:	-10 bis +80°C

Data-logger / Control unit :

The control unit developed for the tool shows numerically and graphically on a 240x128 pixel monitor the values of pressure and temperature.
Certain parameters can be set, such as the sampling rate of the graphic display, the scale of the two axes for pressure and temperature and the speed of storage in the internal data-logger.
The fitted data-logger allows more than 10,000 datasets to be saved including the time and date of each measured value.
All the saved data can be transferred via the serial interface in ASCII format, which is suitable for spreadsheet programs.



Display on the control unit

SOCON expands fleet of survey trucks

Five more survey units under construction

The considerable increase in demand for interface and cavern surveys has prompted SOCON to substantially increase its fleet of survey trucks. As some of the major projects that are currently starting up will each tie up a survey truck for some time, SOCON has decided to expand its fleet by adding five extra trucks over the next two years. The first standard survey truck should be ready for operation this year.

Standard survey trucks

Two identical standard survey trucks are being built. Each is equipped with a 4-core cable (cable length up to about 3500 meters) on an electric winch manufactured in our own workshops. Such winches feature various devices for increasing safety and are extremely robust. The use of rapid-change cable drums makes the survey trucks more flexible, for instance when a fiber-optic cable is to be used for measuring temperatures. Basic equipment on the truck includes an underfloor generator for producing power and a small loading crane.

Survey truck for logging

Our smallest unit is a 5-tonne survey truck specially equipped for logging, SoMIT and shaft surveys. Owing to its compact design this truck is also ideally suited to working in places where the space is limited.

Survey container

Our survey container is mounted on a trailer and equipped with a cable winch for flexible surveying operations. It will be delivered shortly.

Survey truck with long cable

Our biggest new vehicle will be a three-axle truck with a winch capable of holding cable lengths of up to more than 6000 meters. Owing to the large diameter of the cable drum and also because of the load that has to be raised, this survey truck is fitted with a hydraulic winch. Whereas the above trucks will all be extra units, this unit will replace an existing cable truck.

Frank Haßelkus