

## Level measurements in the chemical industry

### Application:

#### Level measurement for salt caverns



Digital submersible pressure transmitter  
CG2011



In a solution mining plant for the production of brine for the chloralkali electrolysis, a LABOM digital submersible pressure transmitter CG2011 will measure the level in the collection basin in the salt caverns and helps to save time and costs.

## Level monitoring in salt caverns for chloralkaline electrolysis

**Digital submersible pressure transmitter with remote signal transmission and robust construction saves time and costs**

Many of us may remember from the explosive chlorine-hydrogen reaction during our school days that it is possible to split a salt solution with the help of electricity into chlorine, hydrogen and soda lye. Chloralkaline electrolysis is the basis for many products without which our life as it is could not be imagined. Chlorine alone is involved in approximately 60 % of all chemical production. The examples range from foams (polyurethane) to spectacle lenses and CDs (polycarbonate), from pharmaceutical compounds to semiconducting silicon, from the white pigment titanium dioxide for wall paint through wallpaper paste to "Teflon" (PTFE) coating on frying pans to PVC. We use soda lye, the by-product of electrochemical chlorine production, for example daily via products such as paper, soap or other cleaning products. No wonder that since the beginnings of chloralkali electrolysis (1890) the yearly production has increased to 55 million tons of chlorine and 50 million tons of soda worldwide. For a chemical industry being supplied by a solution mining plant with salt solution for its chlorine alkali electrolysis plants, LABOM's digital submersible pressure transmitter CG2011 measures the level in the collection basins in the salt caverns. The reliable remote signal transmission when the level becomes critical, a plug-in cable connection and its extendibility help to save time and costs.

**Task:** The brine plant with salt caverns has a collection basin for rain water and brine leakage. Previously, for monitoring whether the collection basin was overflowing staff had to be present who sent this information to the technical control panel if a critical level was reached. In order to avoid this cost and staff-intensive type of

monitoring, a level probe should send a message to the control panel as soon as a critical level is reached which then automatically has the brine pumped back from the overflow. For the level measuring the device has to be able to compensate for variations in the measured value on account of the atmospheric pressure on the

inside of the housing. An additional problem is the aggressive salt in the brine plant. The salt corrodes even stainless steel housings so much that after awhile only the plastic of the cabling of the measuring equipment remains. If possible, the instrument should also be able to make level measurements in collection basins of varying sizes.

**Solution:** LABOM's digital submersible pressure transmitter CG2011 for hydrostatic level measurements.

**Customer benefit:** LABOM's digital submersible pressure transmitter is suitable for level measurements in wells, filling stations and open water. The level is determined by measuring the hydrostatic pressure. The compensation of the internal housing pressure is provided via a hose connection which at the same time holds the connection cable. The instrument converts the hydro-

static pressure values to a current and voltage signal. Once the critical level is reached the signal is remotely transmitted to the customer's control panel which has the overflow pumped back into the brine fully automatically.

Special staff deployment for monitoring the level in the cavern is no longer necessary. A further cost saving is provided by the software which the customer can use for parametrising the submersible pressure transmitter for various volumes. A single LABOM submersible pressure transmitter model can therefore be used in caverns of different sizes. A unique cost-saving feature of the LABOM submersible pressure transmitter is the plug-in cable connection. Whenever the submersible pressure transmitter requires maintenance, the complete (often expensively laid and protected) cabling does not need to be removed as well. The cabling is simply disconnected, remains where it was laid, and only the submersible pressure transmitter itself is removed for maintenance. On account of its robust construction, the covering of the stainless steel with epoxy resin-coated plastic, the submersible pressure transmitter is particularly suitable for operation in difficult environmental conditions e.g. under the aggressive influence of salt. Further accessories are available as a modular system for the LABOM submersible pressure transmitter.

A version with an added modified PT 100 sensor for temperature measurements allows e.g. combined pressure and temperature measurement of heavy oils in the chemical industry and shipping. In summary, the LABOM digital submersible pressure transmitter has been tried and tested under difficult environmental conditions and as well as time it also saves staff and storage costs and can be extended and deployed in many ways.



Author: Claus Huth  
Tel.: +49 (0) 4408 804-420  
e-mail: c.huth@labom.com

You can obtain further information on this topic directly from the author, your LABOM contact distribution department or from a technical consultant close to you (see [www.labom.com](http://www.labom.com)).

## EQUIPMENT DESCRIPTION

### Digital submersible pressure transmitter

- Stainless steel construction, protection type IP 68
- Ex-proof construction
- Temperature measurements: with Pt 100
- Coated housing
- Nominal range 2500 mbar, overload limit 6000 mbar
- Minimum span 160 mbar, maximum span 2500 mbar
- Plug-in cable connection: for protective PA tube
- Output signal: 4...20 mA with FSK-BUS, can be parameterised with proprietary LABOM software LEVELcom
- Material screw-on adapter: 1.4462
- Explosion protection type: II 2G EEx ia IIC T6

#### CABLE CONNECTION for submersible pressure transmitter

- Construction: plug-in type
- Material: 1.4462 (standard)
- Construction with protective PA hose