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Optic Measurement System for Temperature, Automatic and Continuous Blanket Interface Monitoring in Caverns.

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Abstract

GESO GmbH Jena has now been operating successfully for more than 22 years in the fields of fiber optical temperature and strain measurement and works in a wide field of applications.

To guarantee the stability, the shape and the production continuity of salt caverns the knowledge about the level of the blanket interface (blanket: oil or nitrogen) for the control of the process is of great importance. For this reason the GESO GmbH Jena has been developing a fiber optic measurement system for the automatic and continuous blanket level interface monitoring during the solution-mining process of salt caverns in close cooperation with the company esco GmbH & Co.KG since 2007 and it has proved successful.

The paper will present the measurement system. The requirements that have to be realized regarding the hard- and software will be shown and the advantages of the measurement system for the customer/user will be exemplified.

By using case examples the main developments on the way to the finished system will be illustrated. Because of the ongoing development of the system relating to the hard- and software, and the experiences drawn from the long practical experience in the salt caverns of esco it is now possible to install and to use the measuring system in other areas. In a conclusion the user of the system esco GmbH & Co.KG and the system developer GESO will give a forecast regarding further enhanced operator convenience and accuracy, for example further refinement of the spatial resolution of 0.5 m.

Additionally we want to inform about a new fiber design for temperature measurements in the world´s first natural gas storage based on the Lined Rock Cavern technology, in the LRC Demo Plant “Skallen”.

Keywords: Fibre Optical Measurement, Blanket Brine Interface Monitoring, Solution Mining, Fiber Composite Rod