

The Case for Gas Flow Measurement in Cavern Operations and Practical Experiences in the Use of Clamp-On Ultrasonic Flow Measurement Technology
@ EWE ENERGIE AG Nuettermoor / Germany

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1 Abstract

Official regulations covering gas flow measurement during injection and withdrawal in cavern gas storage operations differ between countries. However there are practical and safety aspects which make flow measurement an important subject for all cavern operators. Accurate flow measurement during gas storage cycles is one of the key indicators for monitoring a cavern's capacity and its inventory. It is also needed for safe storage operations and monitoring cavern integrity.

This paper discusses the various considerations for cavern gas flow monitoring as seen by Germany's EWE ENERGIE AG. EWE ENERGIE AG operated salt caverns have been in use since 1975 in various parts of Germany. The Nuettermoor facility is the largest of them all. It consists of 18 caverns with volumes ranging from 14 to 25 MMSCF with a total working gas volume of almost 39 BSCF. More caverns are under construction.

During a modernization project several years ago EWE ENERGIE AG selected clamp-on technology for the gas flow measurement task. This paper will discuss the operational philosophy and regulatory requirements for monitoring gas flow to and from individual caverns. It will also describe the reasons for the selection of ultrasonic clamp-on technology over other flow measurement technologies.

Key words: gas storage, cavern operations, instrumentation & monitoring, safety