

Importance of sonar cavern surveying in the monitoring and operation of natural gas caverns

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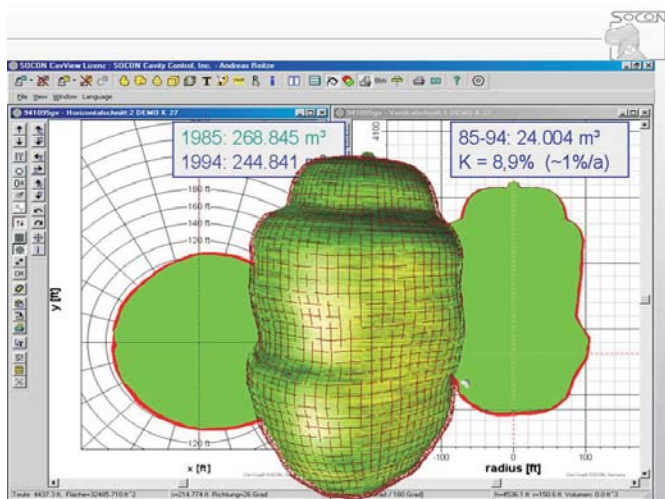
Profilowania sonarowe kawern w monitoringu i eksploatacji kawernowych magazynów gazu

Abstract. Wiarygodna i szybka ocena ilości magazynowanego gazu i efektywności magazynu wymaga szacowania parametrów termodynamicznych już od początkowego etapu planowania budowy magazynu aż po jego eksploatację. Dobowa lub dzienna ocena zmian ciśnienia, temperatury i ilości uruchamianego gazu w magazynie pozwala operatorowi reagować na fluktuacje rynkowe. Opracowane przez SOCON Sonar Control GmbH oprogramowanie dla operatorów magazynów gazu, oparte na profilowaniu sonarowym kawern magazynowych, umożliwia określenie dotychczasowych zmian i oszacowanie przyszłego kształtu i pojemności kawern (ryc. 1).

It is becoming increasingly important to carry out thermodynamic calculations starting from the very first stage of storage planning and continuing right on up to the actual storage operation in gas caverns (Boor & Krieter, 2004). The reason for this is that on the one hand the availability of gas quantities and the efficiency of the storage facilities

need to be determined and on the other hand these have to be predicted as reliably and as quickly as possible. History match methods and particularly the predictions (on a daily or a hourly basis) of pressures, temperatures and operating gas amounts in relation to the existing storage situation are therefore important tools for the storage operator to enable him to react to short and medium-term market needs (Krieter et al., 1998). SOCON Sonar Control GmbH recognized the need for and so developed a software tool that, based on the SOCON sonar survey in caverns under gas with accom-

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panying logs (Fig. 1), answers the open thermodynamic and rock mechanics questions (Reitze et al., 2007). This provides the cavern operator with the opportunity of having increased operational safety and at the same time

Fig. 1. Cavern convergence development between two sonar surveys

Ryc. 1. Model rozwoju konwergencji kawerny w okresie pomiędzy dwoma profilowaniami sonarowymi

allows the capacities and performance profiles during injection and extraction to be assessed (history match) and predicted.

References

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