Experience with large withdrawal rates from Etzel gas storage

by
Svein B. Thaule
Alf P. Fosse
Statoil Gas Technology

ABSTRACT

Etzel gas cavern storage in northern Germany was constructed to deliver gas at large withdrawal rates on short notice. Two years of operational experience conclude that both these objectives have been obtained successfully. Caverns operated continuous at large withdrawal rates for several days may be subjected to hydrate formation in the withdrawal system as a result of the significant temperature drop associated with the gas expansion. Since this phenomenon in some cases may limit the working gas volume, emphasis has been devoted to the inherent thermophysical properties of cavern operations. Basically, this is the study of the wellhead characteristics, which exhibit an aggregated property of all the thermal processes accommodated by the caverns.
Analyses of various cavern operations have for this reason been exercised in order to enhance knowledge of the intrinsic properties. Computational analyses based on numerical models have proved valuable in this respect.