SUMMARIES

Jamrozik A., Gonet A., Czekaj L.: **An analysis of fluids after hydraulic fracturing in the aspect of their further use or neutralization** • AGH Drilling, Oil, Gas 2013 • Vol. 30 • No. 3

Today's ecological policy focuses on preventing anthropogenic environmental hazards. A large share of activities are oriented to the precise recognition of hazards and use of solutions thanks to which the negative environmental effects of mining activity can be considerably reduced.
Issues related to the recovery of water after hydraulic fracturing with emphasis on the possible utilization and management of fluids after hydraulic fracturing in Polish conditions are discussed in view of the respective law.

Keywords: *drilling, hydraulic fracturing, environmental protection, management flowback water*

Jerzy Stopa, Rafał Mrzygłód: **An optimization model for managing compressors in salt cavern gas storage** • AGH Drilling, Oil, Gas 2013 • Vol. 30 • No. 3

The article presents issues related to technical and economic optimization of filling underground gas storage in salt cavern (CUGS) on the example of Mogilno.
Operation practice suggests that the first step is to inject the caverns with a high convergence, then with smaller and at the end caverns with the smallest convergence. In the withdraw process, the situation is reversed. On the other hand, the gas injection into the deepest caverns requires more compressor power. Optimization that takes into account only the speed of storage caverns convergence is not ideal. While injecting gas into storage caverns, compressors typically use about 1–3% of the transported gas, depending on the management of compressors operation. Taking into account the amount of gas supplied to the CUGS Mogilno, the cost of fuel gas that is used can be significant. In the liberalized gas market an underground gas storage operator will have to account carefully and buy fuel gas at market prices. These facts raise an important question: how to manage the operation, in a free gas market in the most efficient way which affects the profitability service storage provision in underground gas storage in salt caverns.
This paper presents the optimization model, developed by the authors, that minimizes the consumption of fuel gas, while preventing overdependence loss of underground salt caverns volume, during the gas injecting process into storage caverns.

Keywords: *salt cavern, gas storage, compressors, optimization*

Krzysztof Polański: **The stand for laboratory tests of loose materials** • AGH Drilling, Oil, Gas 2013 • Vol. 30 • No. 3

The paper describes a laboratory stand for tests of properties of bulk materials. It can be helpful for select proppants and materials for bedding layer. Tests were carried out according to Eurocode-1 norm, which required the construction of laboratory to allow the appointment of the angle of internal friction and external friction of granular materials in accordance with the Jenike procedure. The results obtained during the experiments allowed us to compare properties of various materials and a summary of the results obtained with the values quoted in the literature.

Keywords: *angle of internal friction, coefficient of external friction, the norm Eurocode-1*