

Summaries

WIKTOR FILIPEK

Porous medium as space lattice created from elementary cells

In this paper I have presented a structure a structure of a virtual porous medium based on the principle of the similarity of this medium to the real one. At the beginning of this paper I have defined the conditions which should be fulfilled to make the virtual medium similar to the real one. Next, the ideas “an elementary cell” and “a multipole” have been introduced. The latter one makes it possible to exchange an actual sector of the porous medium into an elementary cell treated as a multipole. This multipole helps to write easily and clearly a system of equations of the functioning of the i -th elementary cell in the space lattice. The results of numerical calculations of the elementary cell chosen and representing a real porous medium have been given. These calculations confirm the sense of constructing virtual porous medium to make them imitate real ones.

Key words: *the mathematical modeling of flows in porous medium, computer simulation the flow of fluid in porous medium, filtration*

DANUTA KRZYSZTOŃ, RYSZARD WOSZ, JERZY CIEŚLIK, ROBERT KLISOWSKI

Determining the rock susceptibility to bumps on the basis of investigation of rock samples from Peru mines in a stiff testing machine

Samples of two kinds rocks: limestone and mineral deposit from different mines of Peru were investigated in a stiff testing machine in conditions of a uniaxial compression at kinematic steering by the rate of sample longitudinal strain equal to 1.10^{-5} s^{-1} . In general 63 samples (26 limestone samples and 37 mineral deposit samples) of slenderness equal to 2 were investigated. The complete stress-strain characteristic was the result of each sample test. The rock susceptibility to bumps was determined on the basis of different indexes, calculated according to the known formulae [11] in which the pre- and post-critical properties of rocks as well as the specific energies in the particular ranges of sample longitudinal strain were taken into consideration. The analysis of all applied indexes of susceptibility to bumps has proved that the investigated rocks are highly and very highly susceptible to bumps.

Keywords: *pre-critical and post-critical properties of rocks, specific energies in particular ranges of sample failure, indexes of rock susceptibility to bumps*

TADEUSZ MIKOŚ, JANUSZ CHMURA

Revitalisation and tourist management of the underground mining excavations in the monumental gold and arsen mine in Złoty Stok

In 1961 the exploitation of gold and arsenic in the mine on Złoty Stok was abandoned due to economic reasons. It was the oldest mining and metallurgical centre in Poland. After many years of revitalisation the closed mine became a tourist destination, which is visited by more than 120 thousand tourists every year. The growing number of visitors necessitated from the owners of the Gold Mine some nationalisation of the tourist traffic. To meet

this need a connection between Czarna Dolna drift and Czarna Górna drift was made; they also reactivated the underground train and modernised its route.

Key words: *ore mining, history of mining, underground of the past, old mines, protection of the underground monuments, geotourism*

STANISŁAW NAWRAT, ZBIGNIEW KUCZERA, RAFAŁ LUCZAK, PIOTR ŻYCKOWSKI

Some problems with utilization of methane from demethanation in Jastrzebie Energetic Company

A methane-aerial mixture is caught by demethanation system. This mixture can be used as a low-methane fuel in different kinds of heating-power engineering installations. Jastrzebie Energetic Company is the biggest energetic plant in Poland, where mixture from demethanation of mines is used as a fuel for electric energy and heat production. In this article is paid an attention to possibilities of improvement and extension of economical utilization of methane, which is caught by demethanation system. An analysis of intake, utilization and transport of gas mixture to consumers, who are associated in energetic company, are realized. Activity of Jastrzebie Energetic Company from 2000 to 2005 is analyzed. The technical state of gas installation, quantity and losses of gas, present and planned modernization of main conduit and demethanation system are taken into account.

Key words: *Jastrzebie Energetic Company, economical utilization of methane, gas main conduit, electric energy and heat production*

MACIEJ WÓJCIKOWSKI, WOJCIECH MACHOWICZ

Mechanical protection of gas pipelines on the mining areas

The Upper Silesia area is a place of intensive mining activity. This activity has large impact on the area relief and on forming the subsidence process, which influence the pipeline integrity. This paper describes theoretical aspects of forming the subsidence basins.

The examples of mining damage related to subsidence process has been shown. The preventive action of pipeline compensator has been demonstrated. The long term impact of exchange of medium pressure distribution network from steel to polietylene has been discussed.

Key words: *gas network, mining, subsidence, stabilisator, compensator*