Summaries

JERZY GAWRYŚ, DANUTA KRZYSZTOŃ

Analysis of the Acoustic Emission Registered During Compression of Sandstone and Coal Samples · Kwartalnik Górnictwo i Geoinżynieria · z. 1, 2007

Experimental investigation on rock mechanical and acoustic properties during the uniaxial and conventional triaxial compression has been conducted. The typical Carboniferous rock samples collected from the Upper Silesian Coal Basin were tested. The rock samples of diameter 30 mm and height 60 mm were compressed in a stiff testing machine. In triaxial compression a 70 MPa pressure chamber was used. The parameters of experiments were the rate of longitudinal strain rate of samples (10^{-4} and 10^{-2} s^{-1}) and the confining pressure (0, 10, 20, 30, 50 MPa). The acoustic emission was registered by a Brüel and Kjaer device. The piezoelectric transducers were used for converting vibrations caused by fracture process during the uniaxial compression and triaxial compression. The output voltage of these transducers was proportional to the acceleration of vibrations. The results of measurements are shown in diagram of rock compression in a stiff testing machine and on a diagram of acoustic emission registration during the complete process of compression and failure. The results obtained from the investigation of fine-grained sandstone and coal are presented in this work For each experiment the cumulated value of impulses and the energy expressed by a sum of squared amplitudes were determined. Those values were related to the strain of a sample at the assumption that 100% of strain corresponds to the value of critical load (pressure). It was shown that the parameters of acoustic emission (the number and amplitude of registered impulses) and their distribution in relation to the stress-strain characteristic depend on the parameters of experiment (strain rate and confining pressure) as well as on the type of the rock. The frequency analysis was conducted for the chosen impulses of the cumulated activity diagram, referred to the stress-strain characteristic. The values of the obtained magnitudes: amplitude of spectrum, dominant frequency and time of impulse duration are presented for sandstone and coal samples correspondingly in tables. The analysis of the obtained results has shown that the increase in strain rate and in confining pressure influence the increase of acoustic parameter in sandstone and on the contrary, the decrease of this parameter in coal. It was observed that the influence of strain rate on the investigated acoustic magnitudes is greater then that of the confining pressure.

Keywords: *stiff testing machine, high pressure chamber, stress-strain characteristic, acoustic activity, amplitude spectrum*

ZBIGNIEW KUCZERA

The Influence of Changing Cooler Air Location for Climatical Conditions in Heading Mine Face · Kwartalnik Górnictwo i Geoinżynieria · z. 1, 2007

The depth growth of exploited layers, concentration of coal and connected with this mechanization of kneading processes and transportation of carbon has influence on deterioration of climatical conditions, especially in main face heading. In spite of intensive ventilation, the mine face zone microclimate often gets worse. The air cooling allows improve climate conditions improvement for working crew. In the article, the author analyses the changing process of dry temperature, proper and relative humidity on the rout of blind heading, with special regard to coal face zone during shifted distance between air radiator and ancestor's forehead.

Keywords: *cooling air, coal mines, climatical conditions*

ZBIGNIEW PIOTROWSKI, KRZYSZTOF ŁUKOWICZ

Use of Fly Ash Suspensions as a Method of Gob Fire and Methane Hazard Prevention in "Brzeszcze" Coal Mine • Kwartalnik Górnictwo i Geoinżynieria • z. 1, 2007

Fly ash suspensions are used in the Polish udergrund Coal Mine "Brzeszcze" for twenty years. The most important application of the suspensions is filling of caved areas as a method of gob fire and methane hazard prevention. The influence of the method on efficiency of methane prevention and methane recovery, is presented in the paper. Results of laboratory tests of gas permeability in consolidated fly ash suspensions samples, are presented too.

Keywords: *methane, methane recovery, fly ash suspension*

MARTA SUKIENNIK

Forecasting and Strategic Planning as an Important Factor in Development of Coal Companies • Kwartalnik Górnictwo i Geoinżynieria • z. 1, 2007

This paper contain considerations about usage strategic planning and forecasting in companies from mining indusrty. Difficult situation in Polish mining and variability economic conditions causes nessesity of applying forecasting and efficienty strategic planning to the companies works in mining indusrty. Paper shows forecast for coal and suggest the directions of changes for mining companies.

Keywords: *coal, forecasting, planning, expansion*

ANTONI TAJDUŚ, TADEUSZ MIKOŚ, JANUSZ CHMURA, MACIEJ PAWLIKOWSKI

Adaptation of the Pharaonic Quarries in Cairo in the Aspect of Conservation of Underground Monumental Sites • Kwartalnik Górnictwo i Geoinżynieria • z. 1, 2007

Civilization of Ancient Egypt owes largely its fame to stonework. In the modern Cairo, city of many millions inhabitants, the coptic community located in the oldest part of the city on the ruins of a huge roman fortress — Babylon and an arabian camp Al-Fustat, is a unique Christian enclave. The quarries of Cairo are situated in a huge rock in Eocene limestone. Present utilization of old quarries is connected to coptic diaspora which built a small church in the suburbs of Cairo of that time. Recently, a part of an old quarry was adapted in the region, which is meeting-place of coptic community. Due to it, a beautiful sanctuary relating to early Christian tradition was realized in the quarries. Nowadays, presented review of the pharaonic quarries revitalization in this coptic quarter shows that there are still adaptations of the old excavations to attractive religious and tourist sites. Nowhere in the world monumental quarries are in such an excellent condition as in Egypt — called "stone country". We can observe there technology of stone treatment dating back to period before iron tools. At the present time they play an important part in education related to stonework history, geology teaching and mining activity.

Keywords: *adaptation of quarries, geotourism, management of post-mining areas*