Summaries

PIOTR CZAJA

Ninety Years of Education in AGH (AGH University of Science and Technology) – Ninety Years of Work Faculty of Mining and Geoengineering

Everybody who smelled the fragrance of these corridors, the atmosphere of lecture halls, emotion of credits, and stress of exams as well as emotion of receipt of this respectable university degree – become the member of the big family of its Graduates. As to the aged grandmother for 90th birthday – we came with flushed cheeks into these unforgettable to recall the most beautiful time of the life, to met fellow-students, to penetrate the history arising in full view of us. I took this opportunity to present you the history formed by the Graduates of the Mining Faculty written in telegraphic way on the pages of our Faculty Mining, as a Graduates of the year 1973, whose fade willed honor him to manage of it during the period of splendid Jubilee – 90 years of existence.

Keywords: technical universities, department jubilee, mining and geo-engineering

ANNA CHADAJ

About the First Woman with a Master of Science Degree in Mining

The article presents the profile of the first female graduate of the Mining Department, her professional career and positions held. Attention is drawn to her underground activity during the Second World War.

Keywords: University of Mining and Metallurgy, Mining Department, biographies

MARIAN BRANNY, WIKTOR FILIPEK, MICHAŁ KARCH

Prediction of Air Temperature in the Working Faces of Blind Headings with Fan and Duct Ventilation System – 3D Computer Simulation

The solution is supported by equations and simulation programs utilizing the CFD approach. The description of wall boundary conditions utilizes the modify wall function. The temperature of side walls was obtained from the solution of a substitute problem. This temperature is a result of the solution of equation of heat conduction with boundary conditions describing the exchange of heat between the rock and the flowing air. The influence of evaporating water on air temperature was taken into consideration. The volumetric source of heat (negative) was defined in energy equation. The source terms were located in group of cells adjacent to the wall. Calculation data are presented in the form of velocity field and air temperature images in the face zone of a working with a force--exhaust overlap system of ventilation.

Keywords: auxiliary ventilation, numerical modeling, temperature hazards, mine ventilation

MARIAN BRANNY, BERNARD NOWAK, BOGUSŁAW PTASZYŃSKI, ZBIGNIEW KUCZERA, RAFAŁ ŁUCZAK, PIOTR ŻYCZKOWSKI

An Influence of the Two-Phase Steady Flow Parameters in the Upcast Shaft on the Parameters of Main Fan

The two-phase flow, in which a continuous phase is moist air and a discrete phase is water, occurs frequently in the ventilating shafts. Flow of discrete phase, often bidirectional, can cause a change of direction of air flow in

the shaft, in spite of function a main fan. In the article, the results of numerical research of influence of the two-phase steady flow in the upcast shaft on the parameters of main fan are described.

Keywords: two-phase flow, fan parameters, reverse flow in upcast shaft

EDYTA BRZYCHCZY

Data Exploratory Techniques in Hard Coal Mining Problems

The paper presents a review of data mining techniques applied to the mining process issues. At the beginning, the need of knowledge discovery is described and the characteristic of data according to the mining process of deposit are given. The importance of information in management of the mining process was emphasized. In the continuation, process of data exploration was described. Attributes of data were characterized as well as the examples of data analysis techniques according to the formulated exploration tasks. The data exploratory model could be created on the basis of the wide know methodologies. In the paper two methodologies were presented: Cross-Industry Standard Process for Data Mining (CRISP-DM) and SEMMA evolved in SAS Institute. In the continuation, examples of the selected exploratory techniques in analysis of the hard coal mining process elements are presented. The following techniques are described: linear regression, neural networks, decision trees, clustering algorithms and association rules. Described techniques were applied to problems such as: methane threat prognosis, longwall gates compression, analysis of longwall equipment, analysis of longwall gate equipment and research on similarity of mining excavations.

Keywords: data analysis, data mining, hard coal mining

BERNARD NOWAK, KRZYSZTOF FILEK

Thermal Power of Exchangers in Mine Compression Refrigerator of Air

This article applies to mine compression refrigerator of air. In this article, work of refrigerator with or without inner regenerative heat exchanger (subcooler) is considered. The equations are given, from which thermal powers of evaporator, condenser and subcooler of refrigerator are determined. Focused character of all elements of refrigerator is assumed (expect specified, compressor and expansion valve also).

For refrigerator with subcooler, system compound with 12 algebraic equations is received, in which unknowns are: temperature and humidity of cooled air, temperature of water after the condenser and temperature of refrigerant in five characteristic points of its circulation and ariolity degree of refrigerant of evaporator's inlet. For refrigerator without subcooler, the system is composed of 9 equations with the same as before unknowns, with the exception of 3 equations refer to subcooler.

Keywords: air conditioning of mine, air cooling, compression refrigerator, thermal power of heat exchanger

RYSZARD SNOPKOWSKI

Errors and Imperfections in Stochastic Simulation of Process – Chances of Verifying Them

Detailed characteristic of errors and imperfections possible to make in stochastic simulation, as research method, are described in this paper. Errors made on the level of creating the model of analyzing real process are discussed. Possible imperfections in recording of model in the form of computer program are characterized. Chances of verifying errors and imperfections, using compatibility tests and experts method, are shown. Papers [2], [3] indicate that problem of errors and imperfections in stochastic simulation of process concerns mining process simulation, as well which was emphasized in this paper.

Keywords: modeling of process, stochastic simulation, mining process simulation

JUSTYNA SWOLKIEŃ

The Influence of "Olza" Retaining-Dose System Modernization on the Odra, Olza and Lesnica Rivers' Water Quality

This article treats about the influence of dropping system "Olza" modernization on the Odra, Lesnica and Olza rivers ecosystem. Both, Leśnica and Olza were the most jeopardize ones, taking into consideration the fact that the mine waters were directly thrown to their waters. Strongly contaminated, mostly with chlorides and sulphates, mine waters, transported through the interceptor-sewer, managed to destroy the whole rivers ecosystem. Huge chloride fluctuations were the cause of biological balance dysfunction. Most of animals and plants species were destroyed. The brake through came after the new dropping system was activated. The new system was placed in the bottom of Odra river and was equipped with 51 nozzles settled down between two river banks. The new system allowed to eliminate the contamination of the Leśnica and Olza rivers and prevented their flora and fauna from total distraction. It also allowed to mix the mine and the river waters just after the drop. It led to the elimination of huge chloride fluctuation in the Odra river and had a huge impact on its quality improvement.

RYSZARD WOSZ

Deflection of the Immediate and Main Roof during Exploitation of Deposit – Stress Concentration Factor for a Single Opening Edge

This article is a continuation of the research works concerning the immediate and main roof strata deflection above the deposit mined by the chamber-pillar system with roof deflection in exploitation conditions of the copper deposits in LGOM. A model of the roof has been defined as a brittle rock with an unstable crack propagation. The destructive influence of cracks in a brittle material was determined by stresses around an elliptical crack. It has been shown that the maximum stress concentration occurs at the tip of long, narrow opening and the stress concentration factor depends on the shape of opening and its length.