

## Summaries

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BRONISŁAW BARCHAŃSKI

**Construction of a New Landfill Site on a Liquidated Old Landfill Site Located on the Grounds of a Former Non-Ferrous Metallic ore Opencast Mine in the Federal Republic of Germany** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

Municipal waste management is an integral part of environmental protection. Western European countries produce significant amounts of municipal wastes, a part of which is disposed on landfill sites. The present article is devoted to the adaptation of an old landfill site located on a former outcrop to the present legal and technical-organizational state currently in force in the Federal Republic of Germany.

**Keywords:** *environmental protection, construction of landfill sites*

PIOTR CZAJA

**German Coal Mining and Environmental Protection in DSK Anthrazit Ibbenbüren GmbH as an Example of Waste Material Management** • Kwartalnik Górnictwo i Geoinżynieria • z. 2, 2005

German hard coal mining industry has been considerably decreased in recent years and finally reached annual output of 26 mln tons. One very modern mine is colliery "DSK Anthrazit Ibbenbüren GmbH" with annual output of 1.8 mln tons. The mine is connected with coal power station Block B of 760 MW power. However this coalmine produces a great amount of waste material (mostly different kind of rock and fly ash), all of them are manage very properly and not polluting air, water and surrounding areas. Mine co-operates with local authorities creating common model of waste material utilization. Paper shows the problems of planning and building of waste rock heap and way of utilization of hundreds thousand tons of fly ash for constructing underground gallery's lining called "Kombiausbau system Ibbenbüren".

**Keywords:** *waste material management, waste materials in mining, mining heap*

KAZIMIERZ CZOPEK

**Ecological and Economic Conditions of Using Resources in Producing Aggregates Process** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

There are in production process of broken aggregates the contrary ecological and economic purposes. From ecological point of view it should be tried to do the maximization in using up resources. So far the production of aggregates needs to use several stages of feed crushing. As the effect there is created more and more small fractions treated as waste. From economic point of view the best situation would be to sell the highest price (the most expensive) fraction: chippings, voussoir, breakstone. The mediate solution can be to offer the lowest granulation fractions. This paper describes the optimum way of choice in this matter, concerning the kind of mineral necessary for recast process, demand of aggregates, prices of particular fraction of aggregates.

**Keywords:** *ecology, economic, resources, broken aggregates, incomes, profit, effectiveness*

SYLWIA GWOREK, ARKADIUSZ UTRATA

**Utilization for Forecasting Activity of Time Range Predictors Type Neural Network** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

This article presents consideration for forecasting activity of economic phenomenon described behind assistance of short time range concerning employment artificial neural network. It presents short characteristic of artificial neural network in first along with possible areas of economic forecasting activities, can find application. The second part of the paper includes an estimation of efficiency of selected economic phenomenon with an application of artificial neural networks.

**Keywords:** *business forecasting, predictors, forecasting activity of time range, artificial neural networks, estimation of efficiency*

WALDEMAR KĘPYS, ZBIGNIEW PIOTROWSKI, EWA WISŁA-WALSH

**Effect of Addition of Compacted MSW Fly Ash on to Properites of Fly Ash-Water Pastes** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

Dense mixtures of conventional fly ashes and water are utilized in many modern mining operations as an underground mine paste backfill, structural fills, fire prevention. The use of MSW fly ashes in such operations are limited as a result of their chemical composition. In this case, the compaction process, accomplished with the use of binder such as Portland cement and/or others, immobilizes the reactive components of this waste and results in the formation of strong granules which remain impervious to leaching. This unables addition of compacted waste to the mixture of fly ash-water. The main purpose of this paper is to evaluate the influence of addition of compacted MSW fly ashes on the properties of fresh and hardened fly ash-water pastes.

**Keywords:** *fly ashes, mixture of fly ash-water, granulation, municipal solid waste (MSW) disposal plant*

JADWIGA KRÓL-KORCZAK

**The Influence of Natural Aggregates Extraction on Natural Environment** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

Extraction of mineral deposits may affect components of natural environment. In mining areas this influence, manifested in different environmental effects, comprises virtually all components of environment. In this article systematics of environmental effects of mining activity was analyzed. A complexity of processes and phenomena occurring during and after extraction, as well as multidimensional character of mining area transformations were considered. The assessment of mining activities on particular components of environment was carried out using natural aggregates quarries as an example. This was an basis to assess the strength of potential effects.

**Keywords:** *natural environment, opencast exploitation, areas after exploitation*

IWONA KUCZYŃSKA

**Exploration into Carbon Loam and Non-Mineral Waste in the Field of Research for Alternative Fuels** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

Alternative fuels are becoming more and more popular due to the depletion of power resources, high cost of usage and growing awareness of the threats posed to natural environment. This paper introduces results of preliminary tests on obtaining fuel from waste, which also proves to be an effective method of waste utilization based on mixing carbon loam with non-mineral waste, by pelletization. The granulated product received in this way could become an alternative fuel in power engineering, heat engineering, cement kilns or domestic fire. The research proves also that granulates of the highest quality are those created from mixing carbon loam with wooden, tobacco and tanning dust.

**Keywords:** *waste fuels, pelletization, karbon loam, feature survey of alternative fuels*

ARKADIUSZ KUSTRA, MARIA SIERPŃSKA

**A Conception of Sustainable Development and Value Creation of Enterprise** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

This paper presents a conception of sustainable development and ways of its reporting. An extra attention was paid to the possibility of using the sustainable development indicators for estimating the value of enterprise in one, single report, consisting of financial, economic, environmental and social measures. The attempt of relating financial aspects of activities together with sustainable development meets the conception of multi criteria assessment regarding the creation of value in both tangible and intangible fields of enterprise. It is a significant problem in mining enterprises which operate in specific conditions.

**Keywords:** mining, value of enterprise, sustainable development, measuring indicators

IGNACY ŁUCZAK, ARKADIUSZ UTRATA

**The Forecasting of the Staff in Mining Processes with the Mass Servicing Models** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

This paper contains some considerations about usage of non-classic forecasting methods and predictors on the mass servicing models. The first part of the paper presents short characteristics of auxiliary works in the mine divided into stable and unstable groups. There are presented the main aspects of the mass servicing models and methods using in this theory. The second part of the paper presents stochastic model of the unstable auxiliary works in mines and also describes possibilities of usage this model to predict the staff in specify auxiliary works in mine.

**Keywords:** business forecasting, non-classical forecasting methods, models of the mass servicing, auxiliary works in mine, analysis of the staff

ANNA OSTREGA, RYSZARD UBERMAN

**Legal Aspects of Post-Mining Sites Revitalisation** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

A discussion of the definitions used in laws, regulations and literature pertaining to the reclamation and redevelopment of post-industrial sites, included post-mining sites, is presented. Obstacles resulting from incoherent laws and regulations, which make it more difficult to carry out revitalisation processes, are described. Efficient and effective procedures for conducting the revitalisation process for general case and chosen particular cases are shown.

**Keywords:** post-mining sites, revitalisation, laws

JAN PALARSKI, FRANCISZEK PLEWA, PIOTR PIERZYNA

**The Influence of Modification Additives on the General Properties of Fly Ash from „X” Power Plant** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

The use of waste from power generation in underground mining, moreover to positive effects for the environment, became necessary and common practice in such a technologies as grouting of gob, liquidation of workings or construction of backfill packs. However, the amounts of power generation waste being produced and the opportunities for much more large scale of application in mining induce searching of new composites that are made on their basis. This is related, between others, to use of them by the construction of isolation barriers. The paper presents an assessment of influence of selected natural additives on the general physical and especially filtration properties of fly ash-water mixtures made on the basis of waste from “X” power plant.

**Keywords:** energetic waste management in mining, strength and elastic properties of composite materials, coal combustion products, cement, mine workings abandonment

JAN PALARSKI, FRANCISZEK PLEWA, PIOTR PIERZYNA

**Liquidation of Flooded Shafts with Use of Waste Materials with Addition of a Binder** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

Liquidation of mining workings, particularly mine shafts represent a complex subject, especially in case of water and gas hazard presence. This paper relates to results of research obtained from many years of experiences collected by the team of researchers on the use of highly densified mixtures (composite materials) made from power generation waste and binders as construction materials for liquidation of flooded mining workings.

**Keywords:** *energetic waste management in mining, mechanical and permeability properties of composite materials, coal combustion products, insulation barriers*

DOMINIKA PALUCH

**Applied of the Ion Exchange Process to Wastewater Treatment in Non-Ferrous Metals Industry** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

The paper presents the process of ion exchange uses to wastewater treatment in non-ferrous metals industry. The ionites made by PUROLITE are described. The results of research in using of these ionites to remove barium ions from wastewater are presented.

**Keywords:** *process of ion exchange, ionites, wastewater treatment*

RYSZARD SNOBKOWSKI

**The Stochastic Simulation for Identification of Function of Production Probability Density** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

In this paper discusses application of the stochastic simulation method, as a method of alternative identification of the function of  $f_{q_z}(q_z)$  random variable  $Q_z$  – shift production and function  $f_{q_d}(q_d)$  random variable  $Q_d$  – daily production. The algorithms using random number generators were presented. It was noted that the use of the stochastic simulation method, could be more effective in resolving these issues, in some cases, when compared to the analytical method.

**Keywords:** *hard coal mining, longwall, production, stochastic simulation*

IRENEUSZ SOLIŃSKI, BARTOSZ SOLIŃSKI, ROBERT RANOSZ

**Prognosis of Development of Renewable Energetics in Poland and European Union** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

European Union has putted range of tasks in front of the members of UE. The aim is to increase participation of production of electric power from renewable sources in all-out expenditure of electric power at the level of 21% in 2010 (for Poland this aim is 7.5% in 2010 and 9% in general sale in 2010). This article shows development forecast for renewable energy in prospect for 2010 and 2020 in UE and Poland.

**Keywords:** *energy, renewable energy sources, forecasts for UE and Poland*

IRENEUSZ SOLIŃSKI, BARTOSZ SOLIŃSKI, ROBERT RANOSZ

**Development of Renewable Energy Sector in Poland and European Union** • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005

Poland as a member of UE since two years trying to fit for requirements witch has been putted for the members of UE in contribution of renewable energy. Polish resources of renewable energies are valued at the level of 9% in

general sale to final customers in 2010. This article shows dynamics of development renewable energy in UE and Poland (at the 2003 level) paying attention at the big gap between UE and Poland in this range.

**Keywords:** *energy, renewable energy in UE and Poland*

ANDRZEJ TOR, KAZIMIERZ GATNAR

**Economical Utilization of Coal-Bed Methane from Jastrzębie Coal Company in Cogeneration Power System • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005**

Paper presents the resources of coal bed methane in the region of Jastrzębie Coal Company (JSW SA) coming from both active and abandoned coal mines. It is also presented how the gas is being used in heat and power plants grouped in Energy Company Jastrzębie (SEJ SA) and in new cogeneration and trigeneration installations with gas engines at Suszec and Pniówek plants. In the summary the role of combined production plants for energy delivery to coal mines is discussed as well as further possibilities of coalbed methane utilization in plants based on gas engines are presented.

**Keywords:** *coal bed methane, gas engines, cogeneration power system*

KAZIMIERZ TRYBALSKI, DAMIAN KRAWCZYKOWSKI

**Energetic Factors of Copper Ore Grinding Process Evaluation and Their Modeling • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005**

The paper concerns the energy consumption problem and copper ores grinding processes evaluation in grinding and classification system of one of KGHM "Polska Miedź" SA ore enrichment plants. The costs analysis of grinding and classification center was conducted, what identified its highest energy consumption. The energetic-technological factors evaluating grinding and classification processes were then proposed and calculated. On their basis the examples of models were constructed, which were regressive ones and neural networks forms, taking into consideration dependencies between process evaluation factors and energetic-technological data of investigated process. The comparison of given models was carried out.

**Keywords:** *copper, grinding, modeling, energy consumption*

BEATA TRZASKUŚ-ŻAK

**An Analysis of Operation of Economic Environmental Instruments • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005**

This article describes the characteristics of operation of economic environmental instruments in Poland including legal regulations. There is described the instruments of direct (legal) and indirect (economics) regulations. There is also included the calculation of volume of environmental charges and fines as well as their payment in the years 1999–2003. Moreover the paper presents an analysis of mining damages expenses and environmental investment expenses.

**Keywords:** *environmental economic instruments, environmental investment expenses, mining damages expenses*

RYSZARD UBERMAN, WOJCIECH NAWORYTA

**Assessment of State and Needs of Land Reclamation and Revitalization of Post Mining Areas in Malopolska Voivodeship • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005**

Referring to Conception of integrated development of postindustrial and postmilitary areas elaborated together with Malopolska Agency for Regional Development (MARR) within the European project EV INTERREG IIIC, and in connection to regulation concerning Integrated Program of Operating Regional Development 2004–2006, the paper presents a register of impacted areas in Malopolska Voivodeship, particularly those affected by mining

industry. Based on the analysis of spatial disposition of mining areas and objects we distinguished the regions which were particularly affected by mining industry. Taking into consideration various criteria we have made an assessment and prepared a hierarchy of areas, which restoration and revitalisation should be concerned a priority task.

**Keywords:** *regional development, postmining areas, revitalisation*

ANDRZEJ J. WÓJCIK, JANUSZ CHMURA

**Deposits of Natural Resources and Changes in the Environment Caused by Mining in the Area of Bukowno (Upper Silesia Region, Poland) • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005**

Complicated geological structure characterise the area of research. Big geological units in this region (Upper Silesian Coal Basin, Cracow Monocline) are separated by big and deep fault zone (Śląsk Trough). Exploitation of natural resources existing in this area (zinc and lead ores, quaternary formations of sand) has led to enormous changes in the environment. As a result of restricting and finally closing down mining (zinc ores and sand mines) the area gradually regains its natural as well as tourist and recreational value. There are also a few places in the town especially distinguished to preserve them in unchanged form (i.e. Sztoła River Valley, Diabla Góra Hill).

**Keywords:** *fields of mineral raw materials, changes of natural environments, protection of nature and landscape*

RENATA ŻYLIŃSKA-DUSZA, JUDYTA HAWRYSZ, ALDONA SKOWROŃSKA

**Chemicals Management in KGHM Polska Miedź S.A. "Rudna" Mine Division • Kwartalnik Górnictwo i Geoinżynieria • z. 4, 2005**

Due to the specific character of operational activities as well as the magnitude of "Rudna" Mine on the premises of the plant large amounts of chemical agents are present. Among them there are also dangerous substances, which ought to be handle with the greatest caution and call for the special treatment. The present paper focuses on the actions currently undertaken in the mine aimed to incorporate the management of chemical agents into existing systems of environmental management and occupational health and safety management. The adequate procedures of chemical agents management, having been implemented and continuously improved on the mine level, provide tools to cope with the actual legal regulations and simultaneously they stand for an important element of the plant efforts in order to ensure high level of the human health and environmental protection issues.

**Keywords:** *chemicals, dangerous substances, management systems, risk assessment*