

SUMMARIES

Cepil M.: The problem of engineering materials selection in relation to the expected properties • AGH Drilling, Oil, Gas 2012 • Vol. 29 • No. 4

Nowadays, in the selection of construction materials the most important thing is the unit price, though more expensive materials are very often replaced by cheap plastic as long as their use provides the durability and safety of the constructions.

Even after using a lot of treatments to improve their mechanical, physical, in-use and technological properties, engineering materials sometimes do not meet the expected requirements. Therefore, today's products consist of many components made of different materials conforming to specific functions.

The subject of the presentation is to analyze the characteristics of engineering materials and the possibility of their modifications depending on the expected parameters. The presentation also focuses on the selection of materials regarding their strength calculations, working conditions (including the impact of the environment on the part of the design), application of the optimal methods of manufacturing etc.

Keywords: construction materials, gas pipelines, steel

Śliwa T., Śnieżek P.: Drilling bits in percussive-rotary drilling technology (down the hole DTH) • AGH Drilling, Oil, Gas 2012 • Vol. 29 • No. 4

This paper addresses the issue of drillbits for drilling normal and large diameter boreholes with the use of percussive-rotary method. The most important elements of drillbits, i.e. sintered carbide inserts of different shapes have been described. The hardness of the drilled rock determines the shape of used sintered carbide inserts and the shape of the drillbit face. The cluster hammers, used for drilling large diameter DTH, have been also presented.

Keywords: drillbits, down-the-hole (DTH) drilling

Zarębska K., Baran P., Cygankiewicz J., Dudzińska A.: Prognosticating fire hazards in goafs in Polish collieries • AGH Drilling, Oil, Gas 2012 • Vol. 29 • No. 4

The purpose of the study is to determine the sorption capacity of hard coals from Polish collieries with respect to several sorbates: ethane, ethylene, propane, propylene. The knowledge of the sorption capacity of coal with respect to a wide range of sorbates is essential to ensure the miners' safety and to allow for reliable forecasting fire hazard and self-heating of coal. The self-heating process is evaluated using specialist indicators based on hydrocarbon contents in mine air. Coal properties, such as porosity, coal rank, maceral content, moisture, ash and volatile matter contents as well as proportion of mineral substances are of key importance for understanding the processes taking place on the hard coal-gas interface. The quantitative analysis of these parameters supported by sorption tests will provide us information about the coal's structure's tendency to accumulate and release gases and vapours. It is important to determine the accessibility of the internal coal structure to gases and to investigate the influence of the micro- and submicro-porosity on the process of sorption. Concentrations of non-saturated hydrocarbons: ethylene and propylene are good indicators used to evaluate the scale of the self-heating process. Therefore, we need to reliably establish whether hydrocarbons present in mine air are released only through the self-heating process or whether they can be also accumulated in the coal structure and then desorbed when the conditions should change. Although preventive measures have been put place in Polish collieries, endogenous fire are still fairly frequent, so the hazard control based only on concentrations of non-saturated hydrocarbons may prove insufficient. It is also necessary to determine whether those hydrocarbons can be accumulated in coal, what factors will trigger this process and in what extent. Results of such tests will contribute to fire prevention and will help control other hazards associated with underground mining operations.

Keywords: gas, coal, sorption, self-heating process