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Technology for Producing High-Octane Gasoline from Degassed Mine Gas

Modern road transport widely uses gasoline. The main properties of gasoline are fractional composition and octane number. Modern brands of gasoline are of high octane number. One of the new ways to get high-octane gasoline is the use of mine gas. In coal mines accumulates CMM, which can currently be viewed as associated minerals. Traditionally, methane is pumped out of the mine and is released into the atmosphere. However, the level of modern technology allows us to solve the problem of disposal of methane-air mixture.

The work carried out in accordance with the "Road Transport" curriculum of bachelors training considers the technology that not only recycles coalbed methane into gasoline, but also reduces emissions of greenhouse gases in the atmosphere, it as well partially compensates the cost of decontamination. The research is relevant because Ukraine has got large-scale coal mining, however, CMM processing technology is not used .

Electrotechnological processing of gas into gasoline is carried out in the plasma arc and consists of three stages. The first stage is the preparation and enrichment of methane-air mixture. Technology developers in the first stage are OJSK " MetanEnergoResurs " and CJSK " Grasys". The second step consists in the production of synthetic gas using oxygen plasma methane conversion installation. The developer is ITAM SB RAS. The third stage - the production of high- octane gasoline from synthetic gas that meets the requirements of national Ukrainian standards GOST 51105-97. Developer - JSC STC "ZEOSIT".

The analysis of the quality of gasoline produced with this technology, in comparison with gasoline produced firms Sasol, Mobil and TIGAS, showed that the given technology produces high-octane gasoline with low content of aromatic hydrocarbons and benzene, without sulfur and nitrogen compounds, with 93 octane number.