

Dmitriy Bas  
A.V. Yavorskii, research supervisor  
L.O. Tokar, language adviser

SHEI «National Mining University»,  
Dnipropetrovsk

### **Automatic Load and Speed Control System and Feeding Rate of Shearer**

Shearer is integrated mining machine which can simultaneously perform operations on crushing coal, and its loading on a conveyer.

Coal mining directly depends on effective use of mining equipment.

“Avtomatgormash after V.A.Antipov” OJSC developed a technical means complex KC500Ч.YXJI5 designed for 1КДК500; 2КДК500; КДК700, and КДК400 machines control with frequency-response coordinate drive system located in shearer made by “Gorlovski Mashinostroitel” CJSC. KC500Ч system helps to control the machine in underground mine gas-hazardous or dust-hazardous conditions.

KC500Ч system proceeds as is described below:

- Powering on and powering off both machine and conveyer together with equipment in a roadway.
- Blockage of unauthorized powering on the machine.
- Control of the machine operating mechanism.
- Diagnostics and protection of crucial components of the machine.
- Emergency outage of equipment operating in a face. And
- Technological and test information display.

Data concerning complex and shearer condition is shown on display unit located in control panel.

Such mines as Bazhanov mine, “Butovskaia”, “Yuzhnodonbasskaia” #3, “Novodonetskaia” tested KC500Ч machine. Today two КДК500 shearers with KC500Ч machine operate in Bazhanov mine, and in “Yuzhnodonbasskaia” #3 mine.

Automation systems of winning machines should provide their automatic powering off if conveyer shutdown takes place; if shearer leaves the zone of relocated support unit; if there are obstacles on its route; if methane permissible concentration is exceeded etc.

Solving the problem of automation of face equipment will give ability to:

- Boost their production by means of more complete capacity utilization.
- Improve quality of mined coal, and reduce its production cost.
- Better dynamic characteristics of the machines and their reliability; expand their life.

As increase in coal mining as well as minimization of hazards associated with its output is the key task of mining industry, then implementation of automated operation modes is rather upcoming tendency.

Hence, application of automation equipment for mining machines is very important for mining industry.