ANNOTATION

In the dissertation work, an energy- and resource-saving frequency-controlled electric drive of centrifugal blowers of pumping units of main oil pipelines with improved technical and economic indicators is considered.

It was determined that the existing EGPA are not able to regulate performance over a wide range while maintaining high efficiency, since the regulation of the performance of the superchargers, which is carried out to coordinate operating modes with the operating modes of the main, is performed by bypassing part of the gas from the discharge side to the suction side.

A high-voltage inverter based on a Rockwel Automation “PowerFlex 7000” stand-alone current inverter or a Tekhnoros inverter, which have similar technical characteristics, was used for the AD voltage.

The analysis is carried out and the rational regimes and quantities controlled by EGPA with the use of VFD for optimal gas transport through the MG depending on the performance of the compressor are evaluated.

The structure of the central electric drive based on an asynchronous electric motor and frequency converter with a relay-pulse control system and control algorithms that ensure optimal operation of the central nervous system and its good electromagnetic compatibility are proposed. On the basis of the mathematical model of the system "power supply network - IF - AD - TsN - MG", a virtual model of the electric drive was developed so that simulation, calculations and analysis of the results were carried out using the application package Matlab. The results confirmed the validity of the theoretical studies presented in this dissertation.