ENERGY EFFICIENCY OF THE OIL TRANSPORTATION PROCESSES AND ALTERNATIVE ENERGY USE

I. Mustafayev, P. Rzayev, H. Mahmudov, N. Guliyeva
Institute of Radiation Problems, ANAS, Baku, Azerbaijan
imustafayev@mail.ru

The energy efficiency of the transportation processes of Azerbaijan oil by pipelines on Western routes has been assessed. It was shown that the surface facilities of oil pipelines in many cases, the power supply is realized through autonomous energy sources. Pump stations, pigging stations, valves, cathodic corrosion protection technics and other facilities are located away from power electricity lines and energy supply is provided by use of diesel generators. The energy supply of pumps are operated by turbogenerators. The energy capacity of these facilities are changes very large-scale, so for example this quantity is 2-5 kW for valve stations and about 1 MW for pump stations. This energy by use of diesel fuel are produced in the power generators. For example, in the pigging station of BTC oil pipeline about 278.7 MWh electricity are produced by combustion of 1093,250 tonnes of diesel fuel, and in the pump station is produced about 5278 MWh of electric energy by combustion of 1451 tons of diesel fuel and 23396 tons of natural gas per year. During these processes about 80 thousand tons of harmful gases (excluding greenhouse gases) are emissioned to the environment.

This report dedicated to analysis of organic fuel combustion processes in the autonomic generators and turbogenerators, definition of energy efficiency of these facilities. The facilities are grouped by energy capacity.

The opportunity of use of Solar energy as a power sources in the facilities with a total capacity of less than 20 kW have been analyzed in this report. There are more than 100 such kind of facilities in the BTC oil pipeline. It has been established the intensity of Solar energy, the number of sunny days, topographic relief, as well as equipment and technical parameters of the Solar panels energy sources.

The technical issues of installation of solar panels to energy supply of oil transportation facilities also are discussed in this report.

Acknowledgement
This work was supported by the Science Foundation of SOCAR.