SUMMARY

The master's dissertation contains: pages - 111, figures - 41, tables - 21, graphic part on 6 sheets of A1.

The aim of the work is to design an autonomous photovoltaic pumping station together with theoretical research and mathematical modeling in the Matlab software environment using the Simulink package. Investigate the performance of the system when changing the input voltage from the power supply. Consider the influence of radiation and temperature on the operation of the photo panel. To analyze the dynamic and static characteristics of the system obtained during the simulation of the pumping unit.

An analytical review of the types, principle of operation, advantages and disadvantages of autonomous energy sources is carried out. Examples of industrial and transport application, features of control and modeling of autonomous power systems are considered.

The choice of the centrifugal pump is made proceeding from initial data of pressure and productivity, its power is calculated and the driving asynchronous motor is chosen, the converter device is developed. Mathematical models of induction motor, photopanel are given. Algorithms of control of electromechanical system are considered.

PUMP INSTALLATION, PHOTO PANEL, AUTONOMOUS, ASYNCHRONOUS, ELECTRIC DRIVE, INVERTER, ALGORITHM, CONTROL, RESEARCH, SIMULINK