RESEARCH OF THE WORK OF PUMPING UNITS IN THE MODE OF STABILIZATION OF THE LIQUID LEVEL IN THE RESERVOIR BASED ON THE IMITATION MODEL

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Abstract

The article investigates electrohydraulic processes in the pump unit in the mode of maintaining a constant liquid level in the reservoir with the use of imitation model of the system that includes an asynchronous electric drive with frequency regulation and a pump with a hydraulic network. The mathematical components of the model implement the main dependencies that relate the fluid inflow, flow rate and pump head, electric motor angular velocity, active power and system efficiency. The sub-drive of the electric drive is a structural model that implements the required scalar law of voltage regulation using frequency and contains a PID controller in the level stabilization loop. During the simulation, the variable operation mode of the pump unit is considered for the case of liquid inflow change within the acceptable limits from the minimum to

the maximum values. Graphic dependencies, that represent phase trajectories with respect to hydraulic characteristics and energy parameters, are shown and analyzed. References 6, figures 4, table 1.

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