

Andranovich B., Popkov E. N., Popov M. G., Sinianskii I. V.

Analysis of the influence of the hydraulic turbine simulation models on the results of the mathematical simulation of electromechanical transients considering frequency.

In the absence of powerful modern computer software systems and digital technology for a very long time calculations of electromechanical transients considering frequency variation were carried out using simplified numerical models of heat and hydraulic power stations. This engineering calculations practice shows that in many cases the use of such models may lead to incorrect results of simulation. The article provides the analysis of the impact of the level of detail of simulation models of hydraulic units on the calculation results of electromechanical transients in isolated power systems with a predominance of hydroelectric power plants.

Key words: hydro turbine, water hammer, diversion power plant, surge tank, simulation model, electromechanical transient processes.

Andranovich Bogdan, Scientific and Technical Center of Unified Power System (STC UPS), St. Petersburg.

E-mail: andranovich_b@ntcees.ru

Popkov Yevgeny Nikolaevich, Dr. Sc., Professor, St. Petersburg Polytechnic University (SPbPU).

E-mail: enpopkov@gmail.com

Popov Maxim Georgievich, PhD. tech., Docent, St. Petersburg Polytechnic University (SPbPU).

E-mail: PopovMG@eef.spbstu.ru

Sinyansky Ivan Vladimirovich, Scientific and Technical Center of Unified Power System (STC UPS), St. Petersburg.

E-mail: sinyanskiy_i@ntcees.ru