

THE ANALYSIS OF AUTONOMOUS ELECTRIC POWER SUPPLY SYSTEM, BASED ON ASYNCHRONISED GENERATOR WITH THREE-PHASE MODULATOR WITH ONE STAR SCHEME DURING COMPLEX LOADING

Autonomous electric power supply systems, based on asynchronous generator with contactless cascade modulated exciter, belong to promising one, as they perfectly provide frequency stability on terms of changing frequency of generator rotor speed. Theoretical concept of such electric power supply systems provides 16 scheme decision kinds, which provide crucial impact on electromagnetic and electromechanic processes course, and on work of electric power supply in general, as well. Besides, such systems are also influenced by type and conditions of generator loading work and functioning of automatic strain amplitude stabilization.

The author has developed mathematical models of high adequacy level. By means of them and on basis of proper program complex instant value calculation of all basic coordinates were received and electromechanic and electromagnetic analysis, that happen in autonomous power supply system on basis of asynchronous generator with contactless cascade modulated exciter with one star scheme generator rotor and combined potential and common connection of rotor machine modulator phased branches, during generator's work at asynchronous motor joint and active-inductive loading were analysed.

Results of electromagnetic and electromechanic investigation processes, which were received for chain of consumers' work conditions: asynchronous motors and active-inductive loading are provided.

On the ground of the research, it was determined, that in contradiction to scheme with common connection of phased branches, modulator scheme with combined connection guarantees higher level of power supply system resistance, and, in particular, commutator resistance. The value and character of asynchronous motors loading, active-inductive loading parameters, including power factor, value of insert by strain commutator, and consumers work schedule have crucial influence of work resistance.