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EFFICIENCY OF AKKUMULATORS WITH USING VOLTAGE RESONANCE

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The actuality of solving modern problems of the electric power industry, due to the depletion of the planet's natural resources, is undeniable and initiates the development of new physical and technical solutions with the practical use of known natural phenomena.

The purpose of the work is proposing and theoretically substantiating of an electrical system workability for resonantly increasing the average energy characteristics of batteries with help of a circuit consisting of series active-reactive electrical contours with common capacitive storage devices, excited in the voltage resonance mode and operating as an active electrical power amplifier in any type of load.

The proposed work was initiated by the current needs of energetic, due to the depletion of natural resources and the rapidly growing needs of the global economy.

The workability of the proposed scheme of the resonant amplifier of periodic active electric power is theoretically justified with the involvement of the mathematical apparatus of the theory of circuits used to calculate transients in closed active-reactive circuits.

A circuit of an amplifier of periodic active electric power is proposed, containing two capacitive storage devices operating in turn so that when one of them is charged, the other is discharged and vice versa. The proposed scheme makes it possible to double the average output characteristics of the amplifier as a whole.

With the substantiation of workability, a scheme for a resonant increase in the energy characteristics of batteries is proposed, consisting of sequential active-reactive electrical contours and operating as an amplifier of the active electrical power in any type of load. It is shown that the symmetry of the proposed scheme of the periodic amplifier of active electric power relatively to the circuits with capacitive storages, with the equal duration of their charge-discharge to the load, makes it possible to double the average value of the output electric power. It has been found that the charging voltage on capacitive energy storage devices significantly exceeds the voltage of the power source. So, the maximum amplification can reach a value of ~ 158 . The largest increase in the average power of the battery can be ~ 21.64 .

As an example, calculations of currents and voltages in the experimental model were made, which made it possible to formulate recommendations for the selection of elements of a real periodic amplifier of active electric power with a high average value of output characteristics for any loads.