TRANSFORMLESS CONDITIONERS of QUALITY of MAIN VOLTAGE.

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Abstract. The set of the schemes of transformless AC / AC voltage regulators is generated from set DC/DC converters. The direct method of the analysis of regulators (without the solution of differential equations for phase variables) is developed for a case of asymmetrical power and (or) load. The outcomes of research of such regulators intended for improvement of quality of main voltage are submitted.

Key words AC/AC regulator, asymmetry voltages, phase variables.

The tasks of stabilization, balancing, improvement of the form of main voltage are actual. The first two tasks are decided usually by usage of thyristor controllers with the transformer. But the availability of the transformer is done by such device unwieldy, inertial, and the thyristors in addition distort the form of voltage and current of load .

We conduct activities on creation of the new class of transistor regulators of alternating voltage with pulse-width modulation [1,2]. In single-phase versions they are full clones DC/DC converters, made with a capability of a reverse of polarity of input and output voltages,. In case of three-phase versions of regulators the fulfilment of the schemes with diminished number of key units (transistors) is possible. This simplification of the schemes is grounded on property of connectivity of three-phase voltage and on property of a homogeneity of switching (commutation) of keys out-of-phase of regulator. Such regulators have a sinusoidal input current, sinusoidal output voltage and are capable to cancel sags in a curve of main voltage.

Outcomes of calculation to the direct method of one such regulator [2] are checked by mathematical simulation and are used at designing of a mock-up sample of the conditioner of quality of main voltage 220 In, 50 Hz, power of 3 kw.

The references

1. Patent of Russian Federation № 2122274. Bul. № 32, 1998.
2. Patent of Russian Federation № 2191463. Bul. № 29, 2002.