

DOI: <https://doi.org/10.15407/techned2020.06.025>

FEATURES OF SECTIONING THE TURNS OF THE TRANSFORMING ELEMENT OF THE TRANSFORMER-KEY ACTUATING STRUCTURE IN THE BOOST CHANNEL OF THE DC POWER SYSTEM

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Science of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	No 6, 2020 (November/December)
Pages	25 - 31

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Abstract

One of the effective ways to ensure the normalized operation of the electricity consumer with an unstable primary power source is the organization of the corresponding voltage supply channel. In a system with a direct current source, the voltage supply is implemented by introducing a rectifier semiconductor bridge in series with the load, into the diagonal of which AC energy is supplied, the voltage level of which is purposefully changed by a corresponding converter with a transformer- and-switches executive structure (TSES). To achieve high efficiency of the use of key elements of TSVS, it is proposed to assign the functions of rectification and voltage regulation to a specific class of TSES – a multilevel rectifier consisting of a transformer and a finite set of parallel connected pairs of serially connected thyristors, the common points of which are connected to the corresponding taps of the sectioned secondary turns of the transformer. By discrete-time control of thyristors, it is necessary to regulate voltage levels, it is attached. The linearity of the scale of these levels is ensured by the proposed transformer sectioning law. This power supply system is characterized by small energy losses in semiconductor elements (only two thyristors work at a time), and the a priori impossibility of emergency situations during transitions from one level to another. References 14, figures 3, tables 3.

Key words: transformer-and-switches executive structure, DC power systems, booster channel, multi-level rectifier, winding sectioning law.

Received: 08.07.2020

Published: 21.10.2020

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