

MATHEMATICAL MODELING FOR CONTACTLESS ELECTRIC POWER TRANSFER TO UNDERWATER VEHICLE

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ABSTRACT

Contactless power transmission device for underwater vehicle developing in IMTP FEB RAS is considered. The new equivalent circuit of the transformer as a part of the contactless electric power transfer device is suggested. Transformer current waveform equations are given.

Keywords: contactless power transmission, high frequency transformer, disc winding, charging batteries, equivalent circuit, simulation.

REFERENCES

1. Illarionov G.Yu., Sidenko K.S., Bocharov L.Yu. *Ugroza iz glubiny: XXI vek* [Threat from depth: the XXI-st century]. Khabarovsk, KGUP «Khabarovskaya kraevaya tipografiya» Publ., 2011. 304 p.
2. Kuvshinov G.E., Kopylov V.V., Filozhenko A.Yu., Naumov L.A. *Ustroystvo dlya zaryadki akkumulyatornoy batarei podvodnogo ob"ekta* [The device for charging of the storage battery of underwater object] Patent RF, no. 2401496, 2009.
3. Kuvshinov G.E., Naumov L.A., Filozhenko A.Yu., Chupina K.V. *Materialy 2-y. nauchn.-tekhn. konf. «Tekhnicheskie problemy osvoeniya mirovogo okeana»* [Proc. of the 2nd Science-Technical Conf. "Technical Problems of World Ocean Exploration"]. Vladivostok: Dal'nauka Publ., 2007, pp. 141–146.
4. Amelina M.A., Amelin S.A. *Programma skhemotekhnicheskogo modelirovaniya Micro-Cap 8* [Program for scheme-technical modelling Micro-Cap 8]. Moscow, Goryachaya liniya-Telekom Publ., 2007. 464 p.
5. Gerasimova G.N., Kuvshinov G.E., Naumov L.A., Usol'tsev V.K. *Topologicheskie metody analiza v elektrotekhnike i avtomatike* [Topological methods of the analysis in the electrical engineer and automatics] Vladivostok, Dal'nauka Publ, 2001. 232 p.
6. Kopylov I.P. *Elektricheskie mashiny: uchebnik dlya vuzov* [Electric cars: the textbook for high schools],. Moscow, Energoatomizdat Publ., 1986. 360 p.
7. *Elektrotehnika, kniga 1: Teoriya elektricheskikh i magnitnykh tsepey. Elektricheskie izmereniya* [The electrical engineer, book 1: the theory of electric and magnetic chains. Electric measurements]. Chelyabinsk, YuUrGU Publ., 2003. 505 p.