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PROVISION OF ELECTROMAGNETIC COMPATIBILITY OF A HIGH-POWER SOFT STARTER WITH VESSEL'S POWER SYSTEM IN DYNAMIC MODES

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Authors
V. Busher[1], V. Zakharchenko[2], O. Glazeva[2], K. Khandakji[3]
[1] – Odesa National Polytechnic University, Odessa, Ukraine,
pr. Shevchenka, 1, Odesa, 65044, Ukraine,
e-mail: victor.v.bousher@gmail.com

[2] – Odesa National Maritime Academy, Odessa, Ukraine,
st. Didrikhsona, 8,Odesa, 65029, Ukraine,
e-mail: zvn@onma.edu.ua, o.glazeva@gmail.com
[3] – Tafila Technical University,
Tafila, Jordan,
e-mail: drkhandakji@yahoo.com

Abstract

A soft starter-fed high voltage induction motor drive of a ship bow thruster is simulated. The synthesis procedure and switching methodology of a C-type filter are proposed to ensure the electromagnetic compatibility of the electric drive with the ship electrical power system in transient and steady-state conditions. Analysis shows that, suppression of high-frequency components in transients, and maintaining the power factor at the optimum level in steady-state operation is reasonable by using a 5th-harmonic capacitive filter, ensuring the appropriate switching of the filter elements simultaneously with the connection of the by-pass contactor. The filters of the 7th, 11th/13th harmonics are selected in such a way to ensure that the total harmonic distortion of the line current and voltage meet the standards defined by IEC. Referenc es 9, figures 2.

Key words: high-power soft starter, electromagnetic compatibility, dynamic mode, passive filter, total harmonic distortion, vessel's power system, Fourier transform.

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