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INVESTIGATION OF MAGNETIC-CONNECTED INDUCTANCES BY SIGNAL GRAPHS

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Abstract

The article considers a description of a system of magnetically coupled inductances using signal graphs. Equivalent transformations of the signal graph allowed to present it in the form when the nodal signals of currents and voltages are expressed through three parameters: inductance of the primary winding and coupling and transformation factors. Mathematical dependencies for the leakage inductance and the relationship between the primary side leakage inductance and the secondary side inductance are obtained. An analysis of these relationships shows that with a decrease in the coupling factor, the fraction of the reduced leakage inductance of the secondary winding increases nonlinearly, and a uniform distribution of the leakage inductance between the primary and secondary sides is possible only for coupling factor, which is close to unity. On the basis of the carried out research, the possibility of neglecting the mutual influence of three-phase transformer windings located on different it's rods. References 9, figures 8.

Key words: magnetically coupled inductances, signal graph, coupling factor, leakage inductance.

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