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COMPARATIVE ANALYSIS OF PASSIVE, ACTIVE AND HYBRID CURRENT HARMONICS FILTERS FOR FREQUENCY-REGULATED ELECTRIC DRIVE

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Abstract

The analysis of three types of harmonic filters of the mains current used in power supply systems of asynchronous electric drives with frequency control is carried out. Mathematical modeling of a typical version of such a system is carried out, supplying an electric drive with a capacity of 250 kW from an industrial network of 0.4 kV, 50 Hz. The spectrograms and diagrams of the current of the active and hybrid filters are compared and significant differences in the values of the transistor currents necessary for the same level of harmonic suppression are determined. The main factors affecting the pricing and optimization of reactive and semiconductor elements are described. A significant effect of the relationship between the reactivity of the short circuit of the network and the additional reactor of the hybrid filter on its efficiency and cost has been established. References 11, Figures 6, Table 1.

Key words: current harmonic ratio, THDi, passive filter, active parallel-type filter, hybrid filter,

electric drive, distortion compensation.

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