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## DEFINITION OF APPARENT POWER OF THREE-PHASE POWER SUPPLY SYSTEMS AS A THEORETICAL BASIS FOR DEVELOPMENT OF ENERGY-EFFICIENT SHUNT ACTIVE FILTERS

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### Abstract

*The physical meaning of the proposed formula of apparent power is defined for the resistive model of a transmission line of three-phase four-wire power supply system in a non-sinusoidal unbalanced periodic mode. This is the geometric mean of the power losses from the line currents and phase voltages of the load under conventionally removed supply sources. Comparative analysis of the proposed formula is conducted with the expressions for total*

power, based on IEEE and European standards, and the conditions of their equivalence is defined. Energy-efficient control algorithms by means of parallel active filtering is considered, corresponding to the decompositions of total power, regulated by the IEEE standard. Calculated ratio to minimize power losses is defined under the application of these tools. References 12, figures 4.

**Key words:** apparent power, power factor, zero sequence component, active filter.

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