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## **Assessment of the economic efficiency of reactive power compensation measures in electrical distribution networks**

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### **Abstract**

*In the past the electrical load of residential consumers had a predominantly active character, thus neglecting the problems related to the compensation of reactive power in the distribution networks, however, at the present time, with the widespread spread of new types of electrical equipment (microwave ovens, air conditioning, fluorescent lamps, washing machines, personal computers, etc.), which consume an important reactive power from the network, the problem of reactive power compensation and increasing the power factor in electrical networks has become a priority. It is known that a low power factor has a number of negative consequences on the electrical network work, such as increasing active power losses, reducing of energy installations capacity, additional investments, etc. Power factor improvement can be achieved via various organizational measures or through producing reactive power on site using specialized sources of reactive power (capacitor batteries, synchronous compensators). In the paper it was considered the installation of capacitor batteries in 0.4-10 kV distribution electrical networks for reactive power compensation, the results of the calculations indicating a reduction of active power losses in power lines by 1.18-1.32 times, and in step-down transformers by 1.25-1.15 times. Investment costs for the installation of capacitor batteries are reimbursed up to 5 years only from the reduction of active power losses in the network.*

**Keywords:** *active power, capacitor batteries, energy losses, power factor, power losses, reactive power*

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