

## Methods for Improving the Quality of Electric Energy

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In modern electrical networks the number of electrical devices with non-linear current-voltage characteristics is constantly increasing. Such devices create var flows in the system and cause current and voltage uninusoidality in the network, which leads to increased losses in power lines and transformers, damages in banks of capacitors, increasing neutral currents and reducing power factor. At the same time, the vast transmission of sensitive loads in the form of digital electronics and sophisticated controlling systems require pure sinusoidal voltage to the control and reliable operation of such load. The result is a current for power supply companies, and consumers task effectively reduce current and voltage harmonics in the network.

Passive filters can be used to compensate for the harmonics, the absolute advantage of which is their low prize. A disadvantage of such devices is that they focus on specific parameters of the lines and energy consumers which can be very unpredictable. Therefore, in modern conditions active filters are becoming more and more useful. Their advantage is the possibility of simultaneous control of several quality parameters of electrical energy and less dependence on the parameters of the distribution network, in which they are installed. The disadvantage of active filters is their high prize.

The principle of active filters operation is that an active filter that measures the power that passes through the filter attachment. Then there is a comparison of the incoming signal with the reference and generating a corrective signals.

1. P. Annapandi, M. Rajaram, *IJEST* 4 No7, 3075 (2012).