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SYSTEM ANALYSIS OF ELECTROMAGNETIC COMPATIBILITY "NETWORK-ACTIVE FILTER HARMONICS" AFFECTING ON QUALITY OF ELECTRIC POWER

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Researches conducted in the field of electromagnetic compatibility show that at introduction to operation and in course of application of technical means two conditions have to be regulated:

1) to limit emission of electric equipment and devices of electromagnetic hindrances in environment, capable to break functioning of other equipment;

2) to ensure steady work of electric equipment and devices under influence of external hindrances of artificial and natural origin.

It is proved that implementation of technical regulation in the field of electromagnetic compatibility has to be considered the fact that existing problems in all developed countries become aggravated. The aggravation of problems of electromagnetic compatibility is connected with broad introduction of microelectronics, computer facilities and means of radio communication, leading to increased electromagnetic susceptibility of technical means to greater quality dependence of its functioning on electromagnetic hindrances in surrounding electromagnetic situation. Therefore, technical regulation in the field of electromagnetic compatibility is necessary condition of existence and sustainable development of modern society.

It is considered system analysis of electromagnetic compatibility " network - active filter of harmonics", quality condition of electric energy in systems of power supply, it is paid attention to consequence, caused by deterioration of electric power, and special attention is paid to higher harmonic components of current and voltage as most difficult for engineering assessment factor.

In general , analysis of work of virtual model of three-phase active filter allows to suggest correct and effective operation of this device in all simulated modes.

It's revealed that electromagnetic emissions from technical means leads to "pollution" environmental field and conductive electromagnetic interference that can

disrupt the normal functioning of other techniques, sometimes – influence on people.

The purpose of these studies is the analysis of the impact of higher harmonic sin power system component sand quality of electricity distribution grids.

Established that active harmonic filters represent a great danger because of the generation of high-frequency electromagnetic noise caused by the presence of the filter design power converters quick voltage and current. As part of improving power active filter has led to an increase in switching frequency, the requirements to reduce electromagnetic noise only pidsylylos. Thus, the requirements of Electromagnetic Compatibility active filter harmonics as technical means come to the fore.

It's revealed that distortions generation capacity active filter harmonic saimed to compensate the higher harmonics of the load current causes ripple voltage on the storage capacitor. Since the allowable level of the variable component voltage electrolytic capacitors for reduced with increasing frequency, it is necessary to check the level of each pulsation frequency filtering.

The analysis work shows that in today's state of the nonlinear load used not only in the domestic power systems, but also industrial consumers is significant. Therefore, the problem of assessing the level of power losses from higher harmonics and the problem of reducing these losses is the most important. Reducing the higher harmonic components of current and voltage to ensure proper sine wave voltage curve can be achieved using various methods and special equipment. Found that the most promising and effective technical to olis active harmonic filter, which provides normal sine wave voltage curve by reducing harmonics.

The analysis that the higher harmonic components of current and voltage transformers cause an increase in hysteresis losses and losses due to eddy current sin the steel, and losses in the transformer. Also, current harmonic sup electro dynamic force causing additional acoustic noise. It is known that the harmonic current and voltage in transmission lines also lead to additional energy losses. In the case of cable harmonics affect the dielectric. This in turn in creases the number of damaged cable line. In air route harmonics For the same reason can cause an increase in losses for the crown. Electrical insulation aging can be explained by the occurrence of partial

charges that apply to only a portion of the insulating gap.

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Tuned filter sare used to filter the harmonic sat the frequency corresponding to the resonant frequency of the filter. Although in this case also has an effect of compensation of the reactive power of the fundamental frequency, but in this case it is not decisive for the choice of filter parameters. The criteria for choosing the parameters of the filter are usually to minimize the specific weight and size or cost indicators. Typically, the capacitance of the filter capacitor capacitance is much less frustrated filter, designed for reactive power compensation. Tuned filters are widely used to provide a sine wave voltage and current ripple and reducing electrical energy converters. Passive filters are simple and reliable devices to improve the quality of electricity. They should be used on large industrial facilities with fairly constant power consumption and to suppress only a few harmonics.