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CHOOSING OF ASYNCHRONOUS MOTOR PROTECTION EQUIPMENT IN PRODUCTION ENVIRONMENT

As known [1], the electric network mode parameters often do not meet the requirements of GOST 32144-2013 in Russia, of GOST 13109-97 in Ukraine and the guidelines No.39/2015/TT-BCT and No.25/2016/TT-BCT in Vietnam. In real operating conditions, there is very often a non-sinusoidal mode in electrical networks, the consequences of which are voltage and current harmonics. The problem of the presence of low-quality electricity in electrical networks is described in the article [2]. The problem of the negative influence of voltage and current harmonics on electrical equipment, on the efficiency of electric energy use, has recently been increasingly represented in international publications and conferences. Even in the countries of Southeast Asia, scientists pay attention to this problem. In paper [3] the authors note that, the parameters of electrical network modes do not meet the requirements of Russian GOST 32144-2013 and the guidelines of Vietnam.

The principal ways of decrease of poor-quality electricity negative impact on electric motor operation in production environment and consequently on the efficiency of production in general are as follows: application of "individual" LC-filters for protection of principal electric drives; application of "sectional" poor-quality supply voltage compensating devices on a workshop level; suppressing of supply voltage distortion in the points of its origin. Rejection of any measures is also considered acceptable despite insignificant motor lifetime reduction. Each of the aforesaid options incurs certain integration cost and expected economic effect. The known methodology for choosing of protection equipment to secure asynchronous motor (AM) operating under the conditions of poor-quality electric energy is based on its energy-efficient pattern.

The above methodology implements computing algorithms involving stochastic model of linear voltage within workshop power supply network, nonlinear electromagnetic and thermal model of asynchronous motor and economic model as well [4]. However, problems related to practical realization of computing procedures in each particular case prevents its implementation in production.

It is possible to implementate the above methodology in production environment based on SCADA of Zenon system software installed on PC.

References

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