METHOD FOR DETERMINING QUALITY INDICATORS OF ELECTRICAL POWER

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Abstract. *This paper proposes to introduce a small number of quality indicators for electrical power in systems with three-phased consumers which are disbalanced, asymmetrical and distorting. These indicators are required for measuring and pre-determining the effects of such consumers on the supply network in order to establish measures for improving the quality of power supply in the electrical networks.*

Keywords: Quality indicators, electrical power, energy quality

1. Introduction

The problem related to the power quality in electrical networks are the following:

- frequency variations;
- active and reactive power shocks;
- distorting, asymmetrical and disbalanced regime.

This last problem has some very important consequences:

- the increase of power losses and active power;
- the interblocking of installations transport and supply capacity;
- difficulties related to the voltage regulating;
- parasitic torques in electrical machines;
- errors done by measure and control apparatus.

2. Three-phased disbalanced, asymmetrical and distorting consumer

Let it be a three-phased asymmetrical consumer R, S, T, whose impedances $Z_R \neq Z_S \neq Z_{T,}$

Supplied from a three-phased voltage system $u_R, u_S, u_T \in u_{Rst}$ with disbalanced currents $i_R, i_S, i_T \in i_{RST}$ running under distorting conditions.

Instantaneous value expressions and the phase voltage u_{RST} and the i_{RST} currents are:

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