

The Influence of Disturbances Generated by Arc Furnaces on the Power Quality

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Abstract : The paper presents the impact of work on the electric arc furnace. Arc equipment is one of the largest receivers powered by the power system. Electric arc disturbances arising during melting process occurring in these furnaces are the cause of an abrupt change of the passive power of furnaces. Currents drawn by these devices undergo an abrupt change, which in turn cause voltage fluctuations and light flicker. The quantitative evaluation of the voltage fluctuations is now the basic criterion of assessment of an influence of unquiet receiver on the supplying net. The paper presents the method of determination of range of voltage fluctuations and light flicker at parallel operation of arc devices. The results of measurements of voltage fluctuations and light flicker indicators recorded in power supply networks of steelworks were presented, with different number of parallel arc devices. Measurements of energy quality parameters were aimed at verifying the proposed method in practice. It was also analyzed changes in other parameters of electricity: the content of higher harmonics, asymmetry, voltage dips.

Keywords : power quality, arc furnaces, propagation of voltage fluctuations, disturbances

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