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POWER QUALITY AND RESISTANCE WELDING MACHINES

ABSTRACT

The resistive welders are highly fluctuating nonlinear loads that consume a large amount of apparent power. Although the operation of this type of machines can cause different types of system disturbances, this work investigates the impact of the phase controlled resistance welding machines over the distribution losses. The investigation focuses on resistive welders because of the large market and also because of the deep penetration of this type of machines within the industry.

Simulation model and experimental results were used to study the disturbing effects of the "deep" phase control over the supply system. It was concluded that the most favorable way to adjust the welding current, and thus minimize distribution losses, is by selecting appropriate transformer ratio. The use of the phase control should be limited to precise control of the current and/or its control during the welding process, but only between two neighboring transformer ratios in a manner to avoid big current distortion.

Keywords: phase control, resistance welding, distribution losses, power quality.