

Power Quality: Definition, aspects, problems and solutions

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The subject of the electric power quality has gained attention in the last decade as the electric power system is undergoing deregulation and with the introduction of the concept of the smart grid with either renewable-based or non-renewable based distributed generation. Due to the increased use of power electronic based devices and other nonlinear loads, the quality of the electric power delivered to consumers can deteriorate leading to economical impacts and many operational problems. This Tutorial presents a comprehensive coverage of power quality including definitions, indices, aspects and solution techniques. The tutorial will focus on providing appropriate definition of the term power quality, identifies the sources and causes of power quality deterioration while introducing the indices for assessing and evaluating the power quality in the electric power system. Different aspects of existing power quality phenomena will be highlighted, some proposed power quality mitigation techniques will be presented and standards for power quality will be reviewed.

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