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Harmonics and Flicker Levels at Substation

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Abstract : Harmonic distortion is caused by nonlinear devices in the power system. A nonlinear device is one in which the current is not proportional to the applied voltage. Harmonic distortion is present to some degree on all power systems. Proactive monitoring of power quality disturbance levels by electricity utilities is vital to allow cost-effective mitigation when disturbances are perceived to be approaching planning levels and also to protect the security of customer installations. Ensuring that disturbance levels are within limits at the HV and EHV points of supply of the network is essential if satisfactory levels downstream are to be maintained. This paper presents discussion on a power quality monitoring campaign performed at the sub-transmission point of supply of a distribution network with the objective of benchmarking background disturbance levels prior to modifications to the substation and to ensure emissions from HV customers and the downstream MV networks are within acceptable levels. Some discussion on the difficulties involved in such a study is presented. This paper presents a survey of voltage and current harmonic distortion levels at transmission system in Kohgiloye and Boyrahmad. The effects of harmonics on capacitors and power transformers are discussed.

Keywords : power quality, harmonics, flicker, measurement, substation
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