Frequency response characterisation of a high-voltage capacitive voltage divider used at mainsfrequency

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Abstract

Measuring systems used for power frequency high-voltage testing measurements, complying with IEC 600060-2:2010 must have a defined dynamic behaviour, in terms of the frequency response around the nominal test frequency. This is a consequence of the increasing use of resonant testing supplies. A high-voltage testing capacitive voltage divider was characterised for its frequency response to verify its suitability for voltage measurements. The divider comprised a compressed-gas high-voltage capacitor as the upper arm and a lower-arm capacitor made at the National Measurement Institute from ceramic capacitors. The divider was evaluated over a frequency range from 0.05 Hz to 20 kHz, at r.m.s. voltages from 500 V to 190 kV.

Keywords: high voltage, IEC 60060, frequency response