

## Abstract

Measurements of the instantaneous amplitude and phase angle of the fundamental current or voltage components and frequency that may be needed in three-phase power grid instrumentations/meters and relays may be affected by several encountering disturbances. These disturbances may be due to an abrupt heavy load changes and post-faults resulting in frequency deviation, DC offsets decaying, and harmonics especially in the power grid including TCSC devices. To study these effects on the quality of measurements, this work presents a new approach using the data generated by Simulink/MATLAB software. The obtained simulation results show that the unwanted DC offset and harmonics as well as sub-harmonics can be removed completely by conventional filters such as anti-aliasing and DFT filtering but they can be eliminated by inserting before DFT algorithm a digital filter