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Special Session on

Operation of Grid-Connected Converters under Adverse Grid Voltage Conditions

Outline of the session

Frequency estimation and harmonic component detection methods are indispensable for the operation of grid-connected custom power devices such as inverters, rectifiers, active power filters, dynamic voltage restorers, UPSs, electrical drives, etc. In order to meet the demand of ever changing scenario of the customer devices landscape, innovative techniques are required that can cope with the presence of various distortions in the grid. This will enable a smooth transition towards more renewable power grid. Owing to the huge importance of frequency estimation and harmonic component detection techniques in the control of custom power devices, this special session will consider recent developments in frequency estimation and harmonic current detection techniques and their applications in the power electronics.

Topics of the Session
o Harmonic detection methods
o Frequency estimation under adverse grid voltage conditions
o Phase-locked loop (PLL).
o Frequency-locked loop (FLL).
o Real and complex filtering for frequency estimation.
o Operation of Active Power Filters under adverse grid conditions.
o Voltage Harmonic Filtering by using Dynamic Voltage Restorers
o Multifunctional grid connected PV supplied Inverters.
o Control of ultrafast grid-connected rectifier
o Neural network and machine learning techniques for frequency estimation
o Linear and nonlinear observers for frequency estimation

Samet Biricik
European University of Lefke, North Cyprus.
e-mail:sbiricik@eul.edu.tr

Hasan Komurcugil
Eastern Mediterranean University, North Cyprus.
e-mail:hasan.komurcugil@emu.edu.tr

Hafiz Ahmed
Coventry University, UK.
e-mail: hafiz.h.ahmed@ieee.org