

Special Session on

“Hybrid Advanced Control Techniques for Grid-Tied Power Converters”

Organized by

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Call for Papers

Multilevel converters are used in various industrial, commercial, and domestic applications such as grid-connected systems, rectifiers, active power filter, UPS, electrical drives, etc. This type of converter makes use of abundant number of power semiconductor devices for dividing a fraction of DC voltage and generating more voltage levels. Because of high number of semiconductor devices, multilevel converters have high nonlinear behaviour which demands an advanced control technique to fulfil the control objectives. In recent years, it has been deeply investigated that the hybrid control technique are the suitable alternative compared to the conventional strategies to control multilevel converters in industrial applications particularly when they are employed grid-connected mode of operation. Various hybrid modulation techniques have been presented which are comparative in different aspects with the conventional pure techniques in terms of better current/voltage harmonic profile, lower switching frequency, excellent capacitor self-voltage balancing performance and supplying different loads conditions etc. Also, the hybrid advanced non-linear control techniques such as the combination of mode-based control techniques with intelligent-based controls have been proposed to improve grid-connected converters performance under different dynamical and steady states conditions. Therefore, this special session concentrates on the latest development of the hybrid advanced control and switching techniques for grid-connected converters and other possible industrial applications.

Topics of the Session include but not limited to:

- Hybrid non-linear control strategies for grid-connected converters
- Novel hybrid intelligent-based non-linear control techniques
- Novel current based control for renewable energy generation applications
- Hybrid PWM switching techniques for power quality improvement
- Hybrid cascaded converter topologies for voltage levels multiplication
- Industrial applications of hybrid control techniques in the area of power quality, electrification and transportation, UPS, etc.
- New switching and control technique and topologies for multilevel converters