

**Special Session on**

**“Bidirectional DC-DC Converters for Medium and Low Voltage DC Power  
Network”**

**Organized by**

- **Pradyumn Chaturvedi,**  
Visvesvaraya National Institute of Technology, Nagpur, India  
email: pc220774@gmail.com
- **H. M. Suryawanshi,**  
Visvesvaraya National Institute of Technology, Nagpur, India  
email: hms\_1963@rediffmail.com
- **Josep Pou,**  
Nanyang Technological University, Singapore  
email: j.pou@ntu.edu.sg
- **Akshay Rathore,**  
Concordia University, Montreal, QC, Canada  
email: [akshay.k.rathore@ieee.org](mailto:akshay.k.rathore@ieee.org)

**Call for Papers**

As the entire world is venturing into the Renewable Energy Sources (RES) like Solar Photovoltaic and Wind power, with such an unpredictable source supplying power to the grid, the grid should be highly adaptive in terms of supply and demand. To meet these requirements in the distribution network along with RES, power electronics converters are required to interconnect medium voltage and low voltage distribution networks. Bidirectional DC-DC converters are one of the best feasible solutions for the above problem and it plays a vital role in the DC power network. Dual Active Bridge (DAB), Multi-Active Bridge (MAB), Quadruple Active Bridge (QAB) converters are the most popular bidirectional DC-DC converters which can be easily interfaced with both AC and DC distribution network. All these bidirectional DC-DC converters provide the DC bus voltage regulation, power flow from DC bus to the energy storage device and vice-versa, also it facilitates the integration of RES into the distribution network which helps in regulating the load power demand. This Special Session aims to focus on the different applications of bidirectional dc-dc converters in various applications such as electric vehicle charging infrastructure, space applications, traction drives, grid integration with RES, DC/AC microgrid, and solid state transformer/Power electronic transformer/smart transformer with reliable bidirectional dc-dc converter etc.

**Topics of interest include, but are not limited to:**

Prime objectives of this special session is to explore and identify the research objectives in the area of Bidirectional DC-DC converters in all aspects of industrials sectors. Topic of interest for this special session are (but are not limited to):

- Bidirectional non-isolated and isolated DC-DC converter topology in distribution network at medium and low voltage.
- Bidirectional DC-DC converter topology with fault tolerant operation.
- Bidirectional DC-DC converter with soft switching techniques.
- Performance Characterization of DC-DC converters with its static and dynamic response.
- Different control strategies of bidirectional DC-DC converter.
- Magnetic design of DC-DC converter, size optimization, power density improvement, components selections, protection, cost optimization and other related issues.
- Loss minimization and different methods for efficiency improvement with their limitations and challenges.
- Reliability analysis, methods to improve the reliability of the converter.
- Solid state transformer/Power electronic transformer/smart transformer with reliable bidirectional dc-dc converter.
- Application of bidirectional DC-DC converter in HVDC Transmission, AC/DC microgrid, smart grid, electric vehicle charging infrastructure, space applications etc.

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IEEE IES Technical Committee of Power Electronics (Subcommittee of Resonant and Soft Switching Converters).