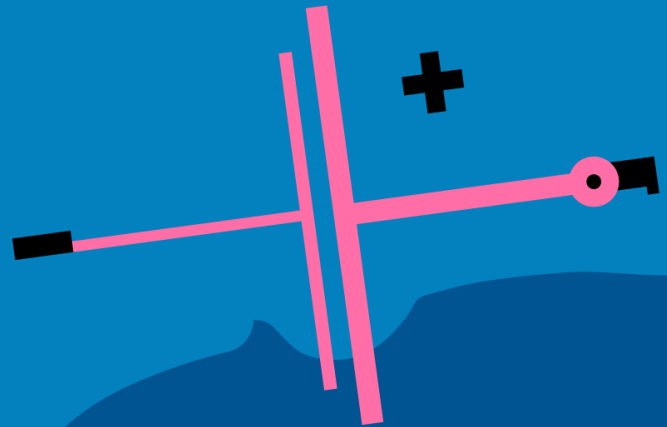


# IESES 2020

## CAGLIARI, SARDINIA (ITALY)

### 20-22 APRIL 2020

IEEE 2<sup>nd</sup> International Conference  
on Industrial Electronics  
for Sustainable Energy Systems



Special Session on:

## ADVANCED SEMICONDUCTOR DEVICES FOR BATTERY ENERGY STORAGE APPLICATIONS

### ORGANIZERS (MAX 3 ORGANIZERS)

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### CALL FOR PAPERS (MAX 200 WORDS)

Battery energy storage systems (BESSs) are enabling technologies for well-established and new applications such as power quality, electric vehicles (EV), integration of renewable energies. At present, the fast growth of the electric vehicle market places at the center of interest of the operators the energy storage and fast charging systems. BESSs need a power electronics conversion unit, which converts the power flow between the grid and the battery, and the required control and monitoring components—voltage sensing units and thermal management of power electronics components. Power devices have a key role in the development of these emerging technologies. The performance optimization of power electronic components depends both on the technologies used and on the driving, protection and thermal management circuit solutions. Advanced IGBTs and silicon and wide-gap MOSFETs are increasingly applied in power converters to improve efficiency and dynamic performance as well as harmonic content and electromagnetic interference (EMI). The use of complex converter circuits also implies a study on the reliability of the components to better understand the life cycle and the duration in terms of years of these critical applications especially when it comes to allowing a continuity of service or in dangerous situations for human health. The main objective of this special session is to provide an opportunity for exchange between universities and industry on the main technological solutions for new generation power devices used in the state of the art and to be used in the future applications. In this direction the research and industrial effort can be addressed so that the BESSs applications can increasingly fit to the criteria of electrical performance, reliability and pollution reduction required for sustainable development.

Topics of interest include, but are not limited to:

- New technologies of power devices for energy storage system;
- Advanced insulated gate silicon devices in power converter for battery energy management;
- Wide-Gap SiC Devices advanced technology applications and GaN emerging application on power converter;
- Modelling of silicon and Wide-Gap power devices in power converter applications for BESSs;
- Advanced characterization and measurement methodology for power devices in energy storage system;
- Thermal management of power devices in BESSs applications;
- Reliability of advanced power devices analysis in power converter applications;
- EMI impact of silicon and wide-gap devices in power converter application
- Improved gate drive and protection circuit solution for advanced silicon and wide-gap devices;