



CORPE – the Center of Reliable Power Electronics

CORPE Thematic Days (Virtual)

June 2nd & 3rd 2021

Program

*The Aalborg University's **Centre of Reliable Power Electronics** is proud to invite professionals, scholars, experts, and those who in general are interested in the reliability of power electronics to the **CORPE Thematic Days on June 2nd & 3rd 2021**. Due to Covid-19, we had to cancel the last year's CORPE Annual Symposium; however, we feel to keep it running this year. Considering the restrictions, the event will be held virtually titled CORPE Thematic days. Speakers from industry and academia will present their views on challenges in power electronics reliability.*

Afterward, presentations about the research findings and achievements from CORPE will take also place, together with a discussion about the strategic roadmap.

*The thematic days are **free of charge**. Sign up for the event [here](#). Please, register by 28th May 2021.*

June 2nd : System-Level Reliability

(CEST time zone)

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| 13:00 – 13:15 | Welcome and a Short Introduction to CORPE – Prof. Frede Blaabjerg and Prof. Francesco Iannuzzo, Aalborg University, Denmark |
| 13:15 – 13:45 | Mission Profile Emulation of Submodules in MMC System: Principles, Designs and Applications – Prof. Ke Ma, Shanghai Jiao Tong University, China |
| 13:45 – 14:15 | “Prospects of Artificial Intelligence for Power Electronics Applications” – Prof. Huai Wang, Aalborg University, Denmark |
| 14:15 – 14:30 | Break |
| 14:30 – 14:45 | “Reliability Analysis of Fault-Tolerant Power Converter including Wear-Out Failure” – Postdoc Ariya Sangwongwanich, Aalborg University, Denmark |
| 14:45 – 15:00 | “Model-Based System-Level Design for Reliability in Power Electronic-Based Power Systems” – Assist. Prof. Saeed Peyghami, Aalborg University, Denmark |
| 15:00 – 15:15 | “FS-MPC Based Thermal Stress Balancing and Reliability Analysis for NPC Converters” – Postdoc Mateja Novak, Aalborg University, Denmark |
| 15:15 – 15:30 | “ReliaPE – A Mission-Profile-Based Reliability Assessment Tool for Power Electronic Systems” – Postdoc Ionut Vernica, Aalborg University, Denmark |
| 15:30 – 15:45 | “Mission-Profile-Based System-level Reliability Prediction of Modular Multilevel Converters” – Postdoc Yi Zhang, Aalborg University, Denmark |
| 15:45 – 16:00 | “Energy Storage for 1500 V Photovoltaic Systems: A Comparative Reliability Analysis of DC- and AC-Coupling” – PhD Student Jinkui He, Aalborg University, Denmark |
| 16:00 – 16:30 | Wrap-up and Discussion |



DEPARTMENT OF ENERGY TECHNOLOGY
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June 3rd : Component-Level Reliability

(CEST time zone)

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| 13:00 – 13:05 | Welcome – <i>Assoc. Prof. Amir Sajjad Bahman, Aalborg University, Denmark</i> |
| 13:05 – 13:35 | Modelling and reliability of WTG power electronic converters – dynamic load conditions in a wide range of conditions – <i>Dr. Kristian Bonderup Pedersen, Vestas Wind Systems</i> |
| 13:35 – 14:05 | “Emerging Testing Methods - X-Power Facilities” – <i>Prof. Francesco Iannuzzo, Aalborg University, Denmark</i> |
| 14:05 – 14:15 | Break |
| 14:15 – 14:30 | “Reliability of Fuses in Power Electronics” – <i>Assoc. Prof. Amir Sajjad Bahman, Aalborg University, Denmark</i> |
| 14:30 – 14:45 | “Advanced kV/kA Capacitor Test Bench with Circulating Power” – <i>Assist. Prof. Haoran Wang, Aalborg University, Denmark</i> |
| 14:45 – 15:00 | “A Dual Condition Monitoring Sensor for IGBTs and MOSFETs” – <i>Assist. Prof. Nick Baker, Aalborg University, Denmark</i> |
| 15:00 – 15:15 | “Turn-off Instability of Cascade GaN HEMTs: Origin, Instability Analysis, and Mitigation” – <i>Postdoc Peng Xue, Aalborg University, Denmark</i> |
| 15:15 – 15:30 | “Mission Profile Based LEGO-brick Approach for IGBT Lifetime Prediction” – <i>Postdoc Heya Yang, Aalborg University, Denmark</i> |
| 15:30 – 15:45 | “Robustness Assessment of EMI Filter in a Three-Level Active Neutral-Point-Clamped Inverter” – <i>Postdoc Zhan Shen, Aalborg University, Denmark</i> |
| 15:45 – 16:00 | “E-Sense Power: A Converter-level Condition Monitoring Solution for Power Semiconductor Devices” – <i>Research Assistant Yingzhou Peng, Aalborg University, Denmark</i> |
| 16:00 – 16:30 | Wrap-up and Discussion |

Register no later than 28th May 2021: click [here](#)

The event will be held virtually. The Zoom link will be sent to registrants on Monday 31st May.

We look forward to seeing you online!

Frede Blaabjerg

Info/contacts

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About CORPE

<http://www.corpe.et.aau.dk/>

*The **Centre of Reliable Power Electronics (CORPE)** at Aalborg University, Denmark, inaugurated in 2012, aims to designing more reliable and more efficient power electronic systems for power generation, distribution and consumption. The center strives to better understand how the reliability of power electronic devices and systems is influenced by stress factors such as temperature, overvoltage and current, humidity and other environmental factors.*

The centre was established in close collaboration with major Danish power electronic companies, Aarhus University and two leading European universities. The centre develops device and system models enabling design of power electronic systems at predicted reliability. The knowledge is also used for online monitoring to predict remaining useful lifetime and to enable smart failure control strategies. A number of advanced test systems are available in CORPE. More than 30 researchers are active (around 15 PhD's). The centre is supported by the Danish Strategic Research Council and the Obel Foundation.

CORPE is supported by

