

4th Workshop on Reliable Power Converters for Wind Turbines

Challenges. Results. Opportunities.

Dear Ladies and Gentlemen,

We invite you to the 4th Workshop on Reliable Power Converters for Wind Turbines, which will take place on 20 April 2023 in Bremen.

Reliability and robustness remain a challenge.

Power converters are designed to withstand their typical operating conditions. In the field, however, they are exposed to a wide variety of influences giving rise to failures. In the wind-power application, for instance, the failure rate of power converters is still as high as 0.4 damage-related failures per wind turbine and year. Independent analyses of more than 20,000 wind-turbine operating years have revealed: The converters show pronounced early-failure behavior and susceptibility to environmental influences. Strong parallels can be observed in PV inverters.

We link industry, operators, and researchers.

Due to the complexity of the overall electrical system and its failures, professional cooperation between stakeholders along the value chain has proven to be a promising way to find solutions. This workshop is intended to link findings from recent and ongoing research projects on power electronics in wind turbines with the different perspectives of the participants in the discussion. Fraunhofer joined forces with the University of Bremen to build and operate the HiPE-LAB – a unique facility for testing power converters up to 10 MVA under a combination of application-specific climatic and electrical loads. Participants will have the opportunity to take an exclusive lab tour.

We are looking forward to meeting you in person.



Prof. Dr.-Ing. Jan Wenske
Deputy Director and Technical Director Fraunhofer IWES

The participation is free of charge. We ask for your registration until 10 April 2023 by e-mail to: kommunikation@iwes.fraunhofer.de

Photos as well as videos will be taken during this workshop. With your participation you give your consent to this.

Agenda

Where? Fraunhofer IWES
Am Fallturm 1
Bremen, Germany

When? 20 April 2023
9:30 – 17:00

- 9:30** **Welcome and Morning Coffee**
- 10:00** **Opening**
Chairman: Prof. Dr.-Ing. Jan Wenske, Fraunhofer IWES
- 10:30** **Reliability of Power Converters from a Field-Data Based Perspective**
Dr.-Ing. Katharina Fischer, Fraunhofer IWES
- 11:00** **Latest Results on Humidity Testing and Power Cycling of Power Semiconductor Devices**
Prof. Dr.-Ing. Nando Kaminski, University of Bremen, IALB
- 11:30** **Coffee Break**
- 12:00** **Requirements for Electrical Component Condition Monitoring Systems to Support Wind Turbine Operation**
Oliver Schönfelder, RWE Renewables GmbH
- 12:30** **Medium Voltage Power Converters: Opportunities for Wind Turbine Condition Monitoring: Needs and Status Quo**
ABB
- 13:00** **Lunch Break**
- 14:00** **Field Experience and Reliability Oriented Design of Power Modules for Wind Energy Converters**
Dr. Oliver Schilling, Infineon Technologies AG
- 14:30** **HiPE-Lab: Test Laboratory for Multimodal Lifetime Tests on Power Electronics**
Dr.-Ing. Wilfried Holzke, University of Bremen, IALB
- 15:00** **Coffee Break**
- 15:30** **Application-specific Profiles for Converter Testing: Past, Present, Future**
Dr.-Ing. Christian Zorn, Fraunhofer IWES
- 16:00** **Closing Remarks and Summary**
Chairman: Prof. Dr.-Ing. Jan Wenske, Fraunhofer IWES
- 16:30** **Guided HiPE-Lab Tour**
(5 min walking distance)
- 18:30** **Optional Dinner**
(please inform with the registration)