

Reliability of Modern Power Electronic based Power Systems

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Abstract:

Electrification is one of the pragmatic solutions for decarbonization and making a greener society. Renewable energy generations, electric transportation systems, smart- and micro-grid technologies, as well as digitalization are essential parts of sustainable electric networks. Power Electronics play an underpinning role in the energy conversion process of these technologies. However, power electronics might be a frequent source of failure and may cause unplanned downtime and costs in the case of inappropriate design and operation. This is due to the fact that power electronic converters may introduce static challenges associated with their hardware and electro-thermal characteristics as well as dynamic issues in relation with the electro-magnetic and electro-mechanical interactions. This talk will present the challenges and address the latest advanced approaches for system-level, model-based reliable design and operation of future power electronic based power systems.



Biography:

FREDE BLAABJERG (Fellow, IEEE) received the Ph.D. degree in electrical engineering from Aalborg University in 1995. He was with ABB-Scandia, Randers, Denmark, from 1987 to 1988. He became an Assistant Professor in 1992, an Associate Professor in 1996, and a Full Professor of power electronics and drives in 1998. Since 2017, he has been a Villum Investigator. He is honoris causa at University Politehnica Timisoara (UPT), Romania, and Tallinn Technical University (TTU), Estonia. He has published more than 600 journal articles in the fields of power electronics and its applications. He has coauthored four monographs and editor of ten books in power electronics and its applications.

His current research interests include power electronics and its applications such as in wind turbines, PV systems, reliability, harmonics, and adjustable speed drives. He received the 33 IEEE Prize Paper Awards, the IEEE PELS Distinguished Service Award, in 2009, the IEEE William E. Newell Power Electronics Award 2014, the Villum Kann Rasmussen Research Award 2014, the Global Energy Prize in 2019, the 2020 IEEE Edison Medal and the EPE Outstanding Achievement Award 2020. He was the Editor-in-Chief of the IEEE TRANSACTIONS ON POWER ELECTRONICS, from 2006 to 2012. From 2019 to 2020, he served as the President for the IEEE Power Electronics Society. He has been the Vice

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President of the Danish Academy of Technical Sciences. He is nominated in 2014-2020 by Thomson Reuters to be between the most 250 cited researchers in Engineering in the world.