

November 2020

Event

Rock River Valley Section  
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**WHEN** Thursday, November 19, 2020

**WHERE:** Webex

**Meeting link:**

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## AGENDA

7:00 PM Dial in

7:15 PM Introductions

7:30 PM Presentation

# Power Electronics in Power Systems

**Dr. Jian Sun**, Professor, Department of Electrical, Computer, and Systems Engineering

Director, New York State Center for Future Energy Systems, Rensselaer Polytechnic Institute

**Abstract:** The development of renewable energy is fundamentally changing the power grid. While the percentage of electricity produced from renewable sources often receives most public attention, the underlying physical transformation of the grid is more profound and creates many technological challenges as well as opportunities for electrical engineers. With converter-based generation from wind and solar replacing conventional power plants, the grid is increasingly dominated by power electronics. Since the best renewable resources are usually at remote locations, new transmission infrastructures are also required to support large renewable projects, and HVDC transmission is often preferred because of its ability to work over long distance and to enhance, or black-start the local grid. This combination of converter-based generation and transmission, coupled with converter-based loads such as electronics, motor drives, and electric vehicles, is creating a future grid that is very different from conventional power systems. This talk gives an overview of the growing applications of power electronics in power systems, discusses the fundamental differences between converters and machines, and introduces a frequency-domain method for stability study of converter-based power systems.

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**Presenter:** **Dr. Jian Sun** joined the faculty at Rensselaer Polytechnic Institute (RPI) in 2002, where he is currently a Professor in the Department of Electrical, Computer and Systems Engineering. He is also Director of the Center for Future Energy Systems (CFES) funded by New York State government. His research interests are in the general area of power electronics and energy conversion, with an emphasis on modeling, control, and different applications including renewable energy and power systems.

Dr. Sun received his Dr.-Ing. Degree from the University of Paderborn in Germany. Prior to joining the faculty at RPI, he spent five years at Rockwell Collins working on power electronics for aircraft power systems, and was a Post-Doc Fellow at Georgia Tech from 1996 to 1997. As Director of CFES, he is responsible for the strategic directions and development of the Center’s research, industry collaboration, education, and outreach programs. His professional services to the power electronics community included serving as Editor-in-Chief of IEEE Power Electronics Letters from 2008 to 2014 and as Treasurer of IEEE Power Electronics Society since 2013. He is also an active consultant to the industry and has worked in that capacity with many international corporations including GE Aviation, Rockwell International, United Technologies, Facebook, GE Power, First Solar, China State Grid, and TenneT.

Personal Notes:

### Certification of Participation

The undersigned certifies that \_\_\_\_\_ (attendee’s name) attended the above program which was sponsored by the IEEE Rock River Valley Section.

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