Understanding of Electrical Concepts in Wind Turbines and Photovoltaic Arrays

Abstract:

This 4 hour tutorial will present the basic concepts in understanding how electricity is generated by wind turbines and photovoltaic arrays. The primary audience is engineers (EE, ME, CE, etc) who are involved with developing these plants, and are not very familiar with the electrical basics that they should know.

The topics include basics of power systems and power electronics, as well as of electric drives required in wind turbines. The interface between the source (wind turbines or PV arrays) and the grid needs to be controlled such as the overall system operates at the maximum power point under varying input conditions. In addition to providing the big picture, the following topics will be covered: Energy Scenario, Power Systems Basics, Power Electronics and Electric Drives.

Lead Instructor:

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Instructor Bios:

Ned Mohan is Oscar A. Schott Professor of Power Electronic Systems in the Department of Electrical Engineering at the University of Minnesota, where he has been teaching since 1976. He has written 5 textbooks; one of them is translated into several languages: Chinese, Greek, Italian, Korean, Turkish and Spanish. He has several U.S. Patents. He has supervised nearly 100 graduate students, 25 of them PhD.

Prof. Mohan is a Morse-Alumni Distinguished Teaching Professor and a member of the Academy of Distinguished Teachers at the University of Minnesota. He received the Outstanding Educator Award from the Power Engineering Society of the IEEE in 2008, and the 2010 IEEE Undergraduate Teaching Award. Prof. Mohan is a Fellow of the IEEE.