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TUTORIAL

Fundamentals of Ocean Wave Energy Conversion, Modelling, and Control

Presented by

Ted Brekken, Oregon State University, Corvallis, Oregon, USA

Synopsis

Ocean wave energy has the potential to be a significant contributor to the renewable energy portfolio of many coastal countries. This tutorial presents the fundamentals of ocean wave energy physics, and wave energy converter modelling and control. In particular, this tutorial focuses on the use of linear wave theory for modelling and optimal control. The wave energy research and developments of Oregon State University (OSU) and other leaders in academia and industry will also be presented. The intended audience is engineers and scientists with a basic knowledge of energy concepts.

About the Speaker

Ted K. A. Brekken is an Assistant Professor in Energy Systems at Oregon State University. Oregon State University is one of the global leaders in academic ocean wave energy research. He received his B.S., M.S., and Ph.D. from the University of Minnesota in 1999, 2002, and 2005 respectively. He studied wind turbine control at the Norwegian University of Science and Technology (NTNU) in Trondheim, Norway in 2004-2005 on a Fulbright scholarship. His research interests include control, power electronics and electric drives; specifically digital control techniques applied to renewable energy systems. He is co-director of the Wallace Energy Systems and Renewables Facility (WESRF), and a recipient of the National Science Foundation CAREER award. In the field of ocean wave energy, Dr. Brekken's expertise is focused on control and modeling of wave energy conversion devices, as well as generator and power converter design.