EGR 285: Power Transmission in Offshore Environment

This course identifies key components of infrastructure needed to transport offshore-generate power to onshore locations. These components include offshore cables (HVDC and HVAC), offshore substations, electrical transformers, and power controlling and protection devices. The course also examines monitoring practices and maintenance needs associated with each of these components and identifies some of their common failures and related corrective/preventative maintenance strategies. The economics of offshore power generation and transportation are briefly discussed. Prerequisite: EGR 282. Three lecture hours and three laboratory hours per week. Instructional Support Fee applies.

Course Student Learning Outcomes

1. Demonstrate common monitoring and maintenance needs and challenges related to offshore power infrastructure. 2. Demonstrate an understanding of types of failures and faults in offshore electrical power transportation infrastructure. 3. Identify the need and design of over-voltage and over-current protection mechanism used in electrical networks using power relays. 4. Recognize common issues linked with integration of offshore wind turbines power with the national grid, and the impact of offshore electrical power infrastructure failure. 5. Demonstrate the use of power tools and instruments as a mean to identify failure in electrical infrastructure. 5. Analyze relevant power curves and demonstrate its use in a case study.
Credits: 4
Program: Engineering