AN OVERVIEW OF ADVANCED CONTROL STRATEGIES FOR WIND ENERGY SYSTEMS

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ABSTRACT

Wind energy systems have gained traction as a viable alternative to conventional energy sources that are becoming scarce. Control methods suited to wind energy systems are discussed in depth in this article. The emphasis is on hard computing or control techniques such as proportional integral-derivative (PID), optimal, nonlinear, adaptive, and robust, as well as soft computing or control techniques such as neural networks, fuzzy logic, genetic algorithms, and the fusion or hybrid of hard and soft control techniques. Finally, some potential future paths are proposed at the end of this review. This overview is not meant to be a comprehensive examination of the subject, and any omissions of other works are entirely accidental. Offshore wind is the utilization of wind turbines to generate mechanical power, which is then used to spin electric generators to generate electricity. When opposed to burning fossil fuels, wind power is a popular sustainable, renewable energy source that has a considerably lower environmental effect. Many single windmills are linked to the electric power transmission network to form wind farms. Onshore wind is a low-cost energy source that is competitive with, and in many cases, cheaper than, coal and gas facilities.

KEYWORDS: *Electricity, Renewable Energy Wind Energy, Soft Control, Transmission.*

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