U.S. Department of Energy
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Wind Energy Program Technology Portfolio

Low Wind Speed Technology Phase I: Advanced Independent Pitch Control

Advanced Energy Systems, Inc.

Project Description: Advanced Energy Systems (AES) Inc. used inflow angle sensors to conduct a conceptual study of independent blade pitch control. The control strategy combined input from turbine states (rotor speed, rotor azimuth, each blade pitch) with inflow angle measurements (each blade angle of attack at station 11 of 15) to derive blade pitch demand signals. The controller reduced loads sufficiently to allow a 10% rotor extension and to reduce the cost of energy by 6.3%.

Project Type: Conceptual Design Study
Project Budget: $199,933
Industry Cost Share: $0
DOE Cost Share: $199,933
Planned Project Duration: July 2002–July 2004

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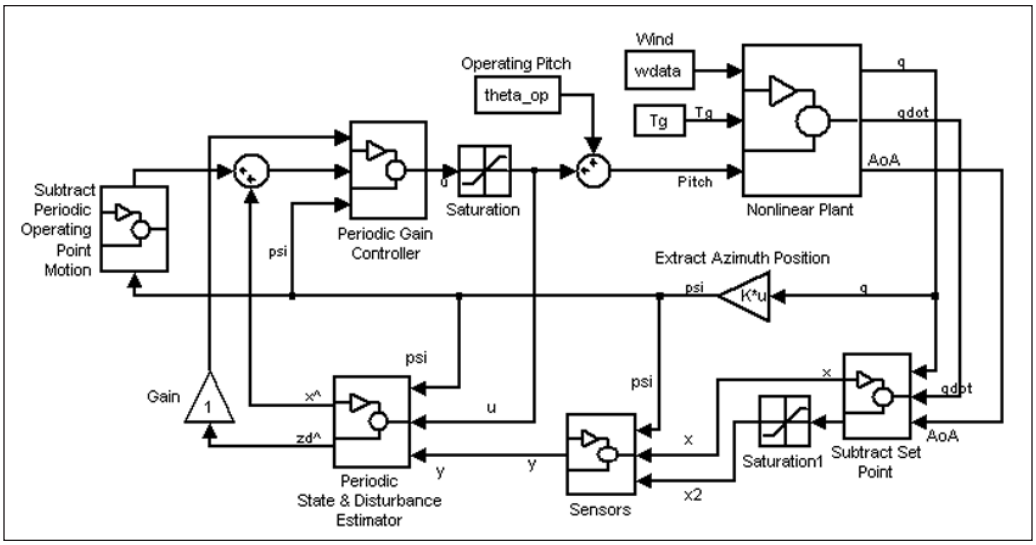
Current Status: Project Complete—Final Report, Low Wind Speed Turbine Project Conceptual Design Study: Advanced Independent Pitch Control *http://www.nrel.gov/docs/fy05osti/36755.pdf*



Proportional integral derivative control schematic for independent pitch control.

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