

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Creation and Optimization of Compliant Flow for an Existing Wind Turbine Rotor Geometry THEODORE WILLIAMS, THOMAS CORKE, JOHN COONEY, University of Notre Dame — A compliant flow is created on a wind turbine rotor through geometric optimization in order to make it more susceptible to active flow control. Feasible designs were limited to ones that can be implemented without permanent modification to the existing geometry. Computational fluid dynamics and quantitative optimization methods are employed to evaluate different design families that incorporate plasma flow control. Designs that resulted in the largest lift control authority are presented. The application of these active lift designs on a horizontal wind turbine is discussed.

Theodore Williams
University of Notre Dame

Date submitted: 02 Aug 2012

Electronic form version 1.4