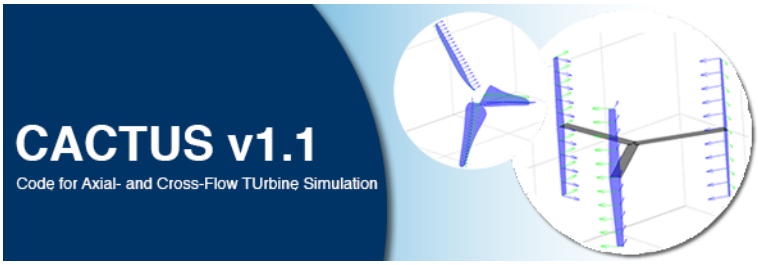
SAND2013-10579P

CACTUS v1.1
Code for Axial- and Cross-flow TUrbine Simulation



CACTUS is an open-source design and analysis (D&A) package developed in support of the DOE Marine and Hydrokinetic R&D program's technology advancement and demonstration efforts to assist developers in designing hydrokinetic turbines and analyzing hydrodynamic performance.

CACTUS uses a free wake vortex method to enable efficient simulation of turbine performance and structural loads under operational and extreme hydrodynamic conditions. CACTUS can also be coupled with Sandia's optimization code, DAKOTA (Design Analysis Kit for Optimization and Terascale Applications), allowing users to perform optimization and uncertainty quantification analysis on hydrokinetic turbine designs. CACTUS simulates arbitrary geometries, including cross- and axial-flow rotors. Simulations can be completed in minutes, allowing users to efficiently explore many design iterations.

"The Development of CACTUS, a Wind and Marine Turbine Performance Simulation Code" (SAND2010-8691C)
This paper describes CACTUS development and gives more detailed information on the methods used.

"Model Performance Evaluation of CACTUS" (SAND2013-XXXXX)
This report presents an evaluation of the performance of the CACTUS code using measured performance curves from three different MHK experiments.

"CACTUS User's Manual," Version 1.1 (SAND2013-XXXXX)
This document serves as a user's manual for CACTUS. A brief overview of the code is provided.

DAKOTA website: http://dakota.sandia.gov/

CACTUS Software Download

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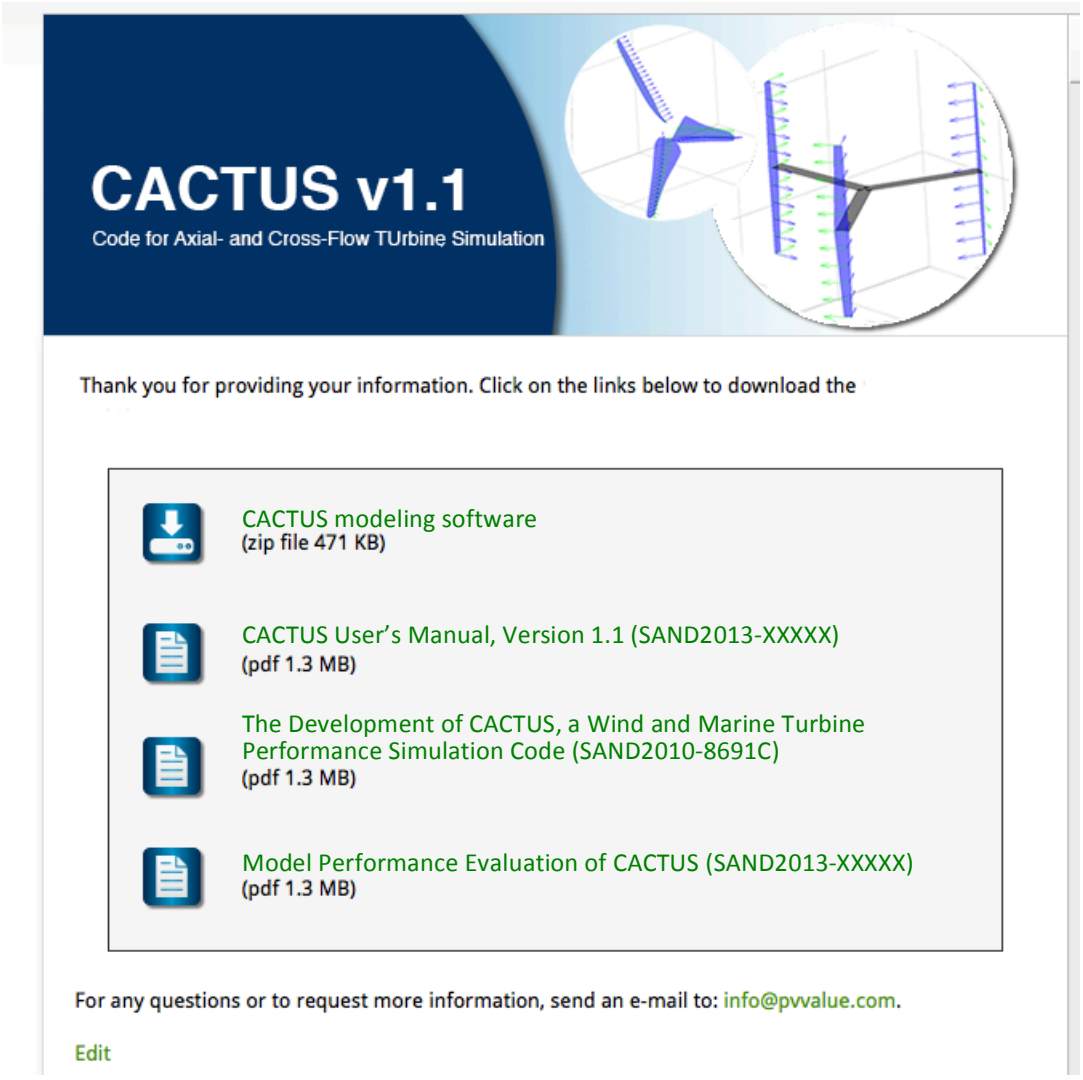

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