SANDIA REPORT
SAND82-0672 UC-261
Unlimited Release
Printed February 1982

AEROELASTIC STABILITY ANALYSIS OF A DARRIEUS WIND TURBINE

David Popelka
Sandia National Laboratories; Albuquerque, NM 87185

ABSTRACT

An aeroelastic stability analysis has been developed for predicting flutter instabilities on vertical axis wind turbines. This report describes the analytical model and mathematical formulation of the problem as well as the physical mechanism that creates flutter in Darrieus turbines. Theoretical results are compared with measured experimental data from flutter tests of the Sandia 2 Meter turbine. Based on this comparison, the analysis appears to be an adequate design evaluation tool.

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550
for the United States Department of Energy
Under Contract DE-AC04-94AL85000