

**FREQUENCY-DOMAIN SYNTHESIS OF THE FATIGUE LOAD SPECTRUM  
FOR THE NPS 100-KW WIND TURBINE\***

by

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**ABSTRACT**

The LIFE2 code is a fatigue/fracture mechanics code that is specialized to the analysis of wind turbine components. Two frequency-domain stress spectra techniques contained in this code are used to analyze the measured frequency loads spectra from the Northern Power Systems 100-kW turbine. Results of the two techniques are compared to cycle counts obtained directly from time series data. These results provide the wind turbine designer with two techniques for determining the cycle-counts from frequency data and illustrate the accuracy that the designer can expect from various cycle-counting techniques.

H. J. Sutherland and R. M. Osgood, "Frequency-Domain Synthesis of the Fatigue Load Spectrum for the NPS 100-kW Wind Turbine," *Proceedings of WindPower '92*, AWEA, Washington, DC, October 1992, pp. 321-328.

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