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EFFECTS OF CYCLIC STRESS DISTRIBUTION MODELS ON FATIGUE LIFE PREDICTIONS[1]

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ABSTRACT [1]

The fatigue analysis of a wind turbine component typically uses representative samples of cyclic loads to determine lifetime loads. In this paper, several techniques currently in use are compared to one another based on fatigue life analyses. The generalized Weibull fitting technique is used to remove the artificial truncation of large-amplitude cycles that is inherent in relatively short data sets. Using data from the Sandia/DOE 34-m Test Bed, the generalized Weibull fitting technique is shown to be excellent for matching the body of the distribution of cyclic loads and for extrapolating the tail of the distribution. However, the data also illustrate that the fitting technique is not a substitute for an adequate data base.

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