

A Benchmark on Lifetime Prediction of Composite Materials under Fatigue

O. Krause, Ch.W. Kensche - Institute of Structure and Design, German Aerospace Center

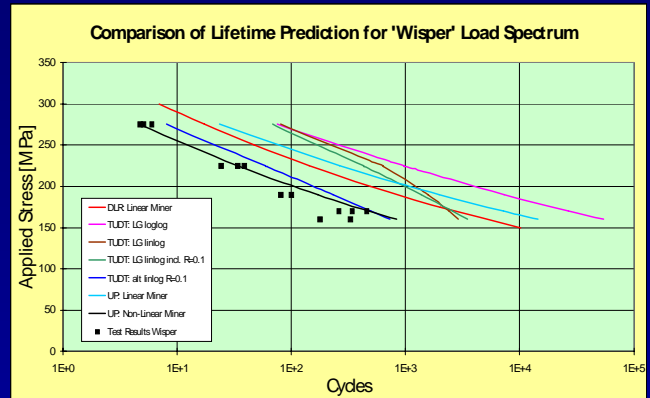
R.P.L. Nijssen - WMC-Group, Delft University of Technology

T.P. Philippidis, A.P. Vassilopoulos - Department of Mechanical Engineering and Aeronautics, University Patras

Starting point

Lifetime prediction methodologies are an essential tool during design of wind turbine rotor blades. A detailed knowledge about their basics and special features is important to evaluate the results.

Even for similar physical models, the results can show decisive differences.



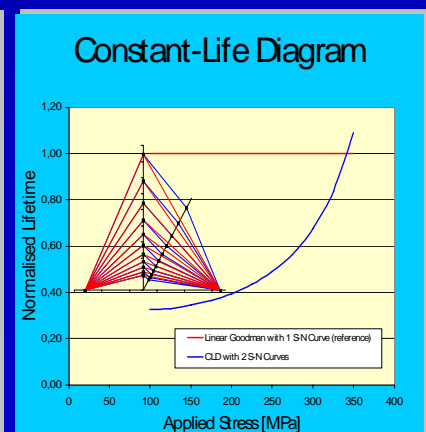
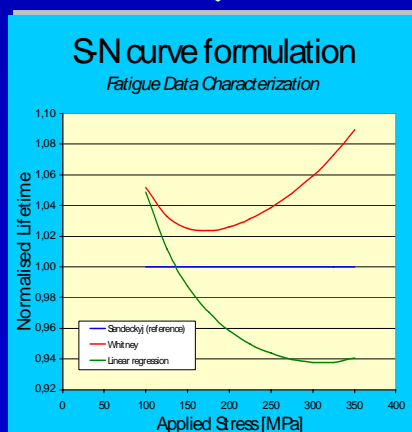
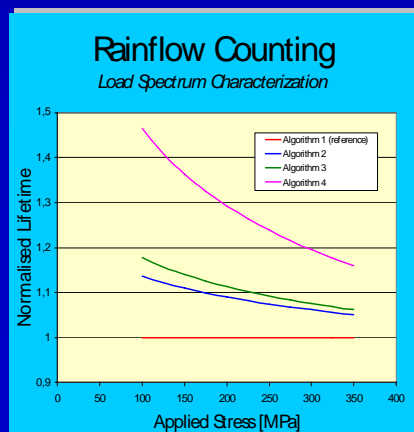
Objective

To quantify the influence of each step within a lifetime prediction process on the results during a benchmark

Benchmark

- Comparison of different rainflow counting algorithms
- Comparison of different S-N curve formulations
- Comparison of different constant-life diagrams

Lifetime calculation with linear Palmgren-Miner rule



Benchmark

Unified Basis

Comparison of different models

Contact person:
Olaf Krause
German Aerospace Center
E-mail: Olaf.Krause@dlr.de
Web-site: www.st.dlr.de/bk

