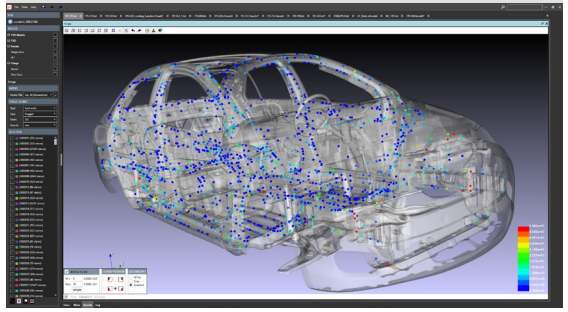
MSC **CAEfatigue – PREMIUM PACKAGE**

Product Overview



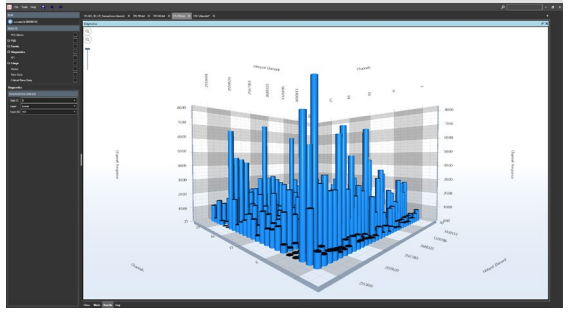
CAEfatigue (Cf) is a package of software products that cover the topics of Fatigue, Random Response, Loads Management and Test Design. It is a ***modern alternative*** to existing software, which is both ***Customer Driven*** and ***Technically Innovative***. The software also provides an embedded ***Technical Transfer*** training package with 100's of hours of training by Dr Neil Bishop.

Cf PREMIUM is one of 4 packages within the software that preforms frequency domain loads management and test design calculations with static or dynamic systems created within Nastran, Abaqus, Optistruct, or Ansys FE environments.

- Cf TIME
- Cf RANDOM
- Cf FREQUENCY
- Cf PREMIUM

Cf PREMIUM includes all the capabilities of ***TIME, RANDOM*** and ***FREQUENCY***.

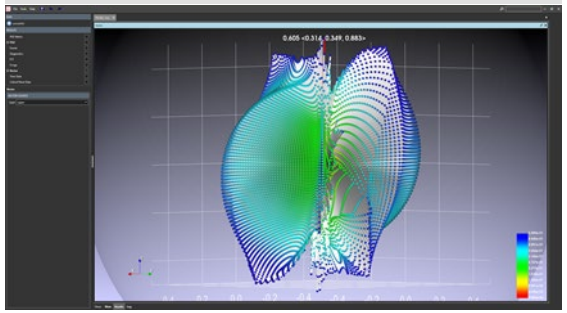
Features



All the Features of Cf TIME, RANDOM and FREQUENCY plus,

- ***Sine-On-Random*** mixed loading analysis.
- ***Narrow Band on Random*** loading analysis.
- ***Simultaneous sines with/without random*** (e.g., MIL-HBK-810).
- ***Surrogate Loading*** to determine simplified test load specification.
- ***Diagnostic Tools*** shows channel influence on response.
- Weld fatigue using ***BS7608***.
- ***Seam Weld Fatigue*** using Volvo Chalmers approach in either time or frequency domain.
- ***Spot Weld Fatigue*** using ***Rupp (ACM2)*** approach.
- ***User Weld Fatigue*** using defined stress tensor for none circular spot welds.
- ***Vector Loading*** function to derive loading on off axis direction.
- ***Pseudo Damage*** capability which can evaluate fatigue damage potential of measured (non-stress) time histories.
- ***Test Acceleration*** controlled via local plasticity.

Case Studies



2017, ***Sine on Random Vibration Fatigue***, NAFEMS World Congress, June 2017. Work done with ***Navistar, Chicago***, on sin-on-random analysis for truck brackets.

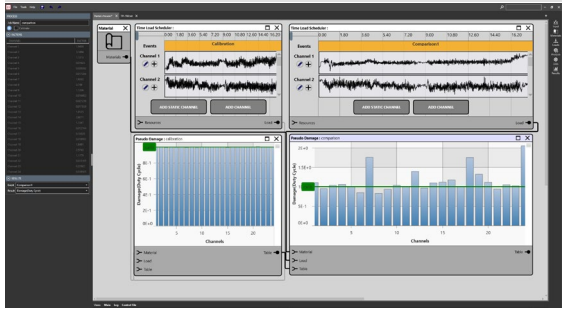
2020, ***Vector Load Simplified Duty Cycle for Lower Control Arm***. SAE World Congress paper 2020-01-1058. Work done with ***FCA, Canada***, on test design simplification and surrogate loads analysis.

2020, ***Loads simplification on multi-input axle systems***. SAE World Congress paper 2020-01-1056. Work done with ***GM Brazil, and GM US***, on loads simplification and surrogate loads analysis.

2020, ***Full Body Car Analysis in the Time and Frequency Domains - Sheet, Spot and Seam Weld Fatigue Benchmark Studies***. SAE World Congress paper 2020-01-0195. Work done with ***Ford, US***, on loads simplification and surrogate loads analysis.

2020, ***Frequency Domain Loads Processing for Exhaust Systems***. SAE World Congress paper 2020-01-0180. Work done with ***Ford, Brazil and Ford, US*** on loads simplification and surrogate loads analysis.

Typical Use Cases



- ***Full Body Fatigue Analysis*** in either time or frequency domain to determine sheet fatigue and spot weld fatigue in one analysis.
- Creation of ***Surrogate (simplified) Loading*** functions.
- ***Seam Weld Fatigue*** in either time or frequency domain.
- Development of **Enveloping Functions** to simplify testing.
- ***Pseudo Damage*** calculation to determine relative damage potential of alternative acceleration response time histories.
- ***Sine-on-Random*** vibration fatigue analysis.
- Other ***Mixed Loading*** analysis like Narrow Band on Random or Consecutive Sines on Random (gunfire).

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