



Partner Spotlight: DesignLife by HBM-nCode

Mr. Chris Lewis, Global Partner Manager at HBM-nCode, discusses durability and fatigue software, DesignLife, available through the Altair Partner Alliance.

APA: What prompted the development of your software? What problem(s) is nCode DesignLife meant to solve?

Chris: nCode DesignLife was launched in 2006 as our next-generation CAE fatigue analysis software that combined a powerful solver with a flexible, simple-to-use graphical interface to meet the needs of both novice and expert users. DesignLife introduced a range of advanced calculation techniques for predicting durability quickly and efficiently.

APA: What are the benefits of using nCode DesignLife for durability analysis?

Chris: nCode DesignLife provides tools for engineers to go beyond simplified stress analysis and perform complete durability analysis where behavior through the product's life is of concern. nCode DesignLife is able to use the actual load history for the part, and predict life at all locations on the part, removing any unnecessary simplifying assumptions. Users are equipped with accurate results to avoid under or over designing products, reduce reliance on physical parts testing, and avoid costly design and tooling changes.

APA: Are there any unique applications that nCode DesignLife works for that your competition cannot?

Chris: nCode DesignLife offers a wide variety of methods for performing fatigue analysis, including the ability to more accurately calculate fatigue life and damage from both stress and strain. It incorporates over 25 years of experience and feedback from industry leaders in test and CAE to provide functionally rich options such as virtual strain gauge for engineers to correlate their calculated stresses and strains and compare them against measured values. nCode DesignLife is also the first structural integrity software to be certified by GL Renewables Certification (GL RC) for fatigue design of wind turbine hubs and main shafts. This assures that component designs can be analyzed in conformity with GL RC Guidelines for the Certification of Wind Turbines (2010) by choosing the right settings in the software.

APA: How much time does it take to learn and start using nCode DesignLife?

Chris: While many customers provide favorable feedback that DesignLife has a clear GUI and user-friendly methods, nCode offers several forms of training that provides an introduction through to more sophisticated methods for performing FE-based fatigue analysis.

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APA: What's next for nCode DesignLife ... what can we look forward to?

Chris: Version 11 of nCode DesignLife for HyperWorks enables improved simulation of real-world conditions and predicting loads in structures. Improvements to the vibration fatigue solver enables stress-life fatigue calculations based on Sine Dwell and can now include multiple static offset and temperature load cases. Additional capabilities will be demonstrated at ATC Americas in Dearborn May 5-7, 2015; ATC UK June 16, 2015; ATC Japan July 7-8, 2015; ATC India July 14-15, 2015; and European ATC in Paris Sept. 29- Oct. 1, 2015.

APA: What are the biggest challenges or problems that customers in your target market face and how do you address their needs?

Chris: Fundamentally, our customers want their product to perform to specification and avoid warranty costs. The increasing pressure to improve fuel efficiency by reducing weight and yet maintain product performance has led to a greater need to understand fatigue life.

nCode DesignLife enables engineers to gain insight into their products' performance by providing them with robust options to perform virtual durability assessment up-front to predict and manage product life, accelerate product development, and improve design. The result is that our customers have the ability to assess more design options, consider more realistic loading conditions, and more confidently reduce cost and weight.

APA: Describe a typical workflow using nCode DesignLife.

Chris: nCode DesignLife processes both test and FEA results for fatigue damage. A typical workflow in DesignLife begins by describing the loading history of a part (time histories, flight schedules, PSDs, etc.). Finite element results (linear static, dynamic, nonlinear, harmonic, etc.) are then used to transform loading into detailed stress and/or strain histories. Next, the user selects material data from the nCode material data base, or enters it manually, and assigns it to the fatigue model. With these inputs, nCode DesignLife calculates life using specified methods (strain life, stress life, spot weld, seam weld, thermo-mechanical fatigue, short fiber composites, adhesive bonds, vibration, etc.)

APA: Is there a use case or case study that highlights your software's strengths?

The following case study references both DesignLife and HyperView: [PSA Peugeot Citroën Leverages nCode DesignLife to Investigate and Predict Fatigue Life of Automotive Components and Subsystems](#)

For more information about nCode DesignLife, visit the [solution page](#).

