

STAGE de MASTER 2

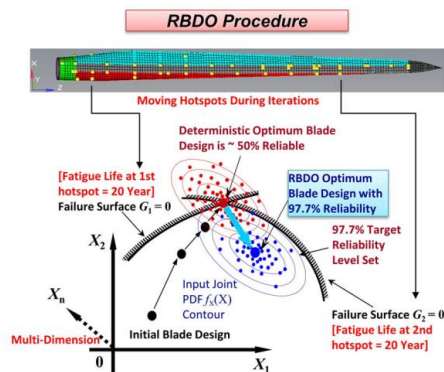
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Application of the RBDO method to optimize the design and reliability of mechatronic products

Abstract

The aim of this work is to study the physics of failure due to the degradation in interconnection material. This material is generally present in the embedded mechatronic modules. The presence of intermetallic and delamination at the interfaces reduce the reliability [1]. The analysis of the causes of these failures can be carried out by experimentation or by simulation. This work consists in using the results of Monte Carlo simulation with a modified ABV Model [2] to implement a mechatronic module design solution based on the reliability based design optimization (RBDO) method. The numerical simulation permits the design of the module produced within the limits of acceptable reliability [3] determined by FEM (COMSOL). This combination allows optimization of design and reliability. The optimization of the design by taking into account the sources of possible failures as determined by the modified ABV model will be discussed in the framework of the RBDO method.



References:

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