



ILLINOIS INSTITUTE
OF TECHNOLOGY



Mechanical, Materials And Aerospace Engineering Department

**SEMINAR
WEDNESDAY, February 18, 2004
E-1 BUILDING – CRAWFORD AUDITORIUM
3:30 – 4:30 PM**

Applications of Finite Element Analysis in Design for Reliability and Six Sigma

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Abstract

Finite Element is a tool that has been historically used to aid design engineers in developing products that pass the strict advanced life testing modules set by the various industries. Simulation can help reduce or eliminate prototype costs by essentially performing the specific durability tests, “virtually”, rather than in the laboratory using prototype parts that cost time and money to make. Multiple design iterations can be performed to optimize the design at a small computational cost. In this presentation, some common and not so common applications of the finite element method in structural analysis are shown as they not only help the development engineer make a design that will pass a particular durability test, but also what the future stands in using finite element to make a product that will have as minimum as possible defects returned during its life with the customer. Some real life examples of applications of FEA to mechanical product design will be shared as well as how it interlocks with the Six-Sigma process within a company . Also, some ideas are shared on how combined simulation and experimentation can be used to simplify and speed experimental testing and component characterization for failure criterion. Finally, an overview of the benefits of doing simulation as a whole will be discussed.