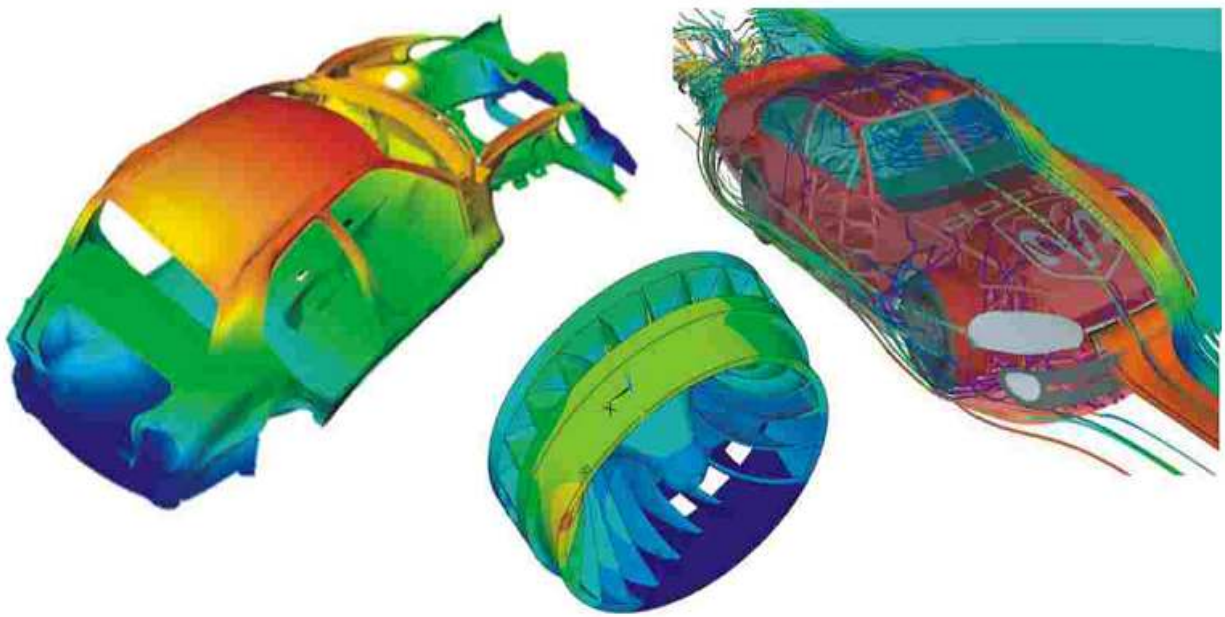




# NAFEMS - INDIA

## Workshop on Modal Analysis in Virtual Prototyping & Product Validation



**Date : 11 June 2011**

**Co-organiser**

### **Venue**

Cambridge Institute of Technology Campus  
K R Puram,  
Bangalore - 560 036



THE INTERNATIONAL ASSOCIATION FOR THE ENGINEERING ANALYSIS COMMUNITY

[www.nafems.org/events](http://www.nafems.org/events)

# Modal Analysis in Virtual Prototyping & Product Validation

## About the Workshop

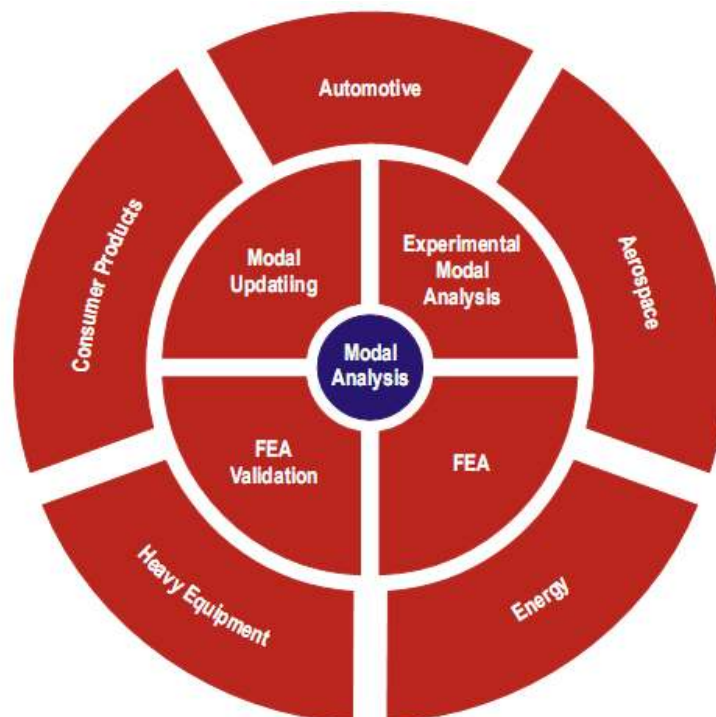
Modal Analysis - Theory, Experiments and Applications in New Product Development

A variant of the Moore's Law is always at the heart of the automotive, aerospace and the rest of the industrial world as the pace maker of product innovation. In the automotive, aerospace, renewable energy, off-highway vehicles and many other industries, new products are developed and tested to meet the harsh real world load conditions.



It is a well known fact that simulation, laboratory and field testing go hand in hand in the new product development. Simulation or virtual prototyping can provide significant cost and time savings if applied correctly. At the same time, experimentation cannot be completely eliminated.

Modal Analysis is one of the tools a designer uses to analyze new product designs. Modal analysis can be performed both through simulation and experimentation. There are various aspects of Modal Analysis one needs to understand to use the tool effectively to design new products.



Moore's Law describes an important trend in the history of computer hardware: that the number of transistors that can be inexpensively placed on an integrated circuit is increasing exponentially, doubling approximately every two years.

## **Importance of workshop for the organizations using FEM**

The salient aspects of this workshop are

- The tutorials would be handled by experienced industry exposed users of FEM.
- This workshop would offer vital guidance to judge which approximations are acceptable for solving the practical problems.
- Learn the easiest way of reducing product development cycle by an incredible extent validating the product design during its inception stages.
- This workshop helps in confirming your FEA models so as to gain confidence in them.
- Identifying the failure modes in the prototype quickly.
- The methods of verifying and validating the FEM results would be demonstrated with real world case studies.
- The globally recognized NAFEMS benchmark standards for FEM would be explained.
- Each participant would be provided with high quality training notes.

## **Who Should Attend?**

Enterprising Engineers, Researchers, Product Development Managers, Quality Assurance Engineers, Maintenance Engineers in the fields of Automobile, Aerospace, Renewable energy, Marine, and Off-Highway equipment that are desirous of reducing time in product development cycle, validate the model design and ensure quality assurance and reliability with an aim to increase the productivity.

Faculty members from Engineering Colleges interested in learning more about tools which will assist them in research and teaching in vibration, selection of sensors, data acquisition.

The material that is presented is independent of any particular software package, making it ideally suited to current and potential users of all commercial finite element software systems. The workshop is open to both members and non-members of NAFEMS.

## **About NAFEMS**

NAFEMS is the International Association for the Engineering Analysis Community and it operates as an independent, not for-profit association. The scope of its activities encompasses all simulation technology, including Finite Element Analysis and Computational Fluid Dynamics. As new application areas and techniques constantly evolve, NAFEMS becomes involved to create awareness of new analysis methodologies, deliver appropriate education and training, and simulate the adoption of best practices and effective use of technology by offering a platform for continuous professional development. NAFEMS and its members are involved in the application of many different types of engineering simulation covering both products and processes. Membership exceeds 930 corporate members from over 32 different countries.

## **Workshop Topics:**

1. Introduction to Modal Analysis
2. Modal Parameters - Damping, Resonance and Mode Shapes
3. FE method for Modal Analysis
4. Experimental Modal Analysis
5. Physics and Mathematics of Modal Analysis
6. Time Domain and Frequency Domain Analysis
7. Sensors in Vibration Testing, their selection and use
8. Data acquisition and software for Modal Analysis

## **Live Demonstrations**

1. Experimental Modal Analysis on Exhaust Pipe, Automotive Wheel and Gear Casing
2. FEA Test Correlation on Exhaust Pipe, Automotive Wheel and Gear Casing

## Expert Tutor



**Mr . Dhanushkodi .D.M**  
Managing Director & CEO  
T echPassion T echnologies Pvt. Ltd

Dhanushkodi earned a B.Tech in Mechanical Engineering from Indian Institute of Technology, Madras. He did his graduate studies at the Massachusetts Institute of Technology and earned Masters in Mechanical Engineering. His graduate thesis involved the design and development of high speed positioning systems with applications in semiconductor and machine tool industry. He, along with his colleagues at MIT has developed a methodology of system identification of precision machines using modal analysis approach. He worked as a Research Engineer at the General Electric Global Research Center before founding Tech Passion Technologies Private Limited. At GE, he worked on research projects and product development programs in industries spanning automotive, locomotive, and medical imaging.

# REGISTRATION FORM

**Please write in BLOCK LETTERS**

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Organisation: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Town: \_\_\_\_\_ State: \_\_\_\_\_

Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Mobile: \_\_\_\_\_

**Register Now**

**Contact:**

**Dr. K. Elangovan**

Mobile : 09620563937

Email: nafemsindia@gmail.com

Date: 11 June 2011

**Course Venue:**

Cambridge Institute of Technology

K R Puram, Bangalore

**Registration Fee**

Students

- Rs. 500/-

Industry / R&D Labs

- Rs. 2000/-

NAFEMS / EDAF Member / Academia - Rs. 1500/-

**\* Registration Fee inclusive of Course Material, Lunch and Tea**

Registration fee is payable as a cheque /DD in favour of “ **Jetwings Technologies** ” payable at **Bangalore** and send to **Organising Secretary**.

**Organising Secretary:**

**Dr. K. Elangovan**

NAFEMS India Operation

Cambridge Institute of Technology Campus

K.R.Puram, Bangalore 560 036