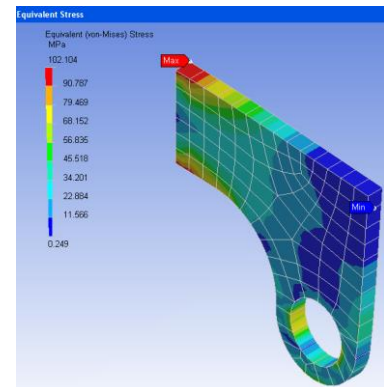


Finite Element Analysis in Design Validation

Modern FEA programs simulate static, dynamic, linear, nonlinear, thermal, modal, and random vibrations, and more. FEA solves many different problems out of which structural and thermal problems are most common for mechanical engineers. "Structural analysis finds deformations, strains, and stresses caused by structural loads such as force, pressure, and gravity. Thermal analysis finds temperatures, temperature gradients, and heat flow caused by thermal loads such as heat flux or heat power. Boundary conditions such as prescribed temperatures and convection coefficients also affect results.

In today's business environment, the product design engineer starts with a concept, analyzes the feasibility, produces a drawing, makes a prototype, tests it, evaluates the results, and then repeats this process until finally arriving at deliverable version that can be manufactured, often sharing FEA information with potential customers, design partners (e.g., consultants, rapid prototyping, stereo lithography equipment, etc.), and part suppliers during the process.



We're pleased to invite you to **Finite Element Analysis in Design Validation a *Short term Course 5 weekends (Saturday)***.

We're offering 5 days of training scheduled only for consecutive Saturdays taking into account your employment requirements. This program filled with the latest information on breakthroughs, and practical approaches to the questions and problems you wrestle with. You'll also have many opportunities to chat with peers who share your concerns and interests.

In the present scenario to become a true competent Engineer, it is essential for the practicing engineer to understand practical application of several technologies. At SAEINDIA we have embarked on this initiative of training desirous engineers in the most updated and on demand technologies that are prevalent in the industry. Mr. R. Natarajan with a glowing history of employment experience and training engineers for years, has consented to lead this training as we believe that its Engineers only who can guide the Engineers. Our goal is to assist you, the application engineer to achieve a more efficient development process, helping in learning & training aspects, and aid your efforts of advancement towards global competence.

We look forward to your participation

SAEINDIA

Finite Element Analysis in Design Validation*Short term Course 5 weekends (Saturday)**Organized by:* **SAEINDIA***Conducted by:* **Mr. R.Natarajan, Director** EGS Computers India Pvt Ltd.*Introduction:*

This short term course to be held on every Saturday concentrates on the use of FEM/FEA finite element method & analysis for design validation. The course will start with an introduction to FEM with mathematical backgrounds and extend to design Process. The different areas covered will include structural, heat transfer, vibration & fatigue analysis. The problems highlighted will be followed by worked out industrial samples.

The FEA software used in the course will be generic as practiced by current FEA specialist. The course will give exposure to practical industrial problems which the participants can work and learn how FEM/FEA can be effectively used in their field of operation.

*Course Content:***Day-1 (14/08/2010):**

**Introduction to FEA- FEA in the design process- Mathematical aspects of FEA- Energy Methods- Linear Static Stress Analysis
Definition- Application Examples in Engine component- Degrees of Freedom- Concept of Stress and Strain- Worked out
Examples- Exercises**

Day-2 (21/08/2010):

**Rayleigh Ritz method- Application to Structural problems- Errors and Limitations of FEA- Loads and Boundary conditions-
Worked out Examples- Exercises**

Day-3 (28/08/2010):

**Procedure for performing FEA- Checklist preparation for validating correctness of FEA- Introduction to Heat Transfer using
FEA- Failure Theories- Introduction to Fatigue- Worked out Examples- Exercises**

Day-4 (04/09/2010):

Introduction to Dynamics- Real Eigen Value Problem- Response to harmonic excitation- Worked out Examples- Exercises

Day-5 (11/09/2010):

Design Optimization- Introduction to Non-Linear FEA- Worked out Examples- Exercises

About The Course Instructor:

Mr. Natarajan R., is the Managing Director of EGS Computers India Private Limited. He Graduated with an MSME Degree from The University of Toledo, Ohio, USA and then worked at Ford Motor Company, Dearborn, Michigan USA in the areas of Design and Development of Automotive sub-systems ranging from Body Structure, Chassis to Full-vehicle Systems. He has trained Engineering professionals belonging to various Automotive Companies in India on the basic tenets of Finite Element Analysis and its relevance to Automotive Product Engineering & Development.

Mr. Natarajan. R specializes in Engineering Design, Validation using FEA and implementation. He, through his Company, actively consults with Indian Engineering Enterprises towards new product development, Simulation using Finite Element Analysis and Value Engineering in Design.

Mr. Natarajan. R had been a visiting faculty at Crescent Engineering College (affiliated to Madras University) for 3 years to teach Finite Element Analysis for ME (CAD/CAM) Students. He has delivered lectures at AU-FRG Institute of CAD/CAM (Anna University), IIT (Chennai), NTTF (Bangalore) in addition to working on projects as a Consultant with Reliance Industries, Ford India, Delphi-TVS, BARC, Saipem India, IDEA, Thermax, Cethar Vessels, TI Group, Rane Group, Borg-Warner among others.

During his tenure at Ford, he has developed Aluminium Disc Brake Rotors for efficient cooling and braking performance, along with his team of Engineers. His application of FEA towards Filament Wound Composites for correlation to test was a milestone in mathematical treatment of material an-isotropy. Engineering Analysis to Test Correlations, new product development and enumeration of procedures (know-how) in design and development of automotive systems have been his enduring passion.

Who should attend?

All practicing Mechanical engineers

Program cost:

Rs 10,000/- (Rs 8000/- for SAEINDIA current members)

(*) Participants have the option to become members

Available Seats-15 (please confirm early)

Venue:

The course will held at SAEINDIA Office on these days from 9.00 AM- 5.00 PM

Please send your registrations along with a cheque or DD drawn in favor of SAEINDIA payable at Chennai on or before 7th August 2010.

For any assistance towards registration please contact

Mr. Ravi Senji @ ravisenji@saeindia.org OR Mr.Phinasudeen @ sudeen@saeindia.org

SAEINDIA

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