NATIONAL SEMINAR

NDE 2008 Mumbai

Organized by ISNT
Mumbai Chapter

Indian Society for ISNT Non-Destructive Testing

INDIAN SOCIETY FOR NON-DESTRUCTIVE TESTING

Pre-Seminar Tutorials

on **November 29 - 30, 2008** *at* **MUMBAI**

- **Advanced Non-Destructive Examination**
- **Non-Destructive Examination for Boilers & Pressure Vessels**
- **Fitness-for-Service Assessment & Risk Based Inspection**

From being considered as *'an evil'* in 1930s... to *'necessary evil'* in 1950s... to just *'necessary'* in 1980s... and now as an *'indispensable diagnostic tool'*... the growth of *Non-Destructive Examination (NDE)* over the years has been phenomenal. Many things have contributed to this change in perception on how people look at NDE from the time it started its journey about a century ago to the present stage, where it has acquired a status of a vital multi-disciplinary subject in science & technology. With applications spreading across various fields, from power to petrochemical industries, from aerospace to exploration, from medical to security... the demands for NDE just keeps growing day by day. ISNT Mumbai Chapter takes pride in organizing Pre-Seminar Tutorials to bring this technology at the door step of the industries just prior to **National Seminar NDE-2008 - "Challenges & Innovations in NDT".** To cater to various sectors of industries, three tutorials: **1) Advanced Non-Destructive Examination, 2) Non-Destructive Examination for Boilers and Pressure Vessels** and **3) Fitness-for-Service Assessment and Risk Based Inspection**, are organized in parallel at Mumbai on **November 29th & 30th, 2008.** Relevant topics for each tutorial will be covered in details by the experts in the field, drawn from Industries, Research & Development Organizations & Academic Institutes.

Advanced Non-destructive Examination

The primary reason for the evolution of NDE over the years is the fact that it has always kept pace with the innovations taking place in related fields such as sensor technology, instrumentation, signal & image processing and so on. There is a noticeable change in the way we used to do NDE many years back and the way we do it today. We now use sensors, which are more efficient and sensitive. We now use instruments, which are powerful in terms of speed and data handling capabilities. In fact, we now gather more and more data and have also devised means of looking at these data in more ways than one. If we have to put these developments in the past couple of decades, which have matured enough for industrial applications, in one bracket, we can collectively term them as 'Advanced NDE Methods'. From the industrial perspective, these developments have made the present 'Advanced NDE' more sensitive, accurate, reliable and much faster than the conventional NDE. As we enter the new age, where nanotechnology is a reality and the instrumentation just gets better and better, it's prudent that we assimilate the NDE technology as it exists presently and also give a thought on future possibilities, so that we can effectively use it for overcoming the challenges we face in industries today & tomorrow.

The tutorial will cover following topics:

- Rationale behind use of advanced NDE from engineering perspective
- Overview of advanced NDE methods
  - Ultrasonics: Phased array, Guided waves, TOFD, Non-contact ultrasonics
  - Radiography: Microfocal, Digital radiography, Tomography
  - Eddy current: Remote field, Pulsed-eddy current
  - Magnetic: Barkhaussen noise, ACFM, MFL, GMR & SQUID sensors
- Applications of advanced NDE methods in
  - nuclear
  - petrochemical
  - power
  - aerospace
  - automobile
  - other industries
- Advanced NDE for
  - quality control during fabrication
  - process monitoring
  - in-service inspection
  - structural health monitoring
  - characterization of material properties
  - residual stress measurement
- Role of simulation in NDE
- Imaging in NDE

Wherever possible, live demonstrations on some of the advanced technology will be conducted during the tutorial.

Coordinator: Mr. Paritosh Nanekar
Scientific Officer, Quality Assurance Division
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Non-Destructive Examination for Boilers and Pressure Vessels

Boilers and pressure vessels are essential components of many industries. Their quality and reliability play an important role in the economics of the company. Also there are regulatory requirements to be met for these components. NDE plays a vital role during manufacturing, installation, operation and maintenance of boilers and pressure vessels. It is essential to be aware of the regulatory requirements and the use of various NDE methods in maintaining healthy condition of the boilers and pressure vessels, thereby protecting the environment and ensuring the safety of people at large.

The tutorial will cover following topics:

- Regulatory Code
  - Indian Boiler Regulation
  - ASME codes
- Inspection During Manufacturing
  - Inspection of Pressure Vessel
  - Inspection of Pressure relief devices
- Various NDE during Manufacturing
  - VT, UT, RT, PT, MT, AET, ET etc.
- Damage Mechanisms
  - Corrosion, Erosion
  - Thermal Fatigue
  - Hydrogen attack, Embrittlement,
  - Mechanical Failure etc.
- In-Service Inspection
  - Inspection Interval
  - Metal loss, Wall thickness Measurement
  - Inspection of Parts
  - Various NDE methods
- Demonstration of conventional NDE methods

Coordinator: Mr. D. P. Deshpande

Director, Directorate of Boilers,
Government of Maharashtra.

For details contact **Mr. Arvind Bhide**

Phone: 022-2430 8867 Email: ittndt@gmail.com

Fitness-for-Service Assessment and Risk Based Inspection

It is well accepted that all welded structures contain flaws and that these do not necessarily affect structural integrity or service performance. This is implicitly recognized by most welding fabrication and design codes which specify weld flaw tolerance levels based on experience and workmanship practice. Design codes also specify non-destructive evaluation methods to detect, locate and characterize flaws. The fracture mechanics based Fitness-for-Service approach enables the significance of flaws to be assessed in terms of structural integrity. It can be used to demonstrate that a given flaw, fabrication-induced or service-induced, can be left as it is to avoid unnecessary repairs. The evaluation basis is the concept based on Fracture Mechanics. This has led to the development of many fitness-for-service evaluation codes available across the industries. Also there have been developments related to reliability based and risk based inspections.

This course intends to introduce the participants to the basics of fracture mechanics, fitness-for-service assessment codes and the risk based inspection procedures.

The tutorial will cover following topics:

- Brittle fracture
- Introduction to Fracture Mechanics
- Fatigue of metals
- Significance of flaws and their characterization by NDE
- Experimental evaluation of fracture properties (ASTM standards)
- Design codes for fitness-for-service assessment (R6, API 579, ASME Section XI)
- Structural reliability based inspection scheduling
- Risk based inspection

Coordinator: Mr. K. K. Vaze

Outstanding Scientist, Reactor Safety Division,
Bhabha Atomic Research Centre, Trombay, Mumbai 400085

Phone: 022-2559 3786 Email: kkvaze@barc.gov.in

Who should attend?

NDT Professionals, Design Engineers, Quality Assurance Personnel, Maintenance Engineers, Management Personnel, Regulators, Consultants and those who wish to know the present state of art and future possibilities of Non-Destructive Examination and its applications in Industrial Sectors covering Power, Nuclear, Chemical, Petrochemical, Automobile, Aerospace, etc.

Whom to contact:

ISNT Mumbai Chapter
Phone: 022-2920 7521
Email: offc@isnt.org
Web: www.isnt.org

Coordinators of respective Tutorials

Chairman, Pre-Seminar Tutorial Committee
Mr. R. S. Vaghasiya
Cell: 0-98208 44873 Email: ravji.vaghasiya@gmail.com

Pre-Seminar Tutorials

on **November 29 - 30, 2008** *at* **MUMBAI**

TOPIC 1 VENUE

Advanced Non-Destructive Examination
Natraj Avenues, Near RK Studio, Sion-Trombay Road
Chembur (East), Mumbai 400 071. Phone: 022-6755 0478

TOPIC 2 VENUE

Non-Destructive Examination for Boilers & Pressure Vessels
Hotel Jewel of Chembur, 1st Road, Opp. BMC Office
Near Natraj Cinema, Chembur (East), Mumbai 400 071
Phone: 022 - 2527 5000 / 2527 9000

TOPIC 3 VENUE

Fitness-for-Service Assessment & Risk Based Inspection
Hotel Oasis, Sion Trombay Road, Deonar
Opp. Tata Institute of Social Sciences, Mumbai 400 088
Phone: 022-2548 0401

ISNT - MUMBAI CHAPTER
303, Lok Centre, Marol Maroshi Road, Andheri (East), Mumbai 400 059
Phone: 022-2920 7521 * Email: offc@isnt.org * Website : isnt.org

National Seminar- NDE-2008
"Challenges and Innovation in NDT"
ISNT - MUMBAI CHAPTER

303, Lok Centre, Marol Maroshi Road, Andheri (East), Mumbai 400 059
Phone: 022-2920 7521 * Email: offc@isnt.org * Website : isnt.org

REGISTRATION FOR PRE-SEMINAR TUTORIAL

(Please write in BLOCK Letters)

Name of Delegate

Designation

Organization

Contact Person

Mailing Address

Phone Number

Fax Cell

Email ID

Please select and tick the appropriate topic of your choice ***(any one only).***
Kindly use photocopies of this form for multiple nominations from your organization.

☐ **Advanced Non-Destructive Examination**

☐ **Non-Destructive Examination for Boilers and Pressure Vessels**

☐ **Fitness-for-Service Assessment and Risk Based Inspection**

Course Fee for the above Two Day Non-Residential Pre-Seminar Tutorial is Rs. 5000/-

Payment Details

Cheque / DD No.: Bank

Date Branch

Rs. Rupees

Cheque should be drawn in favour of ***"ISNT MUMBAI - NDE-2008"*** *payable at Mumbai. For out station cheques please add Rs.100/- towards bank charges.*

Date Company Seal/Stamp Signature

For Office Use Only

Registration form received Date

Receipt Number Date