Theoretical and Experimental Vibration Analysis
Applied to
Machine Elements Health Diagnostics
May 27-28, 2010
The Gateway Hotel Vadodara, Gujarat, India

Organized By:

QUANTUM AGE™
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Participating Companies:

ATALON
Testing And Consulting Engineers

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Introduction

Vibration is a universal phenomenon in all dynamic systems. Engineers worldwide try to mitigate vibration when undesirable. This training program is aimed at providing a comprehensive coverage to vibration phenomenon, its physics and measurement techniques and details on how to use the vibration signature from a machine to diagnose defects and also an insight into solving vibration problems. After completing the training program you will be able to measure and analyse vibration data to identify defects and will be able to solve vibration problems effectively.

Who should attend?

- Design engineers
- Testing engineers
- Quality engineers
- Field Engineers
- Faculty members from educational institutions
- Mechanical and Instrumentation engineering students

Vibration Training Program 2008 attended by:

Alstom Power India Limited, Alstom Projects, Apollo Tyres Limited, Eicher Motors, Greaves Cotton Limited, Jyoti Limited, L&T Chiyoda Limited, Mahindra & Mahindra Limited, , Tata Motors, Optimal Solutions Pvt. Limited

Training Program Topics

A. Basics
- a) Periodic Motion and Oscillations
- b) Single and Multi Degree of Freedom Systems
- c) Prerequisite Physics
- d) Vibration Parameters
- e) Vibration to Noise Journey
- f) Linear Scales vs. Logarithmic Scales
- g) Filters
- h) Initial Discussions on Frequency Analysis
- i) Time Domain Vs. Frequency Domain Analysis
- j) Vibration Sources:
  - i. Rotary Motion
  - ii. Reciprocating Motion
  - iii. Random Excitation - Road Transport

B. FFT Spectrum Analyzer
- a) What is spectrum
- b) Operation of a Spectrum Analyzer
- c) Sampling Techniques

C. Vibration Measurement Transducers
- a) What Parameters to Measure

D. Elementary Problem Diagnosis as Applicable to Various Machine Elements
- a) Gears
- b) Rolling Element Bearings
- c) Electrical Motors
- d) Pumps
- e) Compressors
- f) Engines

E. Advanced Signature Analysis Techniques
F. Vibration Isolation
G. Vibration Limits & Standards

Vibration Measurement Hardware & Software - Display & Demonstration

- FFT Analyzer
- Vibration Sensors
- Fault Detection Software
- Condition Monitoring System
- Impulse Hammer
- 2- Plane Balancing Kit

Quantum Age Tech Solutions Pvt. Ltd.
D 120, Tower D, Vrundavan Township, Harni Road, Vadodara - 390 006, Gujarat, India
Ph. +91-265-2480060, 2480066, 2466240, Fax +91-265-2466340 email: info@qagetech.com

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Principal Faculty:

Rajeev Dubey (M. Tech. – IITK, 1993), Managing Director, Quantum Age Tech Solutions Pvt. Ltd

Key Achievements: *Design and development of machine defect identification system - nvhGeek, Development of Tyre noise simulation algorithm, noise and vibration control of in-operation compressors, gears, pumps, etc. and contribution to the development of design methodologies for low noise and low vibration mechanical systems.*
Experience: *17 years, Noise and vibration (simulation, measurement and control), Development of algorithms for noise and vibration signature analysis for defect identification, FEA, CFD, Consultancy on product design*
Paper Publications: ***"****Hermetic Compressor Noise Control…", Intl. Cong. On Sound and Vib., Adelaide, Australia, 1997*

- ***Earlier Training Programs Conducted For:*** *Apollo Tyres, L&T, L&T Chiyoda, CEAT, Crompton Greaves, Hero Honda, GE, Vulcan Gears, Mahindra & Mahindra, Lear, etc.,*
- *Vibration Training Program 2008 - Vadodara, India attended by major automotive and engineering companies.*

Invited Lecture:
"Right Approach to Accurate Vibration Measurement and Various Vibration Based Product Testing Methods"
Govardhan Giri, CEO, ATLON Testing and Consulting Engineers

- *Extensive Experience in Noise & Vibration field*
- *Research Fellow at acoustic test facility, National Aerospace Lab, ISRO, Bangalore 1999-2003, Product Manager, Acceleration, Kistler India 2003 - 2008, Currently CEO, Atalon Testing and Consulting Services in the field of noise and vibration testing*
- *Assignments on various Aerospace projects globally*
- *Handled Quality and Reliability Aspects of Vibration Systems at ISRO*
- *Development of Calibration technique for vibration and noise instrumentation for satellite applications*
- *Dynamics test lab setup for IITM*
- *Instrumentation and testing services for Daimler India & Rane group*

Invited Lecture
"***Key Technologies for Sound and Vibration Acquisition and Analysis"***
Jayanth Balamurugan, Applications Engineer, National Instruments (India)

Jayanth Balamurugan is an Applications Engineer at National Instruments, working primarily on Test, Measurement, Control and Automation. He has been an advisor to Automotive, Aerospace, Defense, Structural Health Monitoring and Manufacturing companies based in India and Arabia.

He has been a key trainer for various technical programmes on LabVIEW, Graphical System Design, Real Time and FPGA based systems, Data Acquisition, Machine Vision and Motion Control. He has been the major technical point of contact for National Instruments' partners and customers on these technologies.

Invited Lecture:
"Condition Based Monitoring of Rotating Machineries"
Prof. Rajiv Tiwari (PhD-IITK), Dept. of Mechanical Engg., IIT Guwahati

Paper Publications: *More than 70 journal and conference papers on vibrations, rotordynamics and bearing design.*
Consultancies: *ISRO, Trivendrum; Combat Vehicle R& D Establishment, Chennai; Tata Bearings, Kharagpur; Lafarge Cement, Meghalaya; Skoda Power, Czech Republic.*
Organization of Symposium & Courses: *National Symposium on Rotor Dynamics (NSRD-2003), Five day course on Rotor Dynamics in year 2004, 2005 and 2008. Key Position: Research officer at University of Wales Swansea, UK during Jan-Dec 2001.*
Research Interest: *Vibrations, Rotor Dynamics, Signal Processing & Identification in Rotating Machineries, Rolling Element Bearing Design and Analysis, Active Magnetic Bearing, and Virtual Vibration Lab.*
Key Position Held*: Member of Technology Incubation Centre.*

Registration Form

Program Fee: Rs. 20,000/- (Rs. Twenty Thousand Only)

Registration Categories and Discounts

Regular: Individual Professionals and people working with an organization

A. 40% discount for registrations received by May 10, 2010.
B. 15% discount for registrations received by May 20, 2010.
C. Spot registrations at full fee.

Faculty Member: 50% discount

Student: 75% discount

Program fee payable in advance in the name of "Quantum Age Tech Solutions Pvt. Ltd." by demand draft or by "at par cheque" payable at Vadodara, Gujarat, India

NAME :
DESIGNATION/DEPARTMENT :
ORGANIZATION :
CATEGORY OF PARTICIPANT :
(REGULAR / FACULTY MEMBER / STUDENT)
ADDRESS :
PHONE :
FAX :
EMAIL :

PAYMENT DETAILS:
DD / CHEQUE NUMBER :
AMOUNT :
DATE :
BANK :

For queries related to training programme contact:
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