

2024 TRAINING PROGRAMS

Structural Dynamics
Mechanical Reliability
Noise & Vibration



Our Training Center

Sharing and transmitting our know-how with passion are our DNA. Our training programs are complementary and can be scheduled in sequence for a more consequent rise in competence.

All our training programs can be organized on demand to train a group of employees by targeting the specificities of their activity, their function and their tools (hardware, software). Group pricing applies to these sessions, which can be organized anywhere in the world, in your premises or any suitable location.

All of our sessions are based on concrete cases from more than 30 years of experience in all industrial sectors: automotive, railway, aeronautics, energy, mechatronics, etc. Our software and hardware are of various brands, which allows us to use the tools most adapted to your needs.



We are Qualiopi-certified for training activities: courses can be financed by your OPCO (for French companies).



One address - formation@vibratec.fr :

- For intra, visio or bespoke sessions,
- To study the possibilities of compensation for a potential sensory or motor deficit.



GENERAL TRAINING COURSES

Title	Duration	Fee	Dates
General Acoustics & Vibration	2 days	1800€	6-7/02/2024 3-4/09/2024
Experimental Modal Analysis	2 days	1800€	14-15/03/2024 12-13/09/2024
Experimental Vibration Analysis	2 days	1800€	12-13/03/2024 10-11/09/2024
Fundamentals of Vibration	0,5 day	600€	1 st Friday of the month
Fundamentals of Acoustics	0,5 day	600€	3 rd Friday of the month
Fundamentals of Signal Processing	0,5 day	600€	2 nd Friday of the month
Human Vibration Exposure	1 day	1100€	On request
Vibration-Induced Pipework Failure	3 days	2300€	27-29/03/2024 25-27/09/2024
Implementing Instrumentation	0,5 day	600€	4 th Friday of the month
Signal Processing – Acoustics & Vibration	2 days	1800€	19-20/03/2024 17-18/09/2024

ELECTRIFIED SUB-ASSEMBLIES - EPOWERTRAIN

Title	Duration	Fee	Dates
Noise from Electromagnetic Excitation	3 days	2300€	28-30/05/2024 5-7/11/2024
Gear Dynamics	2 days	1800€	18-19/06/2024 26-27/11/2024
Vehicle E-powertrain Integration	2 days	1800€	25-26/06/2024 10-11/12/2024

Our Training Programs

INDUSTRIAL SECTOR TRAINING COURSES

Title	Duration	Fee	Dates
Automotive Acoustics	3 days	2300€	14-16/05/2024 8-10/10/2024
Railway Noise & Vibration Control	3 days	2100€	22-24/04/2024 8-10/10/2024
Railway Maintenance & Dynamics	2 days	1800€	On request
O&G Industry Vibration Control	2 days	1800€	On request

ADVANCED TECHNIQUES

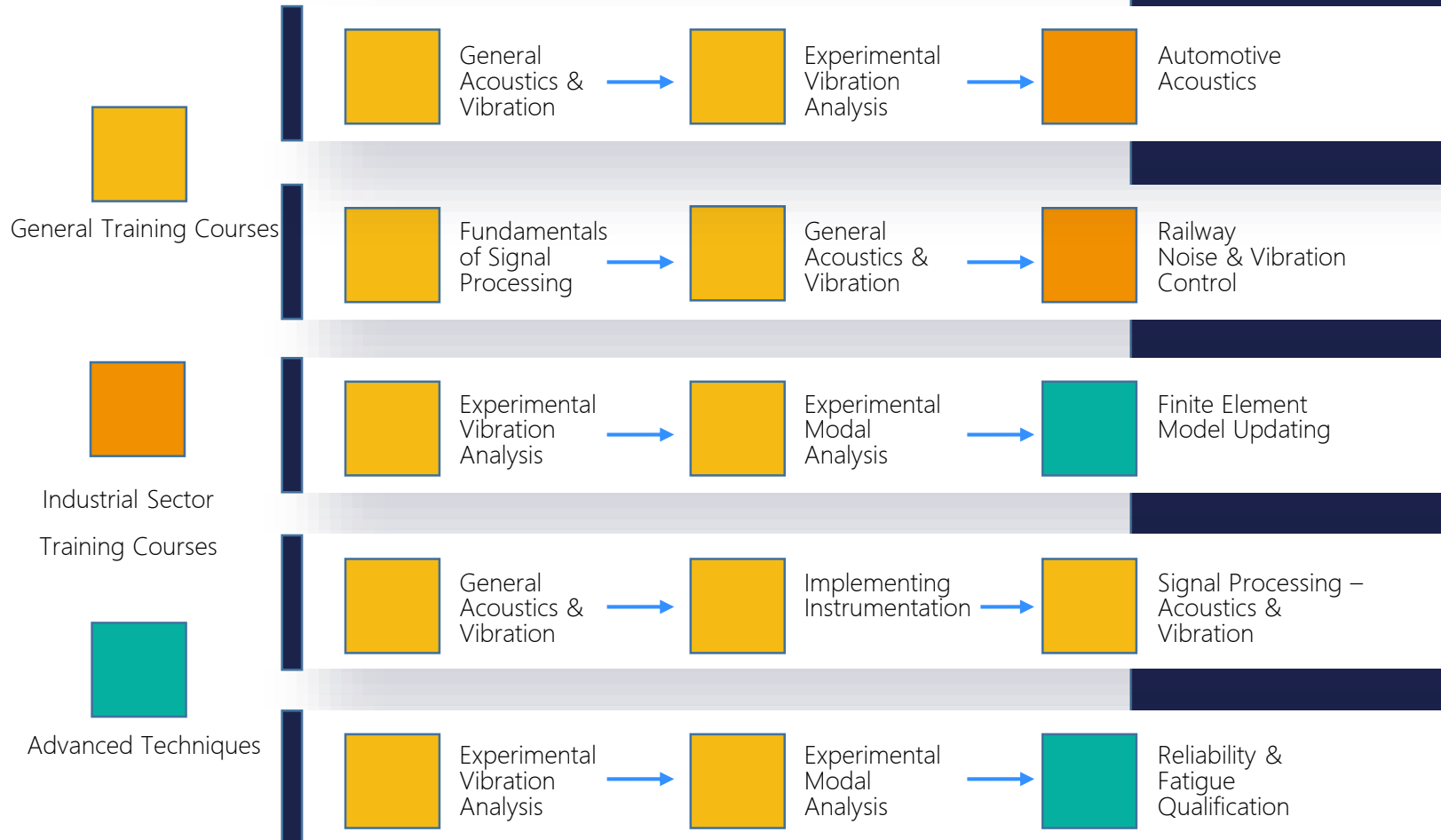
Title	Duration	Fee	Dates
Advanced Rotating Equipment Vibration Diagnosis	2 days	1800€	21-22/03/2024 19-20/09/2024
Rotor Dynamics	1 day	1100€	26/03/2024 24/09/2024
Electronic & Vibrational Reliability	2 days	2100€	20-21/06/2024 3-4/12/2024
Reliability & Fatigue Qualification	3 days	2100€	4-6/06/2024 13-15/11/2024
Acoustic Imagery	3 days	2100€	11-13/06/2024 19-21/11/2024
AI for Acoustics & Vibration	2 days	2100€	2-3/07/2024 17-18/12/2024
Finite Element Model Updating	2 days	1800€	3-4/04/2024 1-2/10/2024

A Flexible Offer

Standard In-house Training

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Combinations of Standard Programs





A Flexible Offer

Examples of Customized Training Courses

- Experimental Vibration Analysis & Using Force Sensors
- Rolling Noise Computation (Railway)
- Transfer Path Analysis
- Automotive Parasite Noise Analysis &
- System Vibration Uncoupling / Filtration
- Using Technical Software
 - Transfer Paths with TestLab
 - Dynamic Models with ANSYS
 - Stardamp



Technical & Educational Supply

- Meeting room designed to accommodate groups
- Video projector with presentation for the trainee group
- Videos
- Flip chart



Each participant receives a binder for each session: including:

- Training program summary
- Course training material
- Examples and/or practical cases

Equipment Provided by Trainees



- Tablet / Computer: **you'll need it to take the quiz & to sign in !**
- Quiet working environment (online sessions)

- Punctuality



- Involvement



- Honest feedback

Key Figures



150
Trainees
(2022)



17
Client Companies
(2022)



9
New clients
(2022)



10
Sessions given in client offices
(2022)

Average global appreciation: 4,6 ★★★★★

Length ★★★★★

Content ★★★★★

Documentation ★★★★★

Activities ★★★★★

Reception ★★★★★

Trainee

Testimonials

(given in French)

Great training. I learned a lot in those 3 days. My brain has reached electromagnetic saturation, now it's time to deflux. 😊

Wissam, Noise from Electromagnetic Excitation

A very clear course with a rich content, and a very pedagogical and attentive trainer. The practical, hands-on aspect makes it easier to grasp the subjects covered.

Clémence, Signal Processing – Acoustics & Vibration

As always at Vibratec, a good balance between theory and practice, and lively training (e.g. on a regular basis).

Xavier, Reliability & Fatigue Qualification

I appreciated the training format, which allowed enough flexibility to take the time to answer participants' questions properly. The answers were comprehensive and gave me a good overall understanding.

Robin, Rotor Dynamics

Very good, clear and concise presentation by a trainer who managed to hold your attention throughout the course.

Denis, Fundamentals of Acoustics (online session)

Good training. Very well adapted to our needs and application.

Florient, Experimental Vibration Analysis



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Implementing Instrumentation	0,5 day	600€	4 th Friday of the month
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Registration / cancellation up to 15 days before each session
No more than 12 people per session

Training material & lunches included
Based on case studies
Alternates theory & application exercises

Experimental Modal Analysis

General Training Course

Duration: 2 days (14 hours)

Price: 1800€



Would you like to know more about this technique? How it works? This training course will give you the basic skills you need to use this technique to characterize the dynamic behavior of structures – with case studies to back it up.



In the Classroom

Participant Profile

- Technicians and engineers in maintenance, testing, laboratory & design offices

Prerequisites

- Basic understanding of vibration issues

Sessions

- 12-13 March 2024
- 10-11 September 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the interest of this technique for the characterization of the dynamic behavior of a structure
- Explain the usefulness of EMA during a vibration diagnosis
- Apply the measurement technique
- Analyze the results obtained

Program

- Theoretical basis of vibration and structural dynamics
- Presentation of modal identification methods
- Implementation of an experimental modal analysis – test protocol and equipment

Presented by



Hugo
SIWIAK



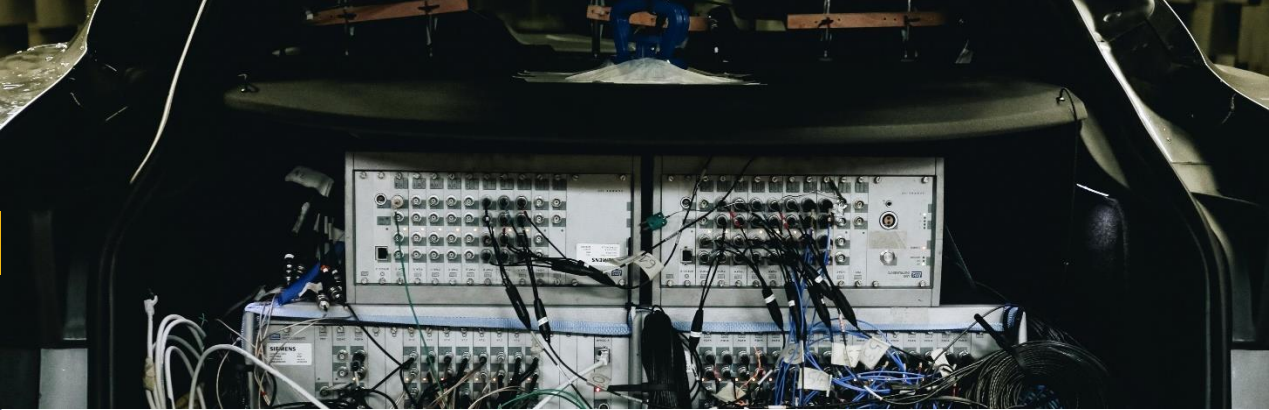
Benjamin
MALARDIER

Experimental Vibration Analysis

General Training Course

Duration: 2 days (14 hours)

Price: 1800€



How to identify machine parts with vibration problems? What are the sources of these problems? These are the questions this training course is designed to answer.



In the Classroom

Participant Profile

- Service technicians / engineers in maintenance, testing, laboratory & design offices
- Project managers

Prerequisites

- Awareness of vibration problems
- Basic understanding of vibration issues

Sessions

- 12-13 March 2024
- 10-11 September 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Identify the causes of vibration problems
- Select and install the measurement equipment
- Differentiate vibration measurement techniques
- Propose solutions to mitigate vibration problems

Program

- Presentation of vibration analysis methods
- Implementation of measurements in operation: choice of sensors, signal processing basics, result interpretation and analysis
- Implementation of vibration measurements at standstill: choice of excitation, frequency response functions
- Case studies on an industrial model

Presented by



Hugo SIWIAK



Benjamin MALARDIER

Fundamentals of Acoustics

General Training Course

Duration: 1/2 day (3.5 hours)

Price: 600€



This course is a first contact with acoustics and introduces the basic characteristics of noise.



In the Classroom



Online sessions

Participant Profile

- Anyone who wants to learn the basics of acoustics

Prerequisites

- High School math & science (calculus, physics, etc)

Sessions

- 3rd Friday of the month 9:00-12:30

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Know the terms used in acoustics, the summation of levels in decibels and the modes of transmission

Program

- Definitions and acoustic quantities
- Sound perception
- Summation of levels in decibels
- Internal acoustics
- Air and solid-state transmission

Presented by



Aurélien
CLOIX



Benjamin
MALARDIER

Fundamentals of Signal Processing

General Training Course

Duration: 1/2 day (3.5 hours)

Price: 600€



This course introduces signal processing: all the methods used to extract information by analyzing a signal from the measurement of a physical quantity.



In the Classroom



Online sessions

Participant Profile

- Engineers and technicians who may need to use signal processing

Prerequisites

- Basic knowledge of acoustics and vibration

Sessions

- 2nd Friday of the month 9:00-12:30

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Discover the main methods of signal processing applied to acoustics and vibrations
- Know how to choose the type of analysis and the parameters
- Have a critical view of the results
-

Program

- Temporal analysis
- Sampling
- Frequency analysis
- Fourier Transform
-

Presented by



Jean-Baptiste
DUPONT, PhD



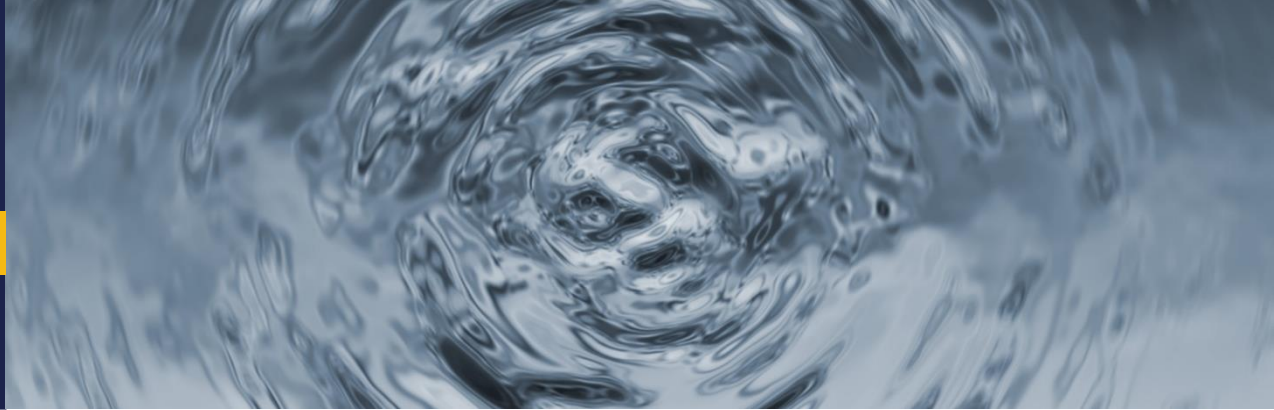
Hugo
SIWIAK

Fundamentals of Vibration

General Training Course

Duration: 1/2 day (3.5 hours)

Price: 600€



This course is a first contact with vibrations and explains how they work and why they can be problematic.



In the Classroom



Online sessions

Participant Profile

- Anyone who wants to acquire the basics in vibration

Prerequisites

- High School math & science (calculus, physics, etc)

Sessions

- 1st Friday of the month 9:00-12:30

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the physical phenomena involved
- Understand how to break down the problem

Program

- Physical units in vibration
- Natural response of a system
- Exciting forces
- Operational vibratory response
- Vibratory insulation

Presented by



Hugo
SIWIAK



Benjamin
MALARDIER

General Acoustics & Vibration

General Training Course

Duration: 2 days (14 hours)

Price: 1800€



The aim of this training course is to introduce the basic principles of vibration mechanics and acoustics to those who are supposed to have no notion of these fields (even if everyone is already sensitized by their telephone, speed bumps, trains, etc.).



In the Classroom



Online sessions

Participant Profile

- Anyone who wants to acquire a basic understanding of acoustics and vibration in an industrial environment

Prerequisites

- High School math & science (calculus, physics, etc)

Sessions

- 6-7 February 2024
- 3-4 September 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Know the terms used in acoustics as well as the main sources and modes of transmission
- Know and understand the parameters used to characterize systems from a vibratory point of view (eigenfrequencies, damping, etc)

Program

- Acoustic definitions and quantities
- Sound perception
- Source summation
- Air and solid-state transmission
- Response of systems to vibration
- Vibration insulation
- Hands-on work – industrial applications
- Visit Vibratec's lab

Presented by



Hugo
SIWIAK



Benjamin
MALARDIER

Human Vibration Exposure

General Training Course

Duration: 1 day (7 hours)

Price: 1100€



Are you concerned about the well-being of your colleagues (or yourself) in relation to vibrating structures? Do you need to justify the vibration comfort of your equipment and products? This training course will give you a basic understanding of vibration analysis, the standards relating to worker exposure to vibration, and customer requirements in this field.

It will also equip you for contract negotiations concerning vibrating equipment or the rights and protections to which employees may be entitled in terms of vibrations.



In the Classroom

Participant Profile

- Project or mechanical engineers
- Support technicians (maintenance)
- Workers' health committee / organizations

Prerequisites

- Basic knowledge of vibration
- Basic knowledge of signal processing

Sessions

- On request

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

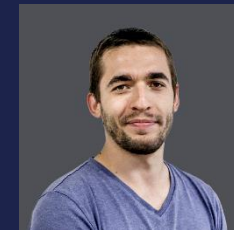
Goals

- Understand the basics of vibration analysis
- Differentiate the standards related to workers' exposure to vibration
- Negotiate contractual employee vibration requirements
- Understand how to protect workers from their vibratory environment

Program

- Introduction to vibration
- Presentation of measurement tools and methodologies
- Vibration source identification
- Types and characterization of vibratory responses
- Determination of exposition time
- Definition of vibratory comfort

Presented by



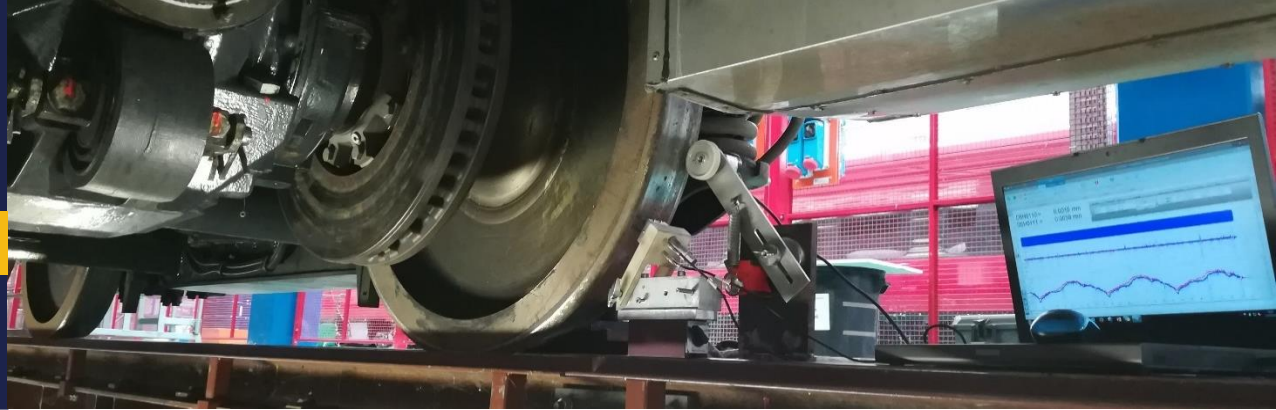
Sylvain ROCHE

Implementing Instrumentation

General Training Course

Duration: 1/2 day (3.5 hours)

Price: 600€



This training course raises awareness of vibration measurement equipment and the importance of defining the purpose of the measurements in advance.



In the Classroom



Online sessions

Participant Profile

- Technicians and engineers required to organize and/or carry out measurements

Prerequisites

- Basic knowledge of acoustics and/or vibration

Sessions

- 4th Friday of the month 9:00-12:30

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Recognize different sensors and how to implement a measurement chain
- Know how to analyze a spectrum

Program

- Goals of the measurements
- Various sensors
- Interfaces with the structure
- Conditioners and analyzers
- Precautions to take
- Associated costs

Presented by



Hugo SIWIAK

Signal Processing – Acoustics & Vibration

General Training Course

Duration: 2 days (14 hours)

Price: 1800€



Would you like to know more about signal processing? Understand the influence of the information sought on the choice and parameters of the equipment to be used and the analysis of results? This course presents the signal processing techniques used in acoustics and vibration, and uses industrial applications to illustrate the choice and characteristics of different types of processing.



In the Classroom



Online sessions

Participant Profile

- Test or simulation technicians
- Test or simulation engineers
- Engineering / BE managers

Prerequisites

- Basic knowledge of acoustics and vibration

Sessions

- 19-20 March 2024
- 17-18 September 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Differentiate the main methods of signal processing applied to acoustics and vibrations
- Choose the type of analysis and the appropriate parameters
- Critically analyze results

Program

- Explanation of signal classification
- Presentation of time analysis
- Presentation of FFT Spectral analysis
- Presentation of system filtration analysis
- Introduction to Time-Frequency Analysis

Presented by



Hugo SIWIAK



Jean-Baptiste DUPONT, PhD

Vibration-Induced Pipework Failure

General Training Course

Duration: 3 days (21 hours)

Price: 2300€



Vibration in piping systems can lead to premature fatigue and even rupture. The aim of this training course is to provide an understanding of vibration problems in piping systems, and to present current screening and assessment methods.



In the Classroom



Online sessions

Participant Profile

- Project Engineers
- Specialized Engineers (HSE, mechanical, structural, piping)
- Support services (maintenance, operation)

Prerequisites

- Basic knowledge of vibration
- Basic knowledge of facilities with piping (O&G, nuclear industry, etc)

Sessions

- 27-29 March 2024
- 25-27 September 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Apprehend piping vibration issues
- Understand current screening & assessment methods for potentially critical lines
- Differentiate theoretical methods for calculating 'Likelihood of Failure (LOF)
- Define what constitutes 'good practice' for avoiding vibration-induced fatigue problems
- 3rd day: Perform dynamic calculations

Program

- Piping vibrations: causes & consequences
- The Energy Institute Guidelines approach
- FIV – turbulence, AIV, other vibration sources
- Instrumentation & basic measurement techniques
- In-depth measurements & predictive techniques
- Detection of problems
- Modeling and dynamic calculations
- Case studies

Presented by



Rémi
SALANON



Loïc
ANCIAN



INDUSTRIAL SECTOR TRAINING COURSES

Title	Duration	Fee	Dates
Automotive Acoustics	3 days	2300€	14-16/05/2024 8-10/10/2024
Railway Noise & Vibration Control	3 days	2100€	22-24/04/2024 8-10/10/2024
Railway Maintenance & Dynamics	2 days	1800€	On request
O&G Industry Vibration Control	2 days	1800€	On request

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For intra, visio or bespoke sessions,

To study the possibilities of compensation for a potential sensory or motor deficit.

Registration / cancellation up to 15 days before each session
No more than 12 people per session

Training material & lunches included
Based on case studies
Alternates theory & application exercises

Automotive Acoustics

Industrial Sector Training Course

Duration: 3 days (21 hours)

Price: 2300€



If you work in the automotive industry, you may find yourself confronted with acoustic problems. This course will provide you with an overview of automotive acoustics.



In the Classroom



Online sessions

Participant Profile

- Experienced engineers & technicians
- Project managers
- Manufacturers & OEMs

Prerequisites

- Notions in acoustics
- Basic knowledge of the automotive industry

Sessions

- 14-16 May 2024
- 8-10 October 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the acoustic aspects
- Understand the analysis of physical and perceptive phenomena related to comfort
- Understand the relevance of integrating a vibro-acoustic approach into the general design & production process
- Gain a global vision of the main automotive services: thermal and electric engine noise, rolling noise, aero-acoustic noise, exterior noise

Program

- Theoretical review
- Acoustics in the design process
- Automotive sounds and sound quality
- Computation & experimental methods
- Motor booming noise
- Electric motor noise
- Road noise
- Vehicle aeroacoustics
- Exterior noise

Presented by



Pascal
BOUVET, PhD



Aurélien
CLOIX



Hugo
SIWIAK

Oil & Gas Industry Vibration Control

Industrial Sector Training Course

Duration: 2 days (14 hours)

Price: 1800€



If you work in the oil & gas industry – on-site or in a design office – you may find yourself confronted with vibration issues or standards that are beyond your control. This training course will give you the skills to build a technical approach to avoid or solve vibration problems.



In the Classroom



Online sessions

Participant Profile

- Project Engineers
- Specialized engineers (HSE, mechanical, structural, piping)
- Support services (maintenance, operation)

Prerequisites

- Basic knowledge of the petro-gas industry

Sessions

- On request

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand vibration phenomena
- Appreciate the relevance of vibration calculations & measurements
- Propose effective technical approaches to prevent and/or solve vibration problems

Program

- Oil&Gas industry vibration contexts
- Vibration standards & specifications
- Theoretical bases
- Vibration measurements
- Vibration computation
- Global vibration analysis strategy

Presented by



Rémi
SALANON



Loïc
ANCIAN

Railway Maintenance & Dynamics

Industrial Sector Training Program

Duration: 2 days (14 hours)

Price: 1800€



Maintenance is a key element of any rail operation (TGV, freight, streetcar, metro). This training course enables you to understand wheel/rail contact and the dynamics of the track/rolling stock system. As a result, it becomes possible to set up conditional and predictive maintenance plans to optimize operating costs.



In the Classroom



Online sessions

Participant Profile

- Engineers & technicians involved in the maintenance, operation & management of rail networks or rolling stock fleets

Prerequisites

- Basic knowledge of vibration & acoustics
- Associates degree or equivalent

Sessions

- On request

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Present a synthetic view of the physical phenomena of wheel-rail contact related to maintenance & operation
- Understand the appearance & evolution of wheel and rail defects (wear, fatigue, squat, strain, corrugation)
- Present issues related to main lines (TGV, freight) and urban applications (metro, tramway)

Program

Rail:

- Defect classification, qualification & quantification
- Material resistance
- Solicitations: contact force
- Tools for operating control

Rolling stock:

- Railway dynamics & safety
- Mechanical behavior during operation
- Residual life assessment

Presented by



Emanuel
REYNAUD



Martin
RISSMANN



Sylvain
BARCET

Railway Noise & Vibration Control

Industrial Sector Training Program

Duration: 3 days (21 hours)

Price: 2100€



Working in the rail industry means taking noise and vibration aspects into account, whether when designing new lines/equipment or modifying existing installations. This training course covers all the issues involved in the railway sector.



In the Classroom



Online sessions

Participant Profile

- Engineers & technicians involved in track or rolling stock design & construction

Prerequisites

- Basic knowledge in vibration & acoustics
- Associates degree or equivalent

Sessions

- 22-25 May 2024
- 15-17 October 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Address noise / vibration issues on existing or planned lines
- Differentiate design & testing approaches & methodologies
- Understand the issues related to main lines (TGV, freight) & urban applications (metro, tramway)

Program

- Basics of acoustics & vibration
- Current standards & regulations & future trends
- Wheel / rail noise
- Traction & auxiliary noise
- Squeal noise
- Aerodynamic noise
- Theoretical aspects of ground-borne noise / vibration
- Ground-borne vibration control on existing lines and in the design phase

Presented by



Emanuel
REYNAUD



Martin
RISSMANN



Sylvain
BARCET

ADVANCED TECHNIQUES

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Acoustic Imagery	3 days	2100€	11-13/06/2024 19-21/11/2024
AI for Acoustics & Vibration	2 days	2100€	2-3/07/2024 17-18/12/2024
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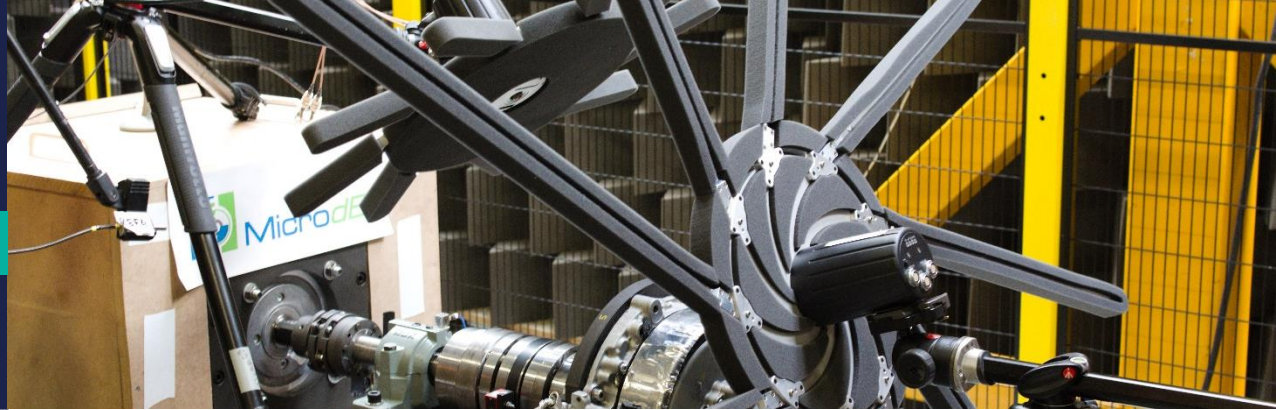
Training material & lunches included
Based on case studies
Alternates theory & application exercises

Acoustic imagery

Advanced Technique Training Program

Duration: 3 days (21 hours)

Price: 2100€



Would you like to understand the theoretical aspects of acoustic imaging and the various methods available (holography, focusing, deconvolution) with their advantages and limitations? This training course will explain them to you, as well as the practical aspects of choosing the right method for your case and knowing how to analyze the results.



In the Classroom

Participant Profile

- Engineers, students & technical managers

Prerequisites

- Basic knowledge of acoustics
- Knowledge of signal processing

Sessions

- 11-13 June 2024
- 19-21 November 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the theoretical aspects of different imaging methods with their advantages & limitations (holography, focalization, deconvolution, etc)
- Choose & apply the 'right' measurement & processing method

Program

- Theoretical reminders of acoustics
- Acoustic beamforming
- Acoustic holography with regular & irregular arrays
- Advanced imaging methods
- Application of imaging methods to aero-acoustic measurement constraints
- Matching tools to requirements
- Measurement preparation
- Use of the imaging software in a Testlab environment
- Result analysis

Presented by



Sébastien
PAILLASSEUR,
PhD



Aurélien
CLOIX



Olivier
MINCK

Advanced Rotating Machine Diagnosis

Advanced Technique Training Program

Duration: 2 days (14 hours)

Price: 1800€



Do you work with rotating machines? Do you need to maintain them or anticipate operating problems (vibration, breakage, etc.)? This training course will give you a better understanding of how to diagnose faults on rotating machines, and how to use the right tools to identify them.



In the Classroom

Participant Profile

- Maintenance Managers
- Project Engineers,
- Specialized Engineers (HSE, mechanical, structural, piping)
- Support services (maintenance, operation, technology)

Prerequisites

- Theoretical understanding of vibration
- Basic knowledge of the principles of rotating equipment operation

Sessions

- 21-22 March 2024
- 19-20 September 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Identify rotating equipment defaults
- Understand & chose diagnosis tools

Program

- Theoretical bases
- Vibration standards (ISO 10816 and 20816)
- Presentation of typical defects
- Detection tools
- Case studies
- Exercises on an industrial model

Presented by



Hugo
SIWIAK



Hervé
GOUTAGNY

AI for Acoustics & Vibration

Advanced Technique Training Program

Duration: 2 days (14 hours)

Price: 2100€



Artificial intelligence (AI) is going to change the world, yet it remains obscure to many people. You've aware that AI is going to have an impact on your business, and now you want to know how it can take you forward, particularly through more powerful vibration and acoustic analysis.



In the Classroom



Online sessions

Participant Profile

- Test or simulation technicians
- Test or simulation engineers
- Design office managers

Prerequisites

- Basic knowledge of acoustics
- Basic knowledge of vibration

Sessions

- 2-3 July 2024
- 17-18 December 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Know the main methods that can be applied to NVH issues
- Methods for extracting important information from large amounts of data
- Methods to improve the prediction of NVH behavior of systems
- Know how to choose the type of method and the appropriate parameters

Program

- Positioning, objectives and issues
- Theoretical bases
- Data visualization and analysis methods
- Different families of machine learning algorithms
- Choice and construction of a model
- Acoustic application case
- Vibration application cases

Presented by



Martin
JEANNEROT,
PhD



Antoine
PURIER



Jean-Baptiste
DUPONT, PhD

Electronic & Vibrational Reliability

Advanced Technique Training Program

Duration: 2 days (14 hours)

Price: 2100€



Electronic systems are becoming increasingly complex and integrated. This equipment sometimes has to operate 24 hours a day in harsh environmental conditions, placing considerable stress on electronic components and systems. It is therefore important – during the development phase, and then during production – to ensure that equipment will meet its specifications in terms of operational service and reliability.



In the Classroom



Online sessions

Participant Profile

- Project managers
- Test technicians & engineers, laboratory & design office personnel
- Electronics engineers facing vibration issues

Prerequisites

- Basic knowledge of mechanics & electronics

Sessions

- 20-21 June 2024
- 15-16 October 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand:
- The challenges of reliability in electronic systems related to vibration constraints
 - The relevance of different vibration measurement techniques
 - The interest of vibratory dimensioning
 - Normative tests

Program

- Introduction to electronic & mechanical reliability
- Defaults of vibrating electronic parts
- Reliability prediction tools (MIL-HDBK217, IEC62380, FIDES) and vibration
- Introduction to the global method of electronics reliability
- Theoretical basis of vibration
- Experimental Vibration Analysis
- Experimental Modal Analysis
- Applied reliability approach

Presented by



Loïc
ANCIAN



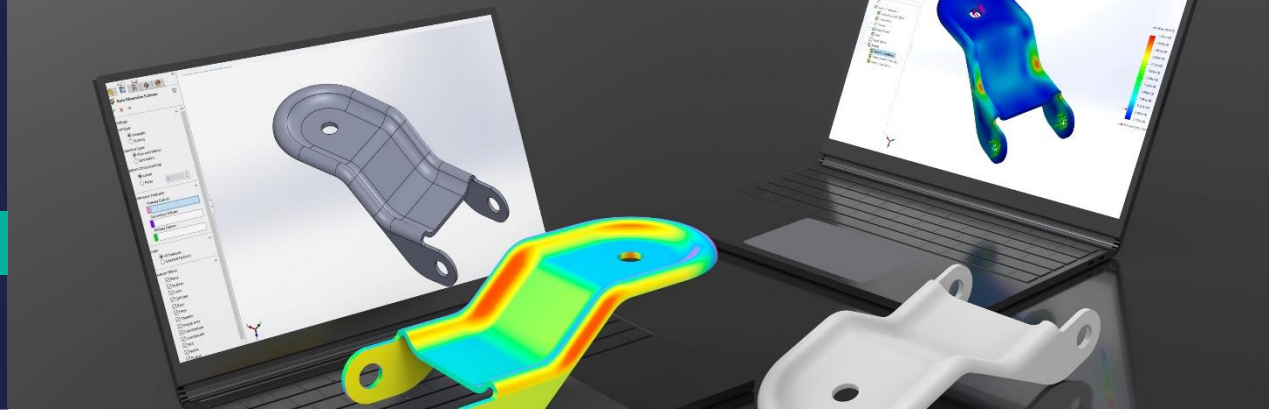
SERMA
TECHNOLOGIES

Finite Element Model Updating

Advanced Technique Training Program

Duration: 2 days (14 hours)

Price: 1800€



Whereas product qualification requires the production of prototypes, and therefore advanced product design with high testing costs, simulation enables numerous tests to be carried out through the development of virtual prototypes.

Finite element modeling covers a wide range of analyses, including solid dynamics, kinematics and acoustics. By recalibrating models with experimental data, we can ensure the fidelity of digital models, making it possible to carry out numerical tests incorporating realistic excitations.



In the Classroom



Online sessions

Participant Profile

- Engineers & technicians in charge of FE model validation
- R&D or NVH engineers

Prerequisites

- Working knowledge of structural dynamics
- Working understanding of FE calculation

Sessions

- 3-4 April 2024
- 1-2 October 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the relevance of simulation before testing
- Define the types of measurements to perform for FEM updating
- Identify the methods & tools to tune FEM
- Differentiate methods & tools to improve FEM

Program

- The updating / tuning process
- Measurements: theoretical basis, tools, set-up, acquisition of Frequency Response Functions (FRF), modal identification
- Computation: assumptions, resolution, FE modeling, computation in the design process
- FE model correlation & updating: tools & their limits, using a modal basis, using FRF results
- Collaborative work with an industrial model

Presented by



Hugo
SIWIAK



Stéphane
TEPPE

Reliability & Fatigue Qualification

Advanced Technique Training Program

Duration: 3 jours (21 hours)

Price: 2100€



ITF -18

The design of reliable products, capable of ensuring their lifecycle without major failure, requires the deployment of methodologies both upstream the project to define specifications representative of actual operating stresses, and during the project to optimize design and qualification procedures to ensure compliance with specifications.



In the Classroom



Online sessions

Participant Profile

- Actors in the industrial development process
- R&D or Quality engineers
- Testing laboratories

Prerequisites

- Basic understanding of material behavior
- Basic knowledge of structural mechanics

Sessions

- 4-6 June 2024
- 13-15 November 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand reliability / life cycle management issues in product development
- Understand the 'stress/resistance' approach
- Write specific specifications for suppliers & equipment manufacturers

Program

- Principle of the stress-resistance approach (S/R)
- Fatigue strength of structures - review
- Loading in service
- Applying the S/R method to product design
- Applying the S/R method to component design
- Reminders of signal processing
- Customization for modal structures
- Taking dispersion into account
- Applications based on concrete examples

Presented by



Loïc ANCIAN

Rotor Dynamics

Advanced Technique Training Program

Duration: 1 day (7 hours)

Price: 1100€



Do you work with rotating machines, but don't know all the intricacies of their design? This training course is designed to help.



In the Classroom



Online sessions

Participant Profile

- Technicians with a good base in mechanics
- Mechanical Engineers

Prerequisites

- Basic understanding of numerical simulation
- Basic knowledge of structural dynamics

Sessions

- 26 March 2024
- 24 September 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the concepts of vibration phenomenon, critical speed, unbalance response, separation margin, amplification factor, stability margin
- Identify important factors in the production & assembly of turbomachines
- Evaluate and/or write an API report on rotor dynamics
- Ask rotor suppliers the right questions to be able to perform studies

Program

- Principles of vibration
- Theoretical basis of rotor dynamics
- Rotor modeling
- Dynamic stiffness mapping
- Critical speed calculation
- Unbalance response calculation
- Stability analysis
- Specific applications

Presented by



Rémi
SALANON



Stéphane
TEPPE



ELECTRIFIED SUB-ASSEMBLIES - EPOWERTRAIN

Title	Duration	Fee	Dates
Noise from Electromagnetic Excitation	3 days	2300€	28-30/05/2024 5-7/11/2024
Gear Dynamics	2 days	1800€	18-19/06/2024 26-27/11/2024
Vehicle E-powertrain Integration	2 days	1800€	25-26/06/2024 10-11/12/2024

One address - formation@vibratec.fr :

For intra, visio or bespoke sessions,

To study the possibilities of compensation for a potential sensory or motor deficit.

Inscriptions / annulations jusqu'à 15 jours avant la session.
12 personnes max par session

Support de formation, pauses & déjeuners inclus
Cas d'application concrets
Alternance de théorie & exercices

Gear Dynamics

Electrified Sub-Assembly Training Program

Duration: 2 days (14 hours)

Price: 1800€



Gear systems play an important role in the mechanical and acoustic performance of the assemblies in which they are installed. Understanding how these systems work and how they behave is essential to optimizing their design and use.



In the Classroom



Online sessions

Participant Profile

- NVH technicians & engineers wishing to apply their know-how to gear systems
- Ordering parties & project managers

Prerequisites

- Basic knowledge of structural acoustic radiation
- Basic knowledge of structural dynamics

Sessions

- 18-19 June 2024
- 26-27 November 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the basics of structural dynamics
- Understand the basics of gear system operation
- Understand all the forces, mechanical and dynamic phenomena involved
- Understand the phenomena involved in gear noise generation
- Implement a numerical approach to understanding the vibratory behavior of a gear system

Program

- Gear mesh characterization (macro- & microscopic scales, kinematics)
- Static transmission error calculation (definition, procedure, mesh stiffness)
- Demonstrations & exercises using VibraGear software
- Dynamic response of gear systems (whining, computation, result analysis, noise reduction)
- Optimization of tooth corrections (structuring data, optimization method, robustness analysis)

Presented by



Jessica
NEUFOND,
PhD



Sylvain
BARCET

Noise from Electromagnetic Excitation

Electrified Sub-Assembly Training Program

Duration: 3 days (21 hours)

Price: 2300€



Are you unfamiliar with the ins and outs of electrical noise? Would you like to know more about the magnetic phenomena involved, or understand the vibratory behavior of such machines? During this 3-day training course, concrete case studies from various industrial sectors will answer your questions.



In the Classroom



Online sessions

Participant Profile

- NVH technicians & engineers wishing to apply their know-how to electric machines

Prerequisites

- Basic knowledge of structural acoustic radiation
- Basic knowledge of structural dynamics

Sessions

- 28-30 May 2024
- 5-7 November 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand basics of electric motor operation and power supply
- Understand the phenomena that generate noise in electric machines
- Understand the relationship between choice of motor architecture and acoustic performance
- Set up an experimental & numeric approach to understand the vibratory behavior of electric machines

Program

- Review of electricity & electro-magnetism
- Operation & constitution of electric machines
- Electronic Power Converters (EPCs)
- Magnetic excitations
- Electric motor acoustics
- Low-noise (silent) design rules
- Exercise: experimental analysis applied to an electric motor
- Exercise: simulation of the noise radiated by an electric motor

Presented by



Jean-Baptiste
DUPONT, PhD



Martin
JEANNEROT,
PhD

Vehicle E-powertrain Integration

Electrified Sub-Assembly Training Program

Duration: 2 jours (14 hours)

Price: 1800€



Do you need to understand the particularities of using electric motors for traction, traction assistance and motor vehicle accessories? This course focuses on the noise and vibrations generated by these specific machines. It will look at electric & hybrid vehicles and the noise they make, as well as sources and transfer paths.



In the Classroom

Participant Profile

- NVH teams who design, develop or integrate E-powertrains

Prerequisites

- Basic knowledge of structural acoustic radiation
- Basic knowledge of structural dynamics
- Basic knowledge of automotive architecture

Sessions

- 25-26 June 2024
- 10-11 December 2024

No more than 12 people per session

Evaluation - Award

- Questionnaire in the form of a quiz
- Certificate of achievement

Goals

- Understand the dynamic behavior of an E-powertrain
- Understand the NVH specificities of E-powertrain integration
- Interpret, analyze & build integration SOWs
- Lead an E-powertrain integration process

Program

- E-powertrain NVH behavior
- Experimental methods to quantify E-powertrain NVH indicators
- Numeric methods to quantify E-powertrain NVH indicators
- E-powertrain contribution to global vehicle NVH
- E-powertrain structure- & air-borne noise contributions
- Vibration isolation design: principle, geometry & elastomer mount dynamic stiffness
- Review of E-powertrain integration designs

Presented by



Aurélien
CLOIX



Martin
JEANNEROT,
PhD