ViBRATEC
everenn group

2026 TRAINING PROGRAMS

STRUCTURAL DYNAMICS
MECHANICAL RELIABILITY
NOISE & VIBRATION

Qualiopi
processus certifié
RÉPUBLIQUE FRANÇAISE
La certification qualité a été délivrée au titre de la catégorie d'action suivante :
ACTIONS DE FORMATIONS

VIBRATEC

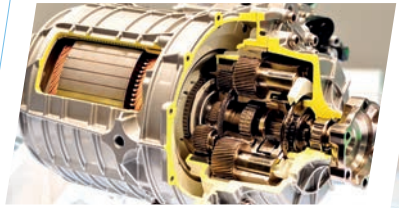
everenn group

28 Chemin du Petit Bois – 69130 Écully – France – +33 4 72 86 65 65.

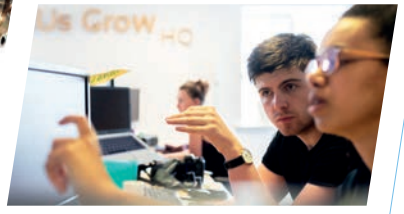
CONTENTS

11 **GENERAL** TRAINING COURSES

20 **INDUSTRIAL SECTOR** TRAINING COURSES



27 **ELECTRIFIED SUB-ASSEMBLIES – EPOWERTRAIN** COURSES



30 **ADVANCED TECHNIQUES**

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 more consistent skill upgrading.
Our sessions are all based on concrete cases from **more than 30 years of experience** in all industrial sectors: automotive, railway, aeronautics, energy, mechatronics, etc. We use various brands of equipment, allowing us to select the tools most adapted to your needs.
We are **Qualiopi-certified** for training activities: courses can be financed by your OPCO (for French companies).

Qualiopi processus certifié
RÉPUBLIQUE FRANÇAISE
La certification qualitée à été délivrée au titre de la catégorie d'action suivante :
ACTIONS DE FORMATIONS

ONE ADDRESS
> formation@vibratec.fr

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

OUR **TRAINING COURSES**

GENERAL TRAINING COURSES

	DURATION	PRICE	SESSIONS	PAGE
Fundamentals of acoustics	0.5 day	660 €	> 3rd Friday of the month	12
Fundamentals of vibration measurement	0.5 day	660 €	> 4th Friday of the month	13
Fundamentals of signal processing	0.5 day	660 €	> 2nd Friday of the month	14
Fundamentals of vibration	0.5 day	660 €	> 1st Friday of the month	15
Experimental modal analysis	2 days	1 980 €	> 11-12/03/26 > 9-10/09/26	16
Experimental vibration analysis	2 days	1 980 €	> 9-10/03/26 > 7-8/09/26	17
General acoustics & vibration	2 days	1 980 €	> 3-4/03/26 > 1-2/09/26	18
Signal processing acoustics & vibration	2 days	1 980 €	> 17-18/03/26 > 15-16/09/26	19

VIBRATEC
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One address
formation@vibratec.fr

INDUSTRIAL SECTOR TRAINING COURSES

	DURATION	PRICE	SESSIONS	PAGE
The acoustic & mechanical challenges of railway maintenance	1 day	1 250 €	> 22/10/26	21
Vibration-induced pipework failure	3 days	2 530 €	> 3-5/11/26	22
Railway acoustics from understanding to solutions	2 days	1 980 €	> 14-15/04/26	23
Robust design of railway systems	2 days	1 980 €	> On request	24
Vibration impact of rail systems on the environment	2 days	1 980 €	> 29-30/09/26	25
Electrified Vehicle Acoustics	3 days	2 530 €	> 2-4/06/26 > 17-19/11/26	26

ELECTRIFIED SUB-ASSEMBLIES EPOWERTRAIN COURSES

	DURATION	PRICE	SESSIONS	PAGE
Noise from electro-magnetic excitation	3 days	2 530 €	> 9-11/06/26 > 1-3/12/26	28
Gear dynamics	3 days	2 530 €	> 21-23/04/26 > 27-29/10/26	29

ADVANCED TECHNIQUES

	DURATION	PRICE	SESSIONS	PAGE
Rotor dynamics	1 day	1 250 €	> 31/03/26 > 01/10/26	31
Transfer path analysis (TPA) & blocked force measurements	2.5 days	2 530 €	> 24-26/11/26	32
Finite element model updating	2 days	1 980 €	> 24-25/03/26 > 22-23/09/26	33
Electronic & vibrational reliability	2 days	2 150 €	> 5-6/05/26 > 20-21/10/26	34
AI for acoustics & vibration	2 days	2 150 €	> 27-28/05/26 > 13-14/10/26	35
Advanced rotating equipment vibration diagnosis	2 days	1 980 €	> On request	36
Reliability & fatigue qualification	3 days	2 530 €	> 6-8/10/26	37
Acoustic imagery	3 days	2 530 €	> 19-21/05/26 > 24-26/11/26	38

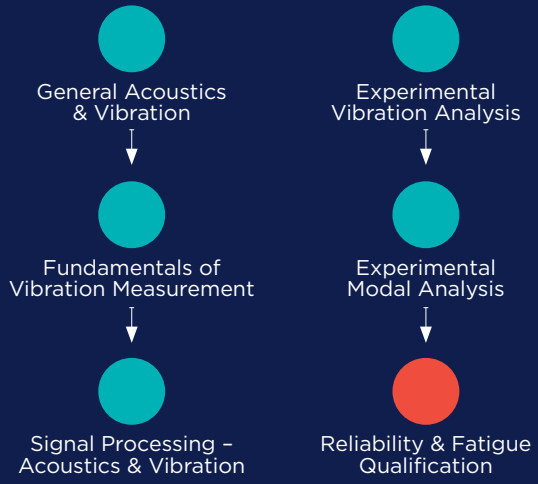
A **FLEXIBLE OFFER**

STANDARD IN-HOUSE TRAINING

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.

COMBINATIONS OF STANDARD PROGRAMS



EXAMPLES OF CUSTOMIZED TRAINING COURSES

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

VIBRATEC TECHNICAL & **EDUCATIONAL SUPPLY**

- Meeting room designed to accommodate groups
- Video projector with presentation for the trainee group
- Videos
- Flip chart
- Tablet for administrative formalities (signing in, quiz, evaluation, etc)
- Each participant receives a training manual for each session including:
  - Training program summary
  - Course training material
  - Examples and/or practical cases

TRAINEE **COMMITMENTS**

- Quiet working environment (online sessions)
- Punctuality
- Involvement
- Honest feedback

KEY **FIGURES**

10

IN-COMPANY SESSIONS (2024-25)

12

NEW CLIENTS (2024-25)

29

CLIENT COMPANIES (2024-25)

239

TRAINEES (2024-25)

9.1

AVERAGE OVERALL APPRECIATION

LENGTH – CONTENT – DOCUMENTATION – ACTIVITIES – RECEPTION

TRAINEE **TESTIMONIALS**

VERY FRIENDLY AND QUALIFIED TRAINERS WITH LOTS OF INTERESTING FEEDBACK. THANK YOU AND WELL DONE TO THEM. THE PROPORTION OF THEORY, PRACTICE AND DEMONSTRATIONS IS GOOD. I CAME AWAY FROM THE COURSE VERY SATISFIED, WITH A LOT OF ROOM FOR IMPROVEMENT IN OUR RECALIBRATION SUBJECTS. THE COURSE MET MY EXPECTATIONS. IT CHALLENGED OUR APPROACH IN ORDER TO IMPROVE IT.

Alexis,
Finite Element Model Updating

MERCI POUR LES CONNAISSANCES APPORTÉES ET L'EXCELLENTE PÉDAGOGIE DES FORMATEURS

Aurélien,
Bruits d'origine électromagnétique

THE TRAINING WAS EXACTLY WHAT I EXPECTED. THE LEVEL IS ADAPTED TO THE PARTICIPANTS (INCLUDING ME). IT'S RATHER TECHNICAL, WITH VERY CONCRETE EXAMPLES. IN MY OPINION, THE COMBINATION OF THE 2 SPEAKERS' SKILLS IS HIGHLY RELEVANT. THE VISIT OF THE FACILITIES WAS ALSO VERY COMPLEMENTARY.

Sébastien,
Electronic & Vibrational Reliability

A VERY INTERESTING COURSE THAT PROVIDES THE BASICS, POINTS OF ATTENTION AND INTERPRETATION TOOLS. THANK YOU FOR THE WARM WELCOME AND FOR LEADING THE COURSE!

Simon,
Signal Processing - Acoustics & Vibration

COMPREHENSIVE TRAINING, STARTING WITH THE BASICS AND GRADUALLY MOVING ON TO MORE COMPLEX SUBJECTS. A PLEASANT TEAM, VERY AVAILABLE FOR ANY QUESTIONS OR EXAMPLES ASKED DURING THE COURSE.

Théo,
Reliability & Fatigue Qualification

WELL RUN, WELL ANIMATED, INTERESTING AND CONCRETE TRAINING.

Rémi,
Gear Dynamics

GENERAL
TRAINING COURSES

ONE ADDRESS
> **formation@vibratec.fr**

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

CLASSROOM TRAINING

ONLINE SESSIONS

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Signal processing acoustics & vibration	2 days	1 980 €	> 17-18/03/26 > 15-16/09/26	19

DURATION: 0.5 DAY

PRICE: 660 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

FUNDAMENTALS OF ACOUSTICS

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

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

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

TRAINERS

AURÉLIEN CLOIX

BENJAMIN MALARDIER

DURATION: 0.5 DAY

PRICE: 660 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

FUNDAMENTALS OF VIBRATION MEASUREMENT

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

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

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

TRAINERS

HUGO SIWIAK

BENJAMIN MALARDIER

DURATION: 0.5 DAY

PRICE: 660 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

FUNDAMENTALS OF SIGNAL PROCESSING

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

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

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

TRAINERS

HUGO SIWIAK

JEAN-BAPTISTE DUPONT, PhD

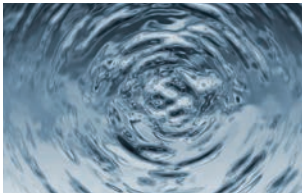
DURATION: 0.5 DAY

PRICE: 660 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

FUNDAMENTALS OF VIBRATION



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

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

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

TRAINERS

HUGO SIWIAK

BENJAMIN MALARDIER

DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

EXPERIMENTAL MODAL ANALYSIS

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.

PARTICIPANT PROFILE

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

PREREQUISITES

> Basic understanding of vibration issues

SESSIONS

> 11-12 March 2026
> 9-10 September 2026

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

TRAINERS

HUGO SIWIAK

BENJAMIN MALARDIER

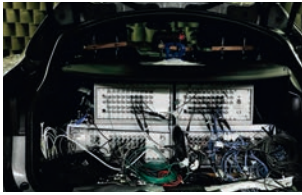
DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

EXPERIMENTAL VIBRATION ANALYSIS



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.

PARTICIPANT PROFILE

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

PREREQUISITES

> Awareness of vibration problems
> Basic understanding of vibration issues

SESSIONS

> 9-10 March 2026
> 7-8 September 2026

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

TRAINERS

HUGO SIWIAK

BENJAMIN MALARDIER

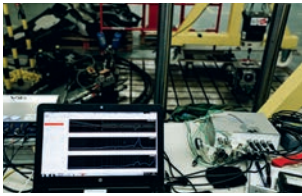
DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

GENERAL ACOUSTICS & VIBRATION



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.).

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

> 3-4 March 2026
> 1-2 September 2026

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

TRAINERS

HUGO SIWIAK

BENJAMIN MALARDIER

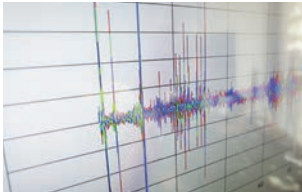
DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

SIGNAL PROCESSING ACOUSTICS & VIBRATION



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.

PARTICIPANT PROFILE

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

PREREQUISITES

> Basic knowledge of acoustics and vibration

SESSIONS

> 17-18 March 2026
> 15-16 September 2026

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

TRAINERS

HUGO SIWIAK

JEAN-BAPTISTE DUPONT, PhD

INDUSTRIAL SECTOR
TRAINING COURSES

ONE ADDRESS
> **formation@vibratec.fr**

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

CLASSROOM TRAINING

ONLINE SESSIONS

	DURATION	PRICE	SESSIONS	PAGE
The acoustic & mechanical challenges of railway maintenance	1 day	1 250 €	> 22/10/26	21
Vibration-induced pipework failure	3 days	2 530 €	> 3-5/11/26	22
Railway acoustics from understanding to solutions	2 days	1 980 €	> 14-15/04/26	23
Robust design of railway systems	2 days	1 980 €	> On request	24
Vibration impact of rail systems on the environment	2 days	1 980 €	> 29-30/09/26	25
Electrified Vehicle Acoustics	3 days	2 530 €	> 2-4/06/26 > 17-19/11/26	26

DURATION: 1 DAY

PRICE: 1 250 €

TRAINEES: 12 MAX

INDUSTRIAL SECTOR TRAINING COURSES

THE ACOUSTIC & MECHANICAL CHALLENGES OF RAIL MAINTENANCE

Maintenance is a key element of any railway operation (high-speed trains, freight, streetcar, metro). This training course provides an understanding of wheel/rail contact, the generation (and evolution) of faults and their impact on infrastructure and rolling stock, making it possible to implement conditional and predictive maintenance plans to optimize operating costs.

PARTICIPANT PROFILE

> Engineers and technicians involved in the maintenance, operation and management of networks or rolling stock
> People in charge of railway asset management (urban communities, etc)

PREREQUISITES

> Basic knowledge of mechanics and vibration
> High school math & science (calculus, physics, etc)

SESSIONS

> 22 October 2026

EVALUATION - AWARD

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

GOALS

> Understanding the physical phenomena of wheel-rail contacts
> Generation and evolution of wheel and track defects (wear, fatigue, spalling)
> Acoustic and vibratory impacts (main lines and urban applications)

PROGRAM

> Classification, qualification and quantification of defects
> Operational control tools
> Railway dynamics and safety
> Mechanical strength of structures and residual service life

TRAINERS

MARTIN RISSMANN

ROMAIN AUGEZ

DURATION: 3 DAYS

PRICE: 2 530 €

TRAINEES: 12 MAX

GENERAL TRAINING COURSES

VIBRATION-INDUCED PIPEWORK FAILURE

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.

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

> 3-5 November 2026

EVALUATION - AWARD

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

GOALS

> Identify vibration-related risks in piping systems
> Apply calculation methods to estimate the probability of failure (LOF)
> Present best practices for preventing piping vibration problems
> Master the basics of dynamic calculations applied to piping systems
> Understand the main techniques for measuring vibration in piping systems

PROGRAM

> Theoretical background
> Piping vibrations: causes and consequences
> Vibration sources (FIV, AIV)
> Standards and guidelines applicable to piping vibrations
> Instrumentation & basic measurements
> In-depth & predictive measurements
> Modeling & dynamic calculations
> Case studies

TRAINERS

LOÏC ANCIAN

RÉMI SALANON

ARMAND BRUN

DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

INDUSTRIAL SECTOR TRAINING COURSES

RAILWAY ACOUSTICS FROM UNDERSTANDING TO SOLUTIONS

Working in the railway industry imposes noise control, whether when designing new lines/equipment or modifying existing installations. This training course covers the full range of acoustic issues in the railway sector.

PARTICIPANT PROFILE

> Engineers and technicians involved in track design and construction, network and rolling stock maintenance, operation and management

PREREQUISITES

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

SESSIONS

> 14-15 April 2026

EVALUATION - AWARD

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

GOALS

> Dealing with the noise problems of existing or planned railroad lines
> Illustrate noise reduction measures in railway applications
> Understand issues related to main lines (TGV, freight) and urban applications (metro, tramways)

PROGRAM

> Basics of acoustics
> Current standards and regulations and future directions
> Wheel-rail contact
> Wheel-rail rolling noise
> Traction and auxiliary noise
> Curve squeal noise
> Aerodynamic noise

TRAINERS

MARTIN RISSMANN

RITA TUFANO, PhD

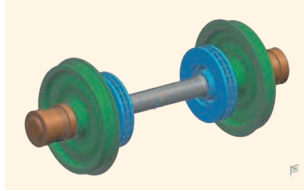
DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

INDUSTRIAL SECTOR TRAINING COURSES

ROBUST DESIGN OF RAILWAY SYSTEMS



Equipment reliability must be considered from the design stage; it is important to be familiar with the standards to be applied, the numerical methods for design and the experimental methods for validation. This training course addresses all of these aspects through concrete examples.

PARTICIPANT PROFILE

> Engineers and technicians involved in the design of components, equipment or rolling stock

PREREQUISITES

> Basic knowledge of vibration and mechanics
> Associates degree or equivalent

SESSIONS

> On request

EVALUATION - AWARD

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

GOALS

> Understand the phenomena behind reliability problems
> Knowledge of the main standards used to validate mechanical strength
> Differentiate numerical and experimental methods/tools to ensure robust design

PROGRAM

> Vibration generation due to bearing surface defects
> Reminder of the basics of vibration fatigue
> Iso-damage approaches
> Normative aspects: EN 12663 / EN 13749 / EN 61373
> Normative approaches based on calculations and tests

TRAINERS

LOÏC ANCIAN

JULIEN VERNAY

DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

INDUSTRIAL SECTOR TRAINING COURSES

VIBRATION IMPACT OF RAIL SYSTEMS ON THE ENVIRONMENT

The implementation of new railway projects in urban areas, or the modification of existing networks, can cause vibration problems for local residents. It is important to understand the phenomena of vibration propagation and to anticipate their treatment. This training course will present the problems encountered throughout railway projects, and the solutions available to remedy them.

PARTICIPANT PROFILE

> Engineers and technicians involved in track design and construction
> Environmental managers

PREREQUISITES

> Basic knowledge of vibration and acoustics
> Associates degree or equivalent

SESSIONS

> 29-30 September 2026

EVALUATION - AWARD

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

GOALS

> Understand the phenomena of vibration generation and propagation in the ground
> Use a project approach to anticipate and manage vibration problems as accurately as possible
> Evaluate the numerical and experimental methodologies used during studies

PROGRAM

> Basics of vibration
> Wheel-rail contact
> Theoretical aspects of vibration / ground-borne noise
> Current standards & regulations and future directions
> Project approach to ground-borne vibration control (design phase, construction phase, existing lines)
> Numerical tools in the design/diagnosis phase (source term, propagation)
> Experimental tools (track-laying efficiency characterization, building transfer functions, roughness passage measurements)

TRAINERS

ROMAIN AUGEZ

JULIEN VERNAY

DURATION: 3 DAYS

PRICE: 2 530 €

TRAINEES: 12 MAX

INDUSTRIAL SECTOR TRAINING COURSES

ELECTRIFIED VEHICLE ACOUSTICS.

You are confronted with acoustic problems in the automotive industry - particularly related to electric and hybrid motorizations. This course will provide you with an overview of the different noise sources (electric and hybrid powertrains, bearings, aero), their transfer to the vehicle, experimental and numerical methods for characterizing them, and noise mitigation options.

PARTICIPANT PROFILE

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

PREREQUISITES

> Notions in acoustics
> Basic knowledge of the automotive industry

SESSIONS

> 2-4 June 2026
> 17-19 November 2026

EVALUATION - AWARD

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

GOALS

> Understand how to integrate acoustics in the vehicle design process,
> Gain insight into numerical and experimental NVH methods,
> Understand the physical mechanisms behind noise in electrified powertrains, and gain insight into noise control methods.
> Understand other NVH issues: rolling noise, airborne noise, exterior noise.

PROGRAM

> Fundamentals of acoustics and vibration.
> Acoustics in the design process.
> Automotive sounds and sound perception.
> Experimental and numerical methods for quantifying E-powertrain NVH performance.
> E-powertrain noise (electric motor and gearbox).
> Rolling noise: physical mechanisms and transfer to the vehicle.
> Airborne noise: vehicle tuning methods.
> Exterior vehicle noise.

TRAINERS

HUGO SIWIAK

PASCAL BOUVET, PhD

AURÉLIEN CLOIX

ELECTRIFIED SUB-ASSEMBLIES EPOWERTRAIN COURSES

ONE ADDRESS
> **formation@vibratec.fr**

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

CLASSROOM TRAINING

ONLINE SESSIONS

	DURATION	PRICE	SESSIONS	PAGE
Gear dynamics	3 days	2 530 €	> 21-23/04/26 > 27-29/10/26	28
Noise from electro-magnetic excitation	3 days	2 530 €	> 9-11/06/26 > 1-3/12/26	29

DURATION: 3 DAYS

PRICE: 2 530 €

TRAINEES: 12 MAX

ELECTRIFIED SUB-ASSEMBLIES
EPOWERTRAIN COURSES

GEAR DYNAMICS

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.

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

> 21-23 April 2026
> 27-29 October 2026

EVALUATION - AWARD

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

GOALS

> 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)
> NVH design best practices (gear integration, robust gear optimization, etc.)
> Practical / Experimental work on transmission error measurement, and case studies

TRAINERS

JESSICA NEUFOND, PhD

ADRIEN PARPINEL

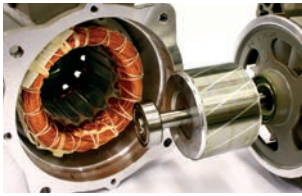
DURATION: 3 DAYS

PRICE: 2 530 €

TRAINEES: 12 MAX

ELECTRIFIED SUB-ASSEMBLIES
EPOWERTRAIN COURSES

NOISE FROM ELECTRO-MAGNETIC EXCITATION



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.

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

> 9-11 June 2026
> 1-3 December 2026

EVALUATION - AWARD

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

GOALS

> Understand the 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

TRAINERS

JEAN-BAPTISTE DUPONT, PhD

ADRIEN PARPINEL

ADVANCED TECHNIQUES

ONE ADDRESS
> **formation@vibratec.fr**

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

CLASSROOM TRAINING

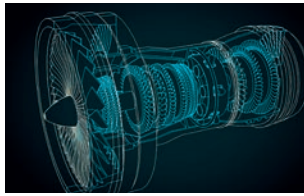
ONLINE SESSIONS

	DURATION	PRICE	SESSIONS	PAGE
Rotor dynamics	1 day	1 250 €	> 31/03/26 > 01/10/26	31
Transfer path analysis (TPA) & blocked force measurements	2.5 days	2 530 €	> 24-26/11/26	32
Finite element model updating	2 days	1 980 €	> 24-25/03/26 > 22-23/09/26	33
Electronic & vibrational reliability	2 days	2 150 €	> 5-6/05/26 > 20-21/10/26	34
AI for acoustics & vibration	2 days	2 150 €	> 27-28/05/26 > 13-14/10/26	35
Advanced rotating equipment vibration diagnosis	2 days	1 980 €	> On request	36
Reliability & fatigue qualification	3 days	2 530 €	> 6-8/10/26	37
Acoustic imagery	3 days	2 530 €	> 19-21/05/26 > 24-26/11/26	38

DURATION: 1 DAY

PRICE: 1 250 €

TRAINEES: 12 MAX



ADVANCED TECHNIQUES

ROTOR DYNAMICS

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

PARTICIPANT PROFILE

> Technicians with a good base in mechanics
> Mechanical Engineers

PREREQUISITES

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

SESSIONS

> 31 March 2026
> 1 October 2026

EVALUATION - AWARD

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

GOALS

> Master the fundamentals of rotor vibration phenomena: lateral analysis, torsional study, etc.
> Identify critical factors in rotor design and assembly
> Know how to analyze a rotor using API methods and write a compliance report
> Acquire the skills needed to communicate effectively with suppliers during sizing and expert appraisal phases
> Understand the main techniques for measuring rotor vibrations (torsion, bending)

PROGRAM

> Principles of vibration
> Theoretical basis of rotor dynamics - Gyroscopic effect
> Lateral analysis:
  - Modeling
  - Simulations and analysis (Campbell diagram, unbalance response, stability)
  - Bending vibration measurements
> Torsional analysis:
  - Modeling
  - Torsional vibration measurements
> Case studies

TRAINERS

RÉMI SALANON

STÉPHANE TEPPE

DURATION: 2.5 DAYS

PRICE: 2 530 €

TRAINEES: 12 MAX

ADVANCED TECHNIQUES

TRANSFER PATH ANALYSIS (TPA) & BLOCKED FORCE MEASUREMENTS

Do you want to optimize the interior acoustics of your vehicle (car, train, airplane, construction equipment, etc.)? You need to quantify the contribution of the different noise pathways (air- and ground-borne). This training course will give you a better understanding of the physical phenomena involved through theoretical reviews, case studies and practical work on a dedicated model.

PARTICIPANT PROFILE

> R&D engineers
> Project engineers
> Specialized engineers (NVH, mechanical, structural)
> Measurement technicians and engineers

PREREQUISITES

> Theoretical knowledge of acoustics and vibration
> Practical knowledge of acoustic and vibration measurement

SESSIONS

> 24-26 November 2026

EVALUATION - AWARD

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

GOALS

> Explain the key principles of TPA analysis
> Better understand the technical elements: matrix inversion, signal processing, calculation of blocking forces
> Give recommendations and precautions
> Apply the complete process on a didactic model

PROGRAM

> Noise sources and pathways in vehicles
> Theoretical review and TPA principles
> Inverse and reciprocal methods
> Definition of a strategy and methodology
> Choice of instrumentation (acoustics, vibration) in TPA
> Case studies
> Measurement of locked forces (feedback on ISO-20270)
> Practical work and exercises on a dedicated model
> Use of Siemens Testlab tools

TRAINERS

HUGO SIWIAK

AURÉLIEN CLOIX

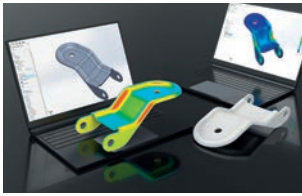
DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

ADVANCED TECHNIQUES

FINITE ELEMENT MODEL UPDATING



Product qualification using prototypes imposes advanced design at high costs; simulation enables testing using virtual prototypes. FE modeling covers a wide range of analyses, including solid dynamics, kinematics & acoustics. Recalibrating models with experimental data ensures digital model fidelity to carry out numerical tests incorporating realistic excitations.

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

> 24-25 March 2026
> 22-23 September 2026

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

TRAINERS

HUGO SIWIAK

STÉPHANE TEPPE

ADRIEN PARPINEL

DURATION: 2 DAYS

PRICE: 2 150 €

TRAINEES: 12 MAX

ADVANCED TECHNIQUES

ELECTRONIC & VIBRATIONAL RELIABILITY

Electronic systems are increasingly complex & integrated, sometimes operating 24/7 in harsh environmental conditions, which places considerable stress on their electronic components and systems. It is therefore important - during the development phase & during production - to ensure that equipment will meet its specifications in terms of operational service and reliability.

PARTICIPANT PROFILE

> Project Managers
> Test Technicians & Engineers, Laboratory & Design Office personnel
> Electronics Engineers facing vibration issues

PREREQUISITES

> Basic knowledge of mechanics & electronics

SESSIONS

> 5-6 May 2026
> 20-21 October 2026

EVALUATION - AWARD

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

GOALS

> 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

TRAINERS

LOÏC ANCIAN

SERMA

DURATION: 2 DAYS

PRICE: 2 150 €

TRAINEES: 12 MAX

ADVANCED TECHNIQUES

AI FOR ACOUSTICS & VIBRATION

Artificial intelligence (AI) is changing the world and the way we work, but for many people it remains a mystery. You'd like to know how it can help you in your acoustics and vibration business, particularly to detect faults in mechanical systems, identify sounds or improve the NVH design and optimization processes of your products.

PARTICIPANT PROFILE

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

PREREQUISITES

> Basic knowledge of acoustics
> Basic knowledge of vibration

SESSIONS

> 27-28 May 2026
> 13-14 October 2026

EVALUATION - AWARD

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

GOALS

> Understand key AI and machine learning terms to communicate effectively with data scientists
> Know the stages of a data science project
> Explore AI applications in acoustics & vibration
> Know how to transform acoustic & vibration data for machine learning
> Understand the operation and application of the main machine learning algorithms
> Master techniques for training, evaluating and industrially implementing machine learning models.

PROGRAM

> Theoretical basis and definition of terms
> Data visualization and analysis methods
> Calculation of indicators
> Principles and specifics of the main machine learning models
> Practical implementation: data preparation, training and model evaluation
> Industrial deployment of a machine learning model
> Application cases in acoustics and vibrations

TRAINERS

ANTOINE PURIER

BAPTISTE COULANGE

JEAN-BAPTISTE DUPONT, PhD

DURATION: 2 DAYS

PRICE: 1 980 €

TRAINEES: 12 MAX

ADVANCED TECHNIQUES

ADVANCED ROTATING EQUIPMENT VIBRATION DIAGNOSIS

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.

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

> On request

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
> Exercices on an industrial model

TRAINERS

HUGO SIWIAK

BENJAMIN MALARDIER

HERVÉ GOUTAGNY

DURATION: 3 DAYS

PRICE: 2 530 €

TRAINEES: 12 MAX

ADVANCED TECHNIQUES

RELIABILITY & FATIGUE QUALIFICATION

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.

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

> 6-8 October 2026

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

TRAINERS

LOÏC ANCIAN

JULIEN VERNAY

DURATION: 3 DAYS

PRICE: 2 530 €

TRAINEES: 12 MAX

ADVANCED TECHNIQUES

ACOUSTIC IMAGERY

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.

PARTICIPANT PROFILE

> Engineers, students & technical managers

PREREQUISITES

> Basic knowledge of acoustics
> Knowledge of signal processing

SESSIONS

> 19-21 May 2026
> 24-26 November 2026

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

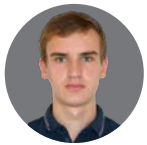
PROGRAM

> 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

TRAINERS

AURÉLIEN CLOIX

SÉBASTIEN PAILLASSEUR, PhD



JOANNES CHAMBON

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