



Brüel & Kjær Vibro
a spectris company



Certified partner for Vibration
Analyst trainings CAT I-IV



Condition Monitoring Training and Seminars

Vibration Analyst
Machinery Diagnostics
Product and Asset Management

Customized courses for all expectations and levels of expertise

About Brüel & Kjær Vibro Training



Our instructors and service engineers are ISO 18436-2 certified to provide world-class trainings for system and diagnostic techniques. Workshops are designed for maximum online 'live' interaction with a rotor kit.

For more information on our training proposal tailored to your needs, please give us a call or write to:

+ 49 6151 428 1124
training@bkvibro.com

or

+ 49 6151 428 1424
service@bkvibro.com

or

+ 1 775 552 3110
setpoint@bkvibro.com

We are a certified partner of the Mobius Institute® to offer ISO 18436-2 vibration analysis trainings and certification, Category I to IV.



An effective condition monitoring strategy can significantly reduce the life cycle costs of your production machinery, but this requires an investment in monitoring technology and expertise. Brüel & Kjær Vibro provides a complete monitoring solution that includes all of this. As specialists can be difficult and expensive to find, training plays an important role in this solution.

We provide training for all levels and purposes in machine monitoring, from novice to expert. Our aim is to build up the competence of each participant, so they can confidently and successfully perform their expected monitoring and diagnostic tasks. We offer three categories of training; Vibration Analyst Certification, Monitoring and Diagnostics, and System Operation and Maintenance.

Vibration Analyst

We are an accredited partner of the Mobius Institute® to deliver vibration analyst training and certification as per ISO 18436-2, from basic level (CAT I), intermediate (CAT II), to advanced (CAT III) and master (CAT IV). If you are interested in a course and certification, please contact us.

Machinery Diagnostics

On top or complementary to the above, competence may be tailored to the solution applied on site to get the best from it. Machine uptime and increased plant reliability is achieved by early fault detection and diagnosis, which in return are based on monitoring principles, physics, vibration, balancing, rotor-dynamics and thermo-dynamics analysis. We offer various courses and duration in these areas, customized to the application and customer's requirements, which allows you to take full benefits from your investment and asset management.

System Operation and Maintenance

To optimally utilize a system, increase its reliability and maximize the value from it, we provide training in all aspects of installation, configuration, operation, and maintenance. From sensors, wiring, monitoring hardware, protection and alarming, data acquisition software, external connections, user interface, optimization, back-ups, upgrades and administration.

Our Training Portfolio

Ref.	Title and description	Course duration	Prerequisites to the training
Machine Monitoring and Diagnostics Courses			
ISO 18436-2 Vibration analyst course and certification			
CAT I	Basic <ul style="list-style-type: none"> Starting place for new vibration analysts For personnel collecting vibration data For those who want a better understanding of vibration monitoring and analysis 	3.5 days	None
CAT II	Intermediate <ul style="list-style-type: none"> For personnel with at least 18 months of experience for certification For those who want to improve their monitoring and analysis skills How to test machines, diagnose faults accurately, perform special diagnostic tests and correct certain faults 	4.5 days	None or CAT I
CAT III	Advanced <ul style="list-style-type: none"> For personnel with at least 36 months of experience for certification In-depth learning of diagnostic techniques to determine faults accurately and make precise recommendations to solve machinery malfunctions 	4.5 days	CAT II
CAT IV	Master: Highest level of certification <ul style="list-style-type: none"> For personnel with at least 60 months of experience for certification In-depth study of advanced signal processing, cross-channel measurements, system dynamics, resonance testing, orbit and centerline plot analysis, rotor dynamics, journal bearings analysis and flexible rotor balancing 	45 hrs of online training + 4.5 days of classroom course	CAT III
Condition Monitoring			
GV 1	Basic safety and condition monitoring <ul style="list-style-type: none"> Techniques and tools, off-line and on-line monitoring systems Fundamentals of machine behaviour Best practise for taking measurements 	1 day	None
GV 2	General vibration measurement <ul style="list-style-type: none"> Why use vibration measurements? Definition, set up and execution of measurements for protection and fault detection Basic diagnosis; causes, effects and indicators for typical machine malfunctions 	2 days	GV 1 or CAT I
GV 3	Advanced vibration monitoring and diagnosis <ul style="list-style-type: none"> Definition and setup of measurements, fault detection Complex machinery faults, interpretation of spectra Root cause analysis and service recommendations 	3 days	GV 2 or CAT II
Turbomachinery and large fluid-film bearing machines			
RV 1	Basic rotor dynamics <ul style="list-style-type: none"> Definitions and theory Modification of machines for mitigating problems Rotor diagnostics by vibration analysis 	2 days	GV 2 or CAT II
RV 2	Machinery Diagnosis (Advanced) <ul style="list-style-type: none"> Fluid-film bearings and turbomachinery analysis techniques, fundamental rotor response, stiffness, instabilities Interpretation of waveform, phase, orbit, polar and bode, vector, shaft centerline and full and half spectrum plots Root cause analysis and recommendations exercise 	3 days	GV 3 / RV 1 or CAT III
RV 3	Advanced Balancing Seminar <ul style="list-style-type: none"> Rigid and flexible rotor best practice, vector review, balance response and recognizing resonance. Mode shape, rotor non-linearity, thermal vector, field consideration, with balancing workshop. 	3 days	GV 3 / RV 2 or CAT III
RV 4	Basic thermodynamics and performance monitoring <ul style="list-style-type: none"> Maximizing machine profitability, environmental compliance and efficiency, reporting, control theory, performance models, combined cycle thermodynamics. Payback on managing performance, evaluating gas and steam turbines condition, centrifugal compressors using thermodynamic calculations and plots, PV plots interpretation 	2 days	Sound mathematical understanding

Ref.	Title and description	Course duration	Prerequisites to the training
System Operation and Maintenance Courses			
Vibration Sensors (Displacement, Velocity, Acceleration) and Transmitters			
SE 1	Sensor selection and location, principles and use, applications, commissioning, trouble-shooting	1 day	None
Compact Monitors - VIBROCONTROL 8xx, 9xx, 1000, 1100, 1500, 6000CM®, 18xx			
CM 1	<ul style="list-style-type: none"> • Functionality, installation, operation, setup and service • Commissioning, measurement chain loop test 	1 day	None
Off-Line Portable Handheld Measurement and Diagnosis (VIBROPORT 80 or VIBROTEST 80)			
HD 1	VIBROPORT 80 or VIBROTEST 80: Basic operation	1 day	None
HD 2	Balancing with VIBROPORT 80 or VIBROTEST 80	1 day	GV 1 or CAT I
HD 3	Data collection (Report & Route Manager Software) with VIBROPORT 80 or VIBROTEST 80 <ul style="list-style-type: none"> • Configuration of a route, displaying alarms and data • Displaying various plot types for machine condition analysis 	2 days	GV 2 or CAT II
HD 4	Advanced analysis (Report & Route Manager Software) with VIBROPORT 80 or VIBROTEST 80	1 day	GV 3 or CAT III
VDAU-6000			
VD 1	Operation and setup <ul style="list-style-type: none"> • Diagnostic Workstation and Event-Master, system configuration, database import/export 	2 days	GV 1 or CAT I
VD 2	Advanced analysis <ul style="list-style-type: none"> • Advanced post-processing diagnosis techniques, (FFT, envelope, cepstrum, rotor dynamics, transients). 	2 days	GV 3 or CAT III
Machine Protection Systems (MPS) - VC-6000® or VC-8000®			
VC 1	Rack and modules functionality, installation and commissioning, servicing, wiring (front-end, Modbus, DCS, IPS etc.), settings and configuration with software	1 day	None
Condition Monitoring Systems (CMS) - Compass 6000® or SETPOINT®			
CP 1	Compass 6000® user <ul style="list-style-type: none"> • System overview, navigation in the Monitoring Workstation, retrieve and display various plots; acknowledge alarms and events in the logbook 	1 day	GV 1 or CAT I
CP 2	Compass 6000® advanced user and setup <ul style="list-style-type: none"> • Basic and advanced setup of the Compass 6000® user-interface, operation of software in setup mode 	2 days	GV 2 or CAT II or CP 1
CP 3	Compass 6000® system administration <ul style="list-style-type: none"> • Maintenance and server management, LAN, Modbus, OPC, CMM, NTP Time sync, system upgrades and trouble-shooting; optimum performance and data reduction 	3 days	CP 2
PM 4	Compass 6000® basic Performance Monitoring <ul style="list-style-type: none"> • Performance Monitoring theory, key indicators and implementation in Compass 6000®, how to navigate through the system, interpret the calculations and perform the analysis 	3 days	RV4 + CP1
PM 7	Compass 6000® Performance Monitoring Hands-on <ul style="list-style-type: none"> • Data acquisition, calculation logics, analysis displays and plots; gain understanding and confidence in making modifications and add-ons through hands-on exercises 	3 days	RV4, CP1 + PM4
SP 8	SETPOINT® CMS user <ul style="list-style-type: none"> • System fundamentals, user-interface and navigation, basic machinery diagnostics, retrieve and display data in various plot formats 	1 day	GV 1 or CAT I

Class sizes: The number of students per class is limited to 4, 6, or 8 participants depending on the course.

Training Details and Conditions



Course locations

Main offices: Darmstadt (Germany), Nærum (Denmark) or Minden (Nevada/USA).

We also offer courses on customer site or at our local representative's premise.

ISO 18436-2 Vibration Analyst CAT I-IV public courses by Brüel & Kjær Vibro are held in Nærum (Denmark).

We may also organize private (certified and non-certified) courses on our or our representatives' premises worldwide, and upon request on customer site (this is not available in the USA, Australia and New Zealand).



Enrolment

Courses are arranged upon request and agreement on scope, fixed dates and price.

Please contact training@bkvibro.com no later than 6 weeks prior to the agreed course date.

Please indicate number and name of course (i.e. SP8 SETPOINT® CMS user).



Price

Will be quoted based on the standard description above.

Changes in scope must be agreed prior to planning the course.



Prices include (standard)

Course documentation, refreshments and lunch.



Not included (standard)

Travel, transportation to/from hotel, accommodation, breakfast and dinner, sightseeing, entertainment, etc.



Payment

Payment in advance upon receipt of invoice.



Cancellation

For cancellations, the following terms apply:

- Up to 6 weeks prior to the course – free of charge
- 4 weeks prior to the course – 25% of course fee will be charged.
- 2 weeks prior to the course – 50% of course fee will be charged.
- Cancellation later than 2 weeks prior to the course -100% of course fee will be charged.
- If the course includes eLearning material, no cancellation and refunds are possible after the student logs in.

Brüel & Kjær Vibro reserves the cancellation right due to insufficient enrolment.



Hotel

Reservations at the participant's cost can be arranged upon request.

In addition to the above, our [Standard Terms and Conditions](http://www.bkvibro.com) as specified on www.bkvibro.com apply.

Contact

Training Center

Inquiries about training
Phone: +49 6151 428 1124
E-Mail: training@bkvibro.com

Services

Inquiries about adding value to your business, on-site or remote diagnostics, consultancy, settings, monitoring strategy, commissioning, maintenance, balancing
Phone: +49 6151 428 1424
E-Mail: service@bkvibro.com

Hotline

Technical inquiries concerning your equipment
Phone: +49 6151 428 1400
E-Mail: support@bkvibro.com

Repairs and Calibration

Inquiries about repairs, calibrations, rental equipment
Phone: +49 6151 428-1327/-1328
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