

COURSE OVERVIEW RE0300-4D
Bently Nevada 3500 Operation & Maintenance

Course Title

Bently Nevada 3500 Operation & Maintenance

Course Date/Venue

October 14-17, 2024/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

RE0300-4D

Course Duration/Credits

Four days/2.4 CEUs/24 PDHs



Course Description



This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.



This course is designed to provide participants with a detailed and up-to-date overview of the operation and maintenance of Bentley Nevada 3500. It covers the fundamentals of vibration; the displacement, velocity and acceleration vibration transducers; the optical sensors to obtain timing and phase reference data to perform balancing and diagnostics on rotating machinery; the monitoring system components and layout; the rack configuration, communications and operator display software; and the Bentley Nevada measurement capabilities.



The course will also discuss the various modules descriptions that include power supply module, rack interface module, keyphasor module, etc; the system software packages and data acquisition software; the configuration of radial vibration channel and axial vibration channel; the electronic overspeed detection system, temperature monitors, process variable monitor and dynamic pressure monitor; the relay operation; the relay card configuration; the common pitfalls; and the troubleshooting and maintenance of the system.

Further, the course will also provide adequate knowledge and skills required how to configure the various monitoring modules that are used in the plant and explain how various configuration parameters affect the quality of your information. Trainer will also demonstrate how to interface the 3500 system with various plant systems, and show troubleshooting techniques as well.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on operation and maintenance of Bentley Nevada 3500
- Explain the fundamentals of vibration and differentiate displacement, velocity and acceleration vibration transducers
- Utilize optical sensors to obtain timing and phase reference data to perform balancing and diagnostics on rotating machinery
- Determine monitoring system components and layout, rack configuration, communications and operator display software as well as Bentley Nevada measurement capabilities
- Identify the various modules descriptions that include power supply module, rack interface module, keyphasor module, etc
- Discuss system software packages and data acquisition software and configure radial vibration channel as well as axial vibration channel
- Describe electronic overspeed detection system, temperature monitors, process variable monitor and dynamic pressure monitor
- Employ relay operation, configure relay card, recognize common pitfalls and troubleshoot and maintain the system

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Howard Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend

This course covers systematic techniques and methodologies on the operation and maintenance of Bentley Nevada 3500 Series On-Line Condition Monitoring System for engineers, vibration analysts, maintenance staff, I&C technical staff and condition monitoring technicians to provide adequate knowledge and skill required for installation.

Course Fee


US\$ 4,500 per Delegate + **VAT**. This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -


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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **2.4 CEUs** (Continuing Education Units) or **24 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council for Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Dimitry Rovas, CEng, MSc, PMI-PMP, SMRP-CMRP is a **Senior Mechanical & Maintenance Engineer** with extensive industrial experience in **Oil, Gas, Power and Utilities** industries. His expertise includes **Boiler** Inspection & Maintenance, **Boiler** Systems, **Boiler** instrumentation & Controls, **Boiler** Start-up & Shutdown, **Boiler** Operation & Steam System Management, **Boiler** Water Chemistry & Treatment, **Boiler** Efficiency & Waste Heat Recovery, **Boiler** Inspection & Testing, **Boiler** Maintenance, **Boiler** Troubleshooting & Safety, **Boiler** Emissions & Pollution Control, **Combustion** Analysis & Tuning Procedures, **Water Treatment**

Technology, Heat Recovery Steam Generating (HRSG), **Impulse Tube** Installation & Inspection, **Parker Compression Fittings, Pipes & Fittings, PSV Inspection, Root Cause Failure Analysis, Tank Design & Engineering, Tank Shell, Tanks & Tank Farms, Vacuum Tanks, Gas Turbine** Operating & Maintenance, **Diesel Engine, Engine Cycles, Governors & Maintenance, Crankshafts & Maintenance, Lubrication** System Troubleshooting & Maintenance, **Engines/Drivers, Motor** Failure Analysis & Testing, **Motor** Predictive Maintenance, **Engine** Construction & Maintenance, **HP Fuel Pumps & Maintenance, Fired Equipment** Maintenance, **Combustion Techniques, Process Heaters, Glass Reinforced Epoxy (GRE), Glass Reinforced Pipes (GRP), Glass Reinforced Vent (GRV), Mechanical Pipe Fittings, Flange Joint Assembly, Adhesive Bond Lamination, Butt Jointing, Joint & Spool Production, Isometric Drawings, Flange Assembly Method, Fabrication & Jointing, Jointing & Spool Fabrication, CAESAR, Pipe Stress Analysis, Pipe Cuttings, Flange Bolt Tightening** Sequence, **Hydro Testing, Pump** Technology, **Fundamentals of Pumps, Pump** Selection & Installation, **Centrifugal Pumps & Troubleshooting, Reciprocating & Centrifugal Compressors, Screw Compressor, Compressor** Control & Protection, **Gas & Steam Turbines, Turbine** Operations, **Gas Turbine** Technology, **Valves, Process Control Valves, Bearings & Lubrication, Advanced Machinery Dynamics, Rubber Compounding, Elastomers, Thermoplastic, Industrial Rubber Products, Rubber** Manufacturing Systems, **Heat Transfer, Vulcanization Methods, Process Plant Shutdown & Turnaround, Professional Maintenance Planner, Advanced Maintenance Management, Maintenance Optimization & Best Practices, Maintenance Auditing & Benchmarking, Material Cataloguing, Reliability Management, Rotating Equipment, Energy Conservation, Energy Loss Management** in Electricity Distribution Systems, **Energy Saving, Thermal Power Plant** Management, **Thermal Power Plant** Operation & Maintenance, **Heat Transfer, Machine Design, Fluid Mechanics, Heating & Cooling Systems, Heat Insulation Systems, Heat Exchanger & Cooling Towers, Mechanical Erection, Heavy Rotating Equipment, Material Unloading & Storage, Commissioning & Start-Up.** He is currently the **Project Manager** wherein he is managing, directing and controlling all activities and functions associated with the domestic heating/cooling facilities projects.

During his life career, Mr. Rovas has gained his practical and field experience through his various significant positions and dedication as the **EPC Project Manager, Maintenance Manager, Mechanical Engineer, Field Engineer, Preventive Maintenance Engineer, Lead Rotating Equipment Commissioning Engineer, Construction Commissioning Engineer, Offshore Lead Maintenance Engineer, Researcher, Instructor/Trainer, Telecom Consultant and Consultant** from various companies such as the Mytilineos Aluminium Group, Podaras Engineering Studies, Metka and Diadikasia, S.A., **Hellenic Petroleum Oil Refinery** and COSMOTE.

Mr. Rovas has **Master's** degrees in **Energy Production & Management** and **Mechanical Engineering** from the **National Technical University of Athens (NTUA), Greece.** Further, he is a **Certified Instructor/Trainer, a Certified Maintenance and Reliability Professional (CMRP)** from the Society of Maintenance & Reliability Professionals (SMRP), **Certified Project Management Professional (PMI-PMP), Certified Six Sigma Black Belt, Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM), Certified Construction Projects Contractor, Certified Energy Auditor** and a **Chartered Engineer.** Moreover, he is an active member of **American Society for Quality, Project Management Institute (PMI), Body of Certified Energy Auditors** and **Technical Chamber of Greece.** He has further received various recognition and awards and delivered numerous trainings, seminars, courses, workshops and conferences internationally.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Monday, 14th of October 2024

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Vibration Fundamentals
0930 – 0945	Break
0945 – 1100	Displacement (Proximity) Vibration Transducers
1100 – 1230	Velocity (Moving Coil & Piezoelectric) Vibration Transducers
1230 – 1245	Break
1245 – 1300	Acceleration (Piezoelectric) Vibration Transducers
1300 – 1330	Optical Phase Reference Sensors
1330 - 1420	3500 Monitoring System Components & Layout Transducers • 3500 Rack • 3500 Software • Computers
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Tuesday, 15th of October 2024

0730 – 0900	Rack Configuration
0900 – 0915	Break
0915 – 1100	Communications & Operator Display Software Communication Gateway • System Display
1100 – 1230	Bentley Nevada 3500 Measurement Capabilities
1230 – 1245	Break
1245 – 1330	Module Descriptions Power Supply Module • Rack Interface Module • Keyphasor Module • Channel Relay Module • TMR Relay Module • Proximitor Monitor • Proximitor/Seismic Monitor Module • Aeroderivative Monitor • Position Monitor Module • Hydro Monitor Module • Tachometer Module
1330-1420	System Software Packages & Data Acquisition Software Rack Configuration Software • Operator Display Software
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3: Wednesday, 16th of October 2024

0730-0900	Configuration of Radial Vibration Channel Transducer Field Installation • Range • Set Points • Key Phasor • Alert Latching/Non Latching
0900-1000	Configuration of Axial Vibration Channel Transducer Field Installation • Towards/Away • Zero Position • Range • Set Points • Key Phasor • Alert Latching/Non Latching • Time Delay • 1X, 2X and not 1X
1000-1015	Break

1015-1145	Electronic Overspeed Detection System
1145 - 1230	Temperature Monitors
1230- 1245	<i>Break</i>
1245 - 1330	Process Variable Monitor
1330 - 1420	Dynamic Pressure Monitor
1420 - 1430	Recap
1430	<i>Lunch & End of Day Three</i>

Day 4: Thursday, 17th of October 2024

0730 - 0930	Relay Operation <i>Logic • Configuration</i>
0930 - 0945	<i>Break</i>
0945 - 1100	Configuration of Relay Card <i>Identify the XTs & VTs Required for Alarms & Danger • Type of Voting</i>
1100 - 1215	Common Pitfalls
1215 - 1230	<i>Break</i>
1230 - 1345	System Troubleshooting & Maintenance
1345 - 1400	Course Conclusion
1400 - 1415	POST-TEST
1415 - 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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