COURSE OVERVIEW RE0300
Bently Nevada 3500 Operation & Maintenance

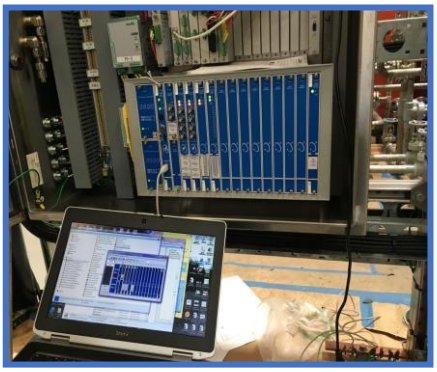
Course Title
Bently Nevada 3500 Operation & Maintenance

Course Date/Venue
July 06-10, 2025/Meeting Plus 5, City Centre Rotana, Doha, Qatar

Course Reference
RE0300

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

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 "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course covers systematic techniques and methodologies on the operation and maintenance of Bently 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.

Accommodation

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

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: -

- 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.

- 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 **3.0 CEUs** (Continuing Education Units) or **30 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.

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:

(1) Dr. Ahmed El-Sayed, PhD, MSc, BSc, is a **Senior Electromechanical Engineer** with over **30 years** of extensive experience in **Oil**, **Gas**, **Refinery**, **Petrochemical**, **Power** and **Utilities** industries. He specializes in **Bently Nevada 3500** Operation, Troubleshooting & Maintenance, **Pumps**, **Valves**, **Boilers**, **Pressure Vessels**, **Heat Recovery Steam Generators** (**HRSG**), **Bearings**, **Compressors**, **Motors**, **Turbines**, **Actuators**, **Carbon Footprint**, **Energy Efficiency**, **Power Plant Performance & Efficiency**, **P&ID**, **Engineering Drawing**, **Codes & Standards** and **Hydraulic Systems**. He is currently the **Systems Control Manager** of **Siemens** where he is in-charge of Security & Control of power generation systems and he further takes part in the DCS implementation and commissioning.

During his career life, Dr. Ahmed has been actively involved in a variety of industrial activities including **Maintenance Planning & Scheduling**, **Reliability & Maintenance Management** and **Plant Shutdown & Turnarounds**. Moreover, he is an **authority** in vibration analysis, mechanical failure analysis, accident reconstruction, shock testing, measurement, analysis, calibration, ESS, HALT and HASS.

Dr. Ahmed is well-versed and conversant in the designed and applied automatic control systems using analogy instrumentation and computer-based control systems for a variety of industries with both analogue and discreet logic automatic control and implementation. Likewise, he is in-charge with troubleshooting and PID loop tuning of simple to complex systems installed and is involved in the design, implementation and documentation of emergency shut-down and safety instrumentation systems for a various processes especially for **hydraulics**, **steam turbines**, **gas turbines**, **boilers**, **heat recovery steam generators** and **large pumping systems**.

Dr. Ahmed has **PhD**, **Master** & **Bachelor** degrees in **Electromechanical and Instrumentation Engineering** from the **University of Wisconsin** (**USA**). Further, he is a **Certified Instructor/Trainer** and has **numerous papers** published internationally in the areas of **superconductive magnetic energy storage** (SMES), SMES role in power systems, power system blackout analysis, intelligent load shedding techniques for preventing power system blackouts and intelligent control of **boilers**, **heat exchangers** and **pumping systems**.

AND,

(2) Mr. Dimitry Rovas, CEng, MSc, PMI-PMP, SMRP-CMRP, is a **Senior Maintenance Engineer** with extensive industrial experience in **Oil**, **Gas**, **Power** and **Utilities** industries. His expertise includes **Bently Nevada 3500** Operation & Maintenance, **Process Plant** Shutdown & Turnaround, **Maintenance** Optimization & Best Practices, **Maintenance** Auditing & Benchmarking, **Reliability** Management, **Reliability Centered Maintenance** Principles & Application, **Machinery Lubrication**, **Maintenance Planning & Scheduling**, **Coupling & Shaft Alignment** Techniques, **Maintenance** Management & Cost Control, **Preventive & Predictive Maintenance**, **Effective Reliability** Maintenance & Superior Maintenance Strategies, **Integrity & Asset** Management, Reliability, Availability & Maintainability (**RAM**), Total Plant Reliability Centered Maintenance, **Turnaround & Outages**, **Process Plant** Shutdown, Turnaround & Troubleshooting, **Shutdown & Turnaround** Management, **Integrity & Asset** Management, **Maintenance Management** Best Practices, **Material Cataloguing**, **Maintenance** Planning & Scheduling, Effective **Reliability Maintenance**, **Maintenance Contracting & Outsourcing**, **Maintenance Inventory**, **Materials** Management, **Mechanical & Rotating Equipment** Troubleshooting & Maintenance, **Rotating Equipment Reliability** Optimization, Computerized Maintenance Management System (**CMMS**), **Material Cataloguing & Specifications**, **Rotating Equipment** Maintenance & Troubleshooting, **Pump** Technology, **Pump** Selection & Installation, **Reciprocating & Centrifugal Compressors**, **Gas & Steam Turbines**, **Turbine** Operations, **Valves**, **Bearings & Lubrication**, Rubber Compounding, Elastomers, Thermoplastic, Industrial Rubber Products, Rubber Manufacturing Systems, **Heat Transfer**, **Vulcanization Methods**, **Energy Conservation**, **Energy Loss** Management, **Energy Saving**, **Thermal Power Plant** Management, **Cogeneration Power Plant** Installation & Commissioning, **Auxiliary Steam Boilers** Troubleshooting, **Piping Racks** (Steel Structure, Valves, Pipe Supports) Commissioning, **Firefighting** Systems, **Steel & Welded Tanks**, Aluminium Logistics Facilities (Cranes, Laydown Areas, Port Facilities, etc), Equipment Heavy Lifting, Long Term Storage of Equipment, **Heat Transfer**, **Fluid Mechanics**, **Heating & Cooling** Systems, **Heat Insulation** Systems, **Heat Exchanger & Cooling Towers**, **Mechanical Erection** and **Heavy Rotating Equipment**. 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 is a **Chartered Engineer** of the **Technical Chamber** of **Greece**. Further, he has **Master** degrees in **Mechanical Engineering** and **Energy Production & Management** from the **National Technical University of Athens**. Moreover, he is a **Certified Instructor/Trainer**, a **Certified Maintenance and Reliability Professional** (**CMRP**) from the Society of Maintenance & Reliability Professionals (**SMRP**), a **Certified Project Management Professional** (**PMP**), a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and a **Certified Six Sigma Black Belt**. He is an active member of Project Management Institute (**PMI**), Technical Chamber of Greece and Body of Certified Energy Auditors and has further delivered numerous trainings, seminars, courses, workshops and conferences internationally.

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 Fee

US$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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: ***Sunday, 06th of July 2025***

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 – 1420	***Acceleration (Piezoelectric) Vibration Transducers***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Monday, 07th of July 2025***

0730 – 0900	***Optical Phase Reference Sensors***
0900 – 0915	*Break*
0915 – 1100	***3500 Monitoring System Components & Layout*** *Transducers ● 3500 Rack ● 3500 Software ● Computers*
1100 – 1230	***Rack Configuration***
1230 – 1245	*Break*
1245 – 1420	***Communications & Operator Display Software*** *Communication Gateway ● System Display*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3: Tuesday, 08th of July 2025

0730 – 0930	***Bentley Nevada 3500 Measurement Capabilities***
0930 – 0945	*Break*
0945 – 1100	***Module Descriptions*** *Power Supply Module ● Rack Interface Module ● Keyphasor Module ● Channel Relay Module ● TMR Relay Module ● Proximitor Monitor*
1100 – 1215	***Module Descriptions (cont'd)*** *Proximitor/Seismic Monitor Module ● Aeroderivative Monitor ● Position Monitor Module ● Hydro Monitor Module ● Tachometer Module*
1215 – 1230	*Break*
1230 – 1330	***System Software Packages & Data Acquisition Software*** *Rack Configuration Software ● Operator Display Software*
1330 – 1420	***Configuration of Radial Vibration Channel*** *Transducer Field Installation ● Range ● Set Points ● Key Phasor ● Alert Latching/Non Latching*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4: Wednesday, 09th of July 2025

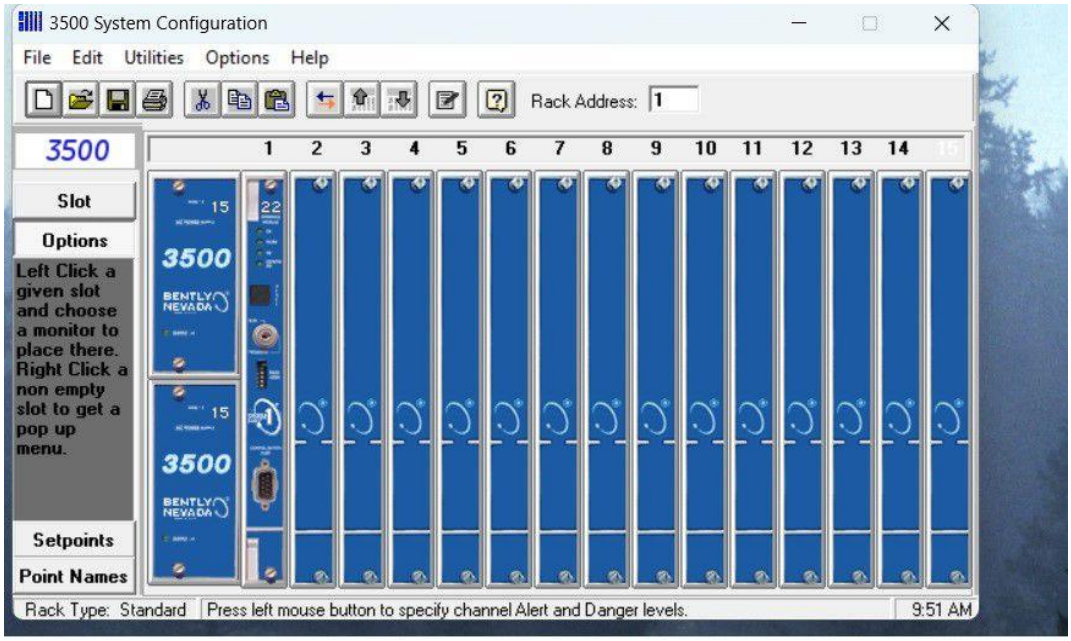
0730 – 0930	***Configuration of Axial Vibration Channel*** *Transducer Field Installation ● Towards/Away ● Zero Position ● Range ● Set Points ● Key Phasor ● Alert Latching/Non Latching ● Time Delay ● 1X, 2X and not 1X*
0930 – 0945	*Break*
0945 – 1100	***Electronic Overspeed Detection System***
1100 – 1215	***Temperature Monitors***
1215 – 1230	*Break*
1230 – 1330	***Process Variable Monitor***
1330 – 1430	***Dynamic Pressure Monitor***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5: Thursday, 10th of July 2025

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

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulator "3500 System Configuration" and "iLearnVibration".



3500 System Configuration

iLearnVibration

Course Coordinator

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