COURSE OVERVIEW FE0059

ASME B31.3, API 579, API 580, API 581, API 570, & API 571:

RBI, FFS, Vibration Analysis & Repair of Piping Systems & Pipelines

Course Title

ASME B31.3, API 579, API 580, API 581, API 570, & API 571: *RBI, FFS, Vibration Analysis & Repair of Piping Systems & Pipelines*

Course Reference

FE0059

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	January 12-16, 2025	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
2	April 14-18, 2025	Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
3	July 06-10, 2025	Al Azziya Hall, The Proud Hotel Al Khobar, KSA
4	October 05-09, 2025	Club B, Ramada Plaza By Wyndham Istanbul City Center, Istanbul, Turkey

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 ASME B31.3, API 580, API 581, API 579, API 570: RBI, FFS, Vibration Analysis and Repair of Piping Systems and Pipelines. It covers the ASME B31.3 (process piping) and its significance in the industry; the key differences between ASME B31.3 and other relevant standards; the fundamentals of risk-based inspection (RBI), risk analysis methods and advanced RBI techniques; the FFS assessment as per API 579-1/ASME FFS-1; and the evaluation of the integrity of equipment for continued service under current or modified operating conditions.

During this interactive course, participants will learn the FFS assessment techniques and the detailed methodologies for assessing different types of damage mechanisms; the legal and safety implications of the standards including the role of regulatory bodies and compliance with international standards; the fundamentals of vibration in piping systems and the techniques for measuring, analyzing and mitigating vibration; the API 570 and its application in the inspection, repair, alteration and rerating of in-service piping systems; and the requirements and guidelines for the repair and alteration of piping systems as per ASME PCC-2 and other relevant standards.

Course Objectives

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

- Apply and gain an in-depth knowledge on ASME B31.3, API 580, API 581, API 579, API 570: RBI, FFS, vibration analysis and repair of piping systems and pipelines
- Discuss ASME B31.3 (process piping) and its significance in the industry as well as the key differences between ASME B31.3 and other relevant standards
- Explain the fundamentals of risk-based inspection (RBI) and apply risk analysis methods and advanced RBI techniques
- Carryout FFS assessment as per API 579-1/ASME FFS-1 and evaluate the integrity of equipment for continued service under current or modified operating conditions
- Employ FFS assessment techniques and the detailed methodologies for assessing different types of damage mechanisms
- Discuss the legal and safety implications of the standards including the role of regulatory bodies and compliance with international standards
- Recognize the fundamentals of vibration in piping systems and apply the techniques for measuring, analyzing and mitigating vibration
- Explain API 570 and its application in the inspection, repair, alteration and rerating of in-service piping systems
- Implement the requirements and guidelines for the repair and alteration of piping systems as per ASME PCC-2 and other relevant standards

Who Should Attend

This course provides an overview of all significant aspects and considerations of ASME B31.3, API 580, API 581, API 579 and API 570: RBI, FFS, vibration analysis and repair of piping systems and pipelines for inspection and integrity engineers, risk and vibration analysts, plant managers, welding personnel and inspectors involved in the design, construction, and maintenance of process piping systems to ensure the continued integrity and cost-effective operation of piping systems and pipelines.

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, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

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: -

- 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.

- 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.

Accommodation

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

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. Craig Nilsen, CMRP, CRCMP, is a **Senior Maintenance & Reliability Engineer** with over **25 years** of extensive experience within the **Oil** & **Gas**, **Refinery** and **Petrochemical** industries. His wide expertise includes Reliability-Centered Maintenance (**RCM**), Reliability Engineering Analysis (**RE**), Root Cause Analysis (**RCA**), Asset Integrity Management (**AIM**), **Reactive & Proactive** Maintenance, **Maintenance** Process, Work Task Prioritization, **Condition Monitoring**, **Mechanical Engineering**, Mechanical Manufacturing Engineering, Mechanical Engineering Design, Electro Technology, **Maintenance Planning**, Modern Safety/Risk Management, **Laser Alignment**, **Thermography**, **Risk Assessment**, Legal Liability, Construction Regulations, **Maintenance Planning & Scheduling**, **Asset** Management, **Machine Vibration** Analysis, **Bag Filters** Operation & Troubleshooting, **Blower & Fan**, **Pumps**, **Valves**, **Bearings & Lubrication**, **Mechanical Seals**, **Mechanical Equipment** Maintenance, **Gearboxes**, **Shaft Alignment**, **Rotating Equipment**, **Preventive & Predictive Maintenance**, **Spare** Management and **Network Analysis**. Further, he is also well-versed in Leadership & Management Skills, Technical Report Writing, Operations Management, Project Management, Business Communication, Management Skills, Problem Solving, Quality Business Skills, Excellence, Finance Management, Labour Relations, Self-Development, Teambuilding & Presentation Skills, MS Office, AutoCAD, RBMWare, ONKEY and SAP.

During his career life, Mr. Nilsen gained his practical and field experience through his various significant positions and dedication as the **Repair Shop Supervisor**, **Maintenance & Reliability Specialist**, **Maintenance Planner/Reliability Specialist**, **Senior Maintenance Planner/Condition Monitoring Specialist**, **Supply Chain Maintenance Planner**, **Technical Advisor**, **Senior Trainer/Lecturer** and **Fitter & Turner** for Algorax (Pty) Limited.

Mr. Nilsen has a **National Higher Diploma** in **Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Maintenance and Reliability Professional** (**CMRP**) from the Society of Maintenance & Reliability Professionals (**SMRP**), a **Certified Reliability Centered Management Professional** (**CRCMP**) from the International Organization of RCM Professionals (**IORCMP**) and a **Qualified Fitter & Turner**. Moreover, he is an active member of the Society of Maintenance and Reliability Professionals (**SMRP**) and the South African Asset Management Association (**SAMA**). He has further delivered numerous trainings, courses, seminars, workshops and conference internationally.

Course Fee

Dubai	**US$ 5,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Abu Dhabi	**US$ 5,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Al Khobar	**US$ 5,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	**US$ 6,000** per Delegate + **VAT**. This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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 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

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 - 0930	***Introduction to Piping & Pipeline Standards*** *Overview of ASME B31.3 (Process Piping) & Its Significance in the Industry • Key Differences Between ASME B31.3 & Other Relevant Standards*
0930 – 0945	*Break*
0945 - 1100	***Introduction to Piping & Pipeline Standards (cont'd)*** *Overview of ASME B31.3 (Process Piping) & Its Significance in the Industry • Key Differences Between ASME B31.3 & Other Relevant Standards*
1100 – 1230	***Fundamentals of Risk-Based Inspection (RBI)*** *Introduction to API 580 & the principles of RBI • Understanding Risk Analysis Methods & How to Apply them to Piping Systems*
1230 – 1245	*Break*
1245 – 1420	***Fundamentals of Risk-Based Inspection (RBI) (cont'd)*** *Introduction to API 580 & the principles of RBI • Understanding Risk Analysis Methods & How to Apply them to Piping Systems*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Advanced RBI Techniques*** *Detailed Discussion on API 581, Its Risk Assessment Methodology & Prioritization of Inspection Activities • Case Studies on Implementing RBI In Various Industrial Contexts*
0930 – 0945	*Break*
0945 – 1100	***Advanced RBI Techniques (cont'd)*** *Detailed Discussion on API 581, Its Risk Assessment Methodology & Prioritization of Inspection Activities • Case Studies on Implementing RBI In Various Industrial Contexts*
1100 – 1230	***Fitness-For-Service (FFS) Concepts*** *Introduction to FFS Assessment as Per API 579-1/ASME FFS-1 • Evaluating the Integrity of Equipment for Continued Service Under Current or Modified Operating Conditions*
1230 - 1245	*Break*
1245 – 1420	***FFS Assessment Techniques:*** *Detailed Methodologies for Assessing Different Types of Damage Mechanisms • Practical Exercises on FFS Assessments for Piping Systems*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Regulatory & Safety Considerations*** *Understanding the Legal & Safety Implications of the Standards*
0930 – 0945	*Break*
0945 – 1100	***Regulatory & Safety Considerations (cont'd)*** *The Role of Regulatory Bodies & Compliance with International Standards*
1100 – 1230	***Regulatory & Safety Considerations (cont'd)*** *Understanding the Legal & Safety Implications of the Standards •*
1230 – 1245	*Break*
1245 – 1420	***Regulatory & Safety Considerations (cont'd)*** *The Role of Regulatory Bodies & Compliance with International Standards*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Vibration Analysis of Piping Systems*** *Fundamentals of Vibration in Piping Systems*
0930 – 0945	*Break*
0945 – 1100	***Vibration Analysis of Piping Systems (cont'd)*** *Techniques for Measuring, Analyzing, & Mitigating Vibration*
1100 – 1230	***Vibration Analysis of Piping Systems (cont'd)*** *Fundamentals of Vibration in Piping Systems*

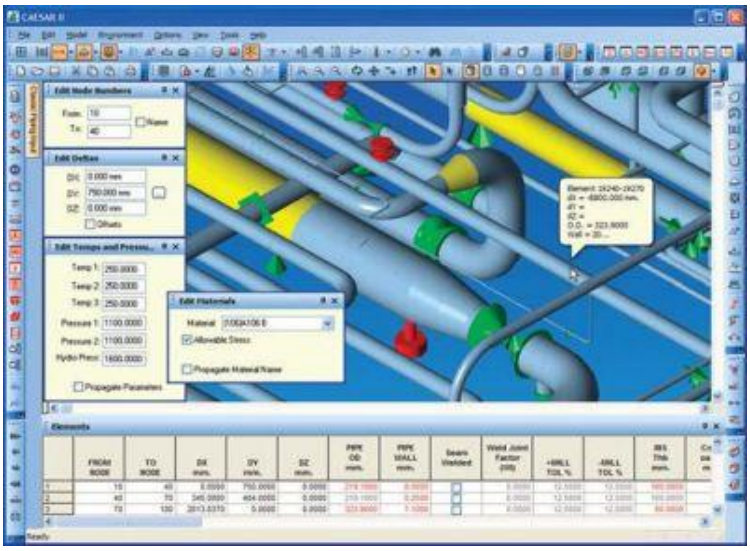
1230 – 1245	*Break*
1245 – 1345	***Vibration Analysis of Piping Systems (cont'd)*** *Techniques for Measuring, Analyzing, & Mitigating Vibration*
1345 – 1420	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 5

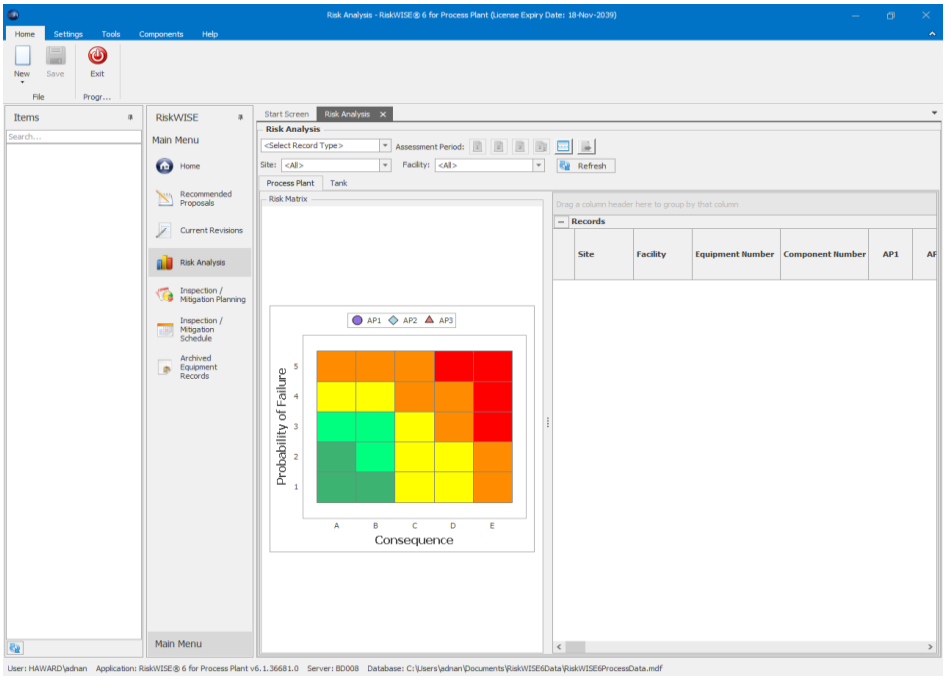
0730 – 0930	***API 570: Piping Inspection Code*** *Overview of API 570 & its Application in The Inspection, Repair, Alteration, & Rerating of In-Service Piping Systems*
0930 – 0945	*Break*
0945 – 1100	***Practical Considerations in Applying API 570*** *Case Studies & Practical Exercises on The Application of API 570 in Real-World Scenarios*
1100 – 1230	***Practical Considerations in Applying API 570 (cont'd)*** *Case Studies & Practical Exercises on The Application of API 570 in Real-World Scenarios*
1230 – 1245	*Break*
1245 – 1345	***Repair & Alteration of Piping Systems:*** *Understanding the Requirements & Guidelines for the Repair & Alteration of Piping Systems as Per ASME PCC-2 & Other Relevant Standards*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 - 1430	*Presentation of Certificates*
1430	*End of Course*

Simulator (Hands-on Practical Sessions)

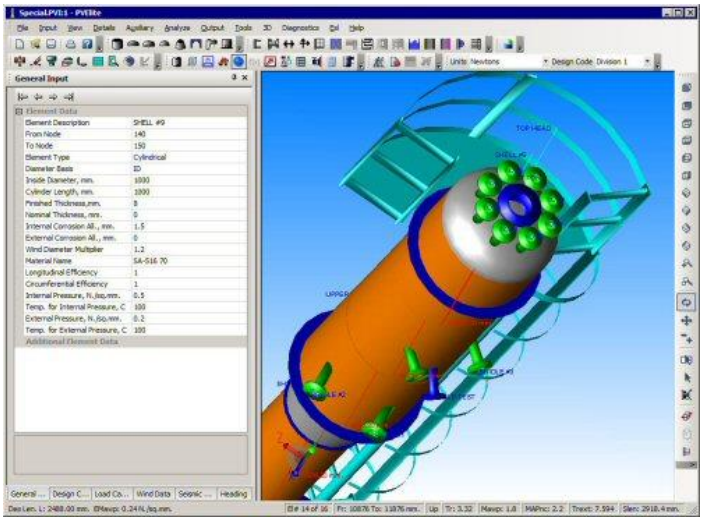
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the state-of-the-art simulators "CAESAR II", "RiskWISE", "PV-Elite" and "IntegriWISE™".



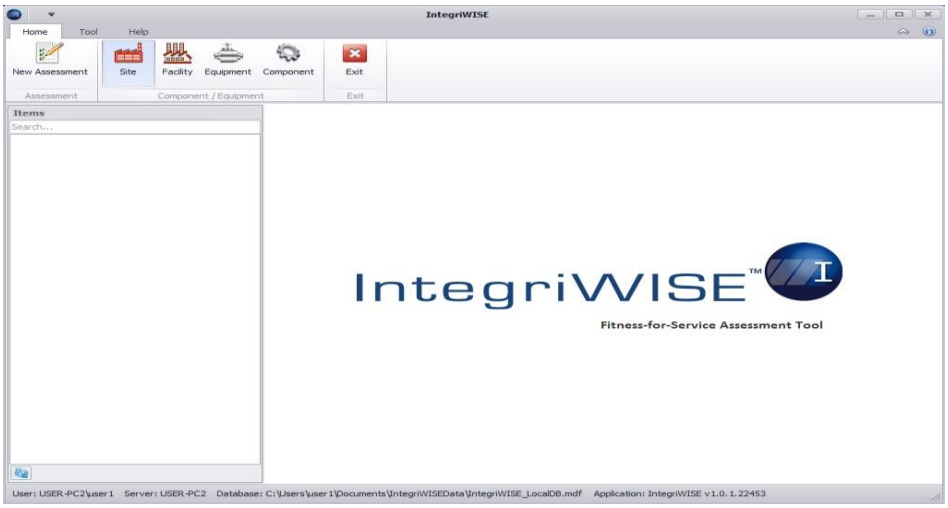
CAESAR II

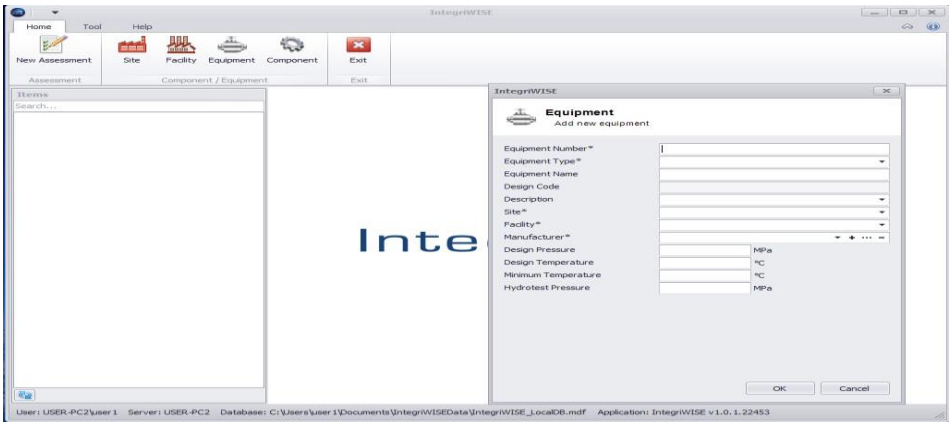


RiskWISE



PV-Elite Simulator





IntegriWISE™

Course Coordinator

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