

COURSE OVERVIEW FE0059-4D

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 Date/Venue

October 07-10, 2024/Club B Meeting Room, Ramada Plaza by Wyndham Istanbul City Center, Istanbul, Turkey

Course Reference

FE0059-4D



Course Duration/Credits

Four days/2.4 CEUs/24 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 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.

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 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.

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

US\$ 4,2500 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 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, 07th of October 2024

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: Tuesday, 08th of October 2024

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: Wednesday, 09th of October 2024

0730 – 0930	Regulatory & Safety Considerations <i>Understanding the Legal & Safety Implications of the Standards • The Role of Regulatory Bodies & Compliance with International Standards</i>
0930 – 0945	Break
0945 – 1100	Regulatory & Safety Considerations (cont'd) <i>Understanding the Legal & Safety Implications of the Standards • The Role of Regulatory Bodies & Compliance with International Standards</i>
1100 – 1230	Vibration Analysis of Piping Systems <i>Fundamentals of Vibration in Piping Systems • Techniques for Measuring, Analyzing, & Mitigating Vibration</i>
1230 – 1245	Break
1245 – 1420	Vibration Analysis of Piping Systems (cont'd) <i>Fundamentals of Vibration in Piping Systems • Techniques for Measuring, Analyzing, & Mitigating Vibration</i>
1420 – 1430	Recap <i>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</i>
1430	Lunch & End of Day Three

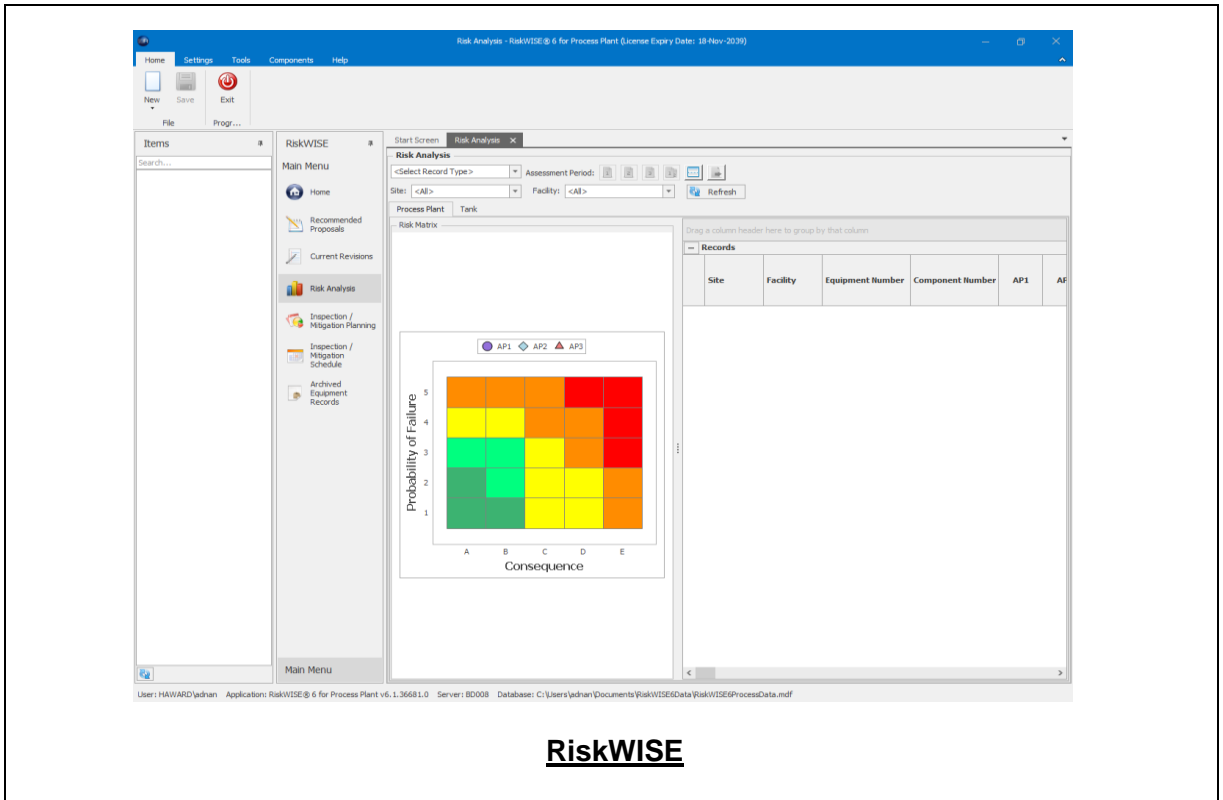
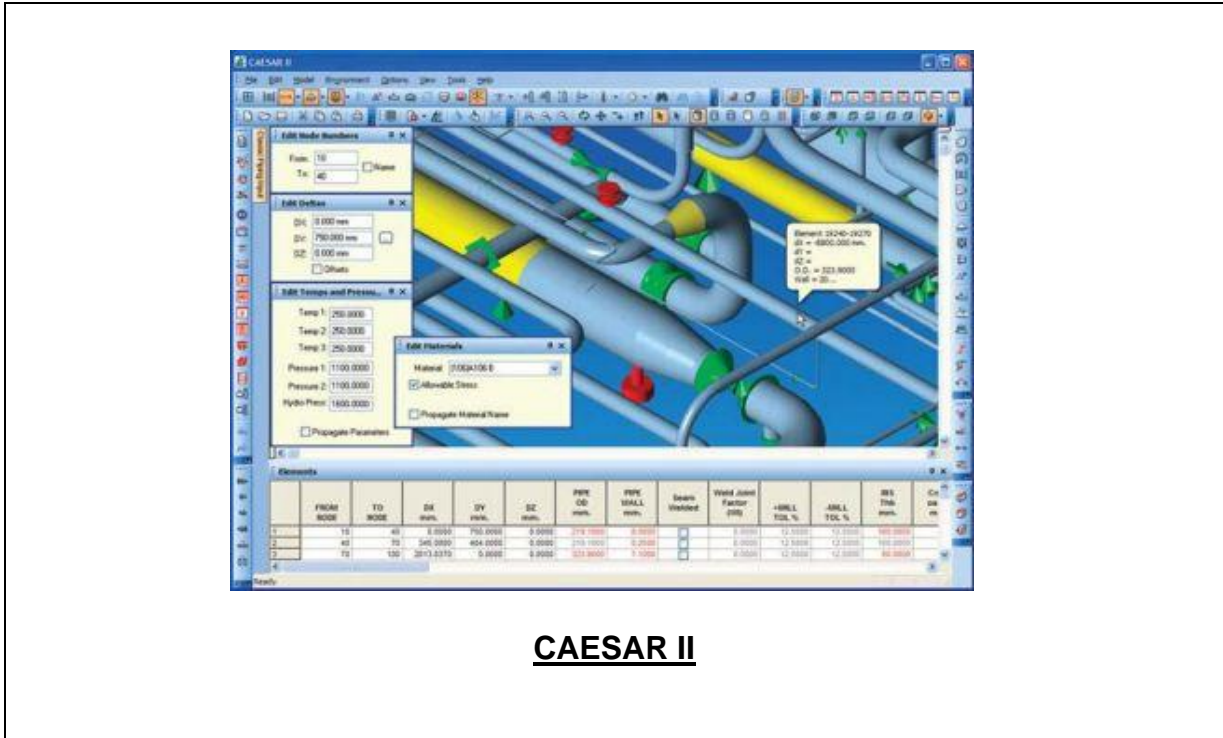
Day 4: Thursday, 10th of October 2024

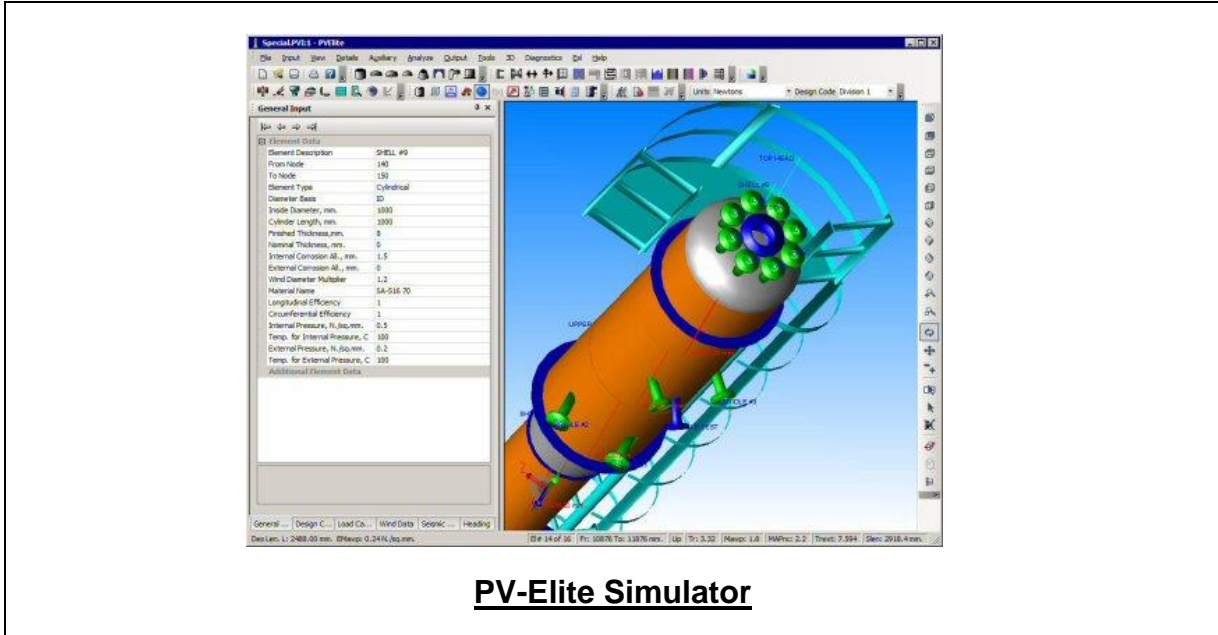
0730 – 0930	API 570: Piping Inspection Code <i>Overview of API 570 & its Application in The Inspection, Repair, Alteration, & Rerating of In-Service Piping Systems</i>
0930 – 0945	Break
0945 – 1100	Practical Considerations in Applying API 570 <i>Case Studies & Practical Exercises on The Application of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



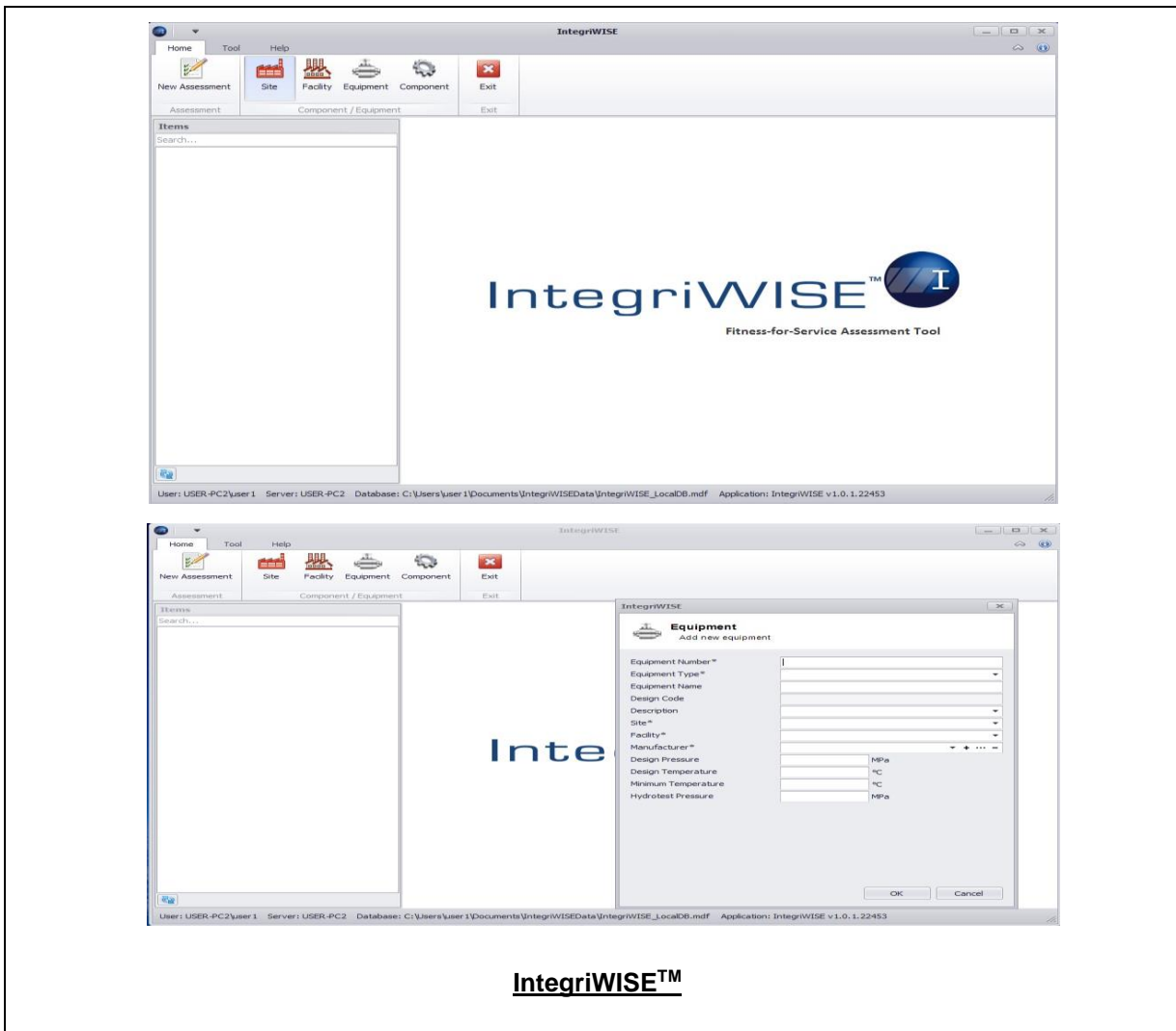
Simulator (Hands-on Practical Sessions)

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™”.





PV-Elite Simulator



IntegriWISE™

Course Coordinator

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