



COURSE OVERVIEW FE0920
API-580: Risk Based Inspection
(API Exam Preparation Training)

Course Title

API-580: Risk Based Inspection (API Exam Preparation Training)

Course Reference

FE0920

Course Duration/Credits

Five days/4.0 CEUs/40 PDHs



Course Date/Venue

Session(s)	Date	Venue	Exam Window	Exam Closing Date
1	January 28-February 01, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE	April 05-26, 2024	January 25, 2024
2	March 03-07, 2024	Club B Meeting Room, Ramada Plaza by Wyndham Istanbul City Center, Istanbul, Turkey	April 05-26, 2024	January 25, 2024
3	June 10-14, 2024	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE	August 09-30, 2024	May 31, 2024
4	September 08-12, 2024	Al Aziziya Hall, The Proud Hotel Al Khobar, Al Khobar, KSA	December 06-27, 2024	September 27, 2024
Exam Venue	Abu Dhabi, Dubai, Al-Khobar, Jeddah, Kuwait, Amman, Beirut, Cairo, Manama and Muscat. Participant has the option to attend at any of the above cities			

Course Description



This practical and highly-interactive course includes practical sessions and exercises where participants carryout welding inspection. Theory learnt in the class will be applied using our state-of-the-art simulators.

API 580 Supplemental Inspection Certification program is designed to train inspectors on Risk-Based Inspection. The program is based on API RP 580 (Risk-Based Inspection), which is applicable to all inspectors in the petroleum/petrochemical industry. The objective of this program is to provide inspectors with advanced (above the basic core API 510, 570 & 653 certifications) knowledge and skills in the area of Risk-Based Inspection based on the information contained in API RP 580.



This course is designed to train individuals who are interested in obtaining the API 580 RBI Inspector Certification, as well as those who are seeking an advanced knowledge of Risk Based Inspection requirements. Included with the course is a pre-study guide and student classroom workbook. The student receives instruction regarding how to take the test, as well as insight into the intricacies of "real world" situations. Daily tests are designed to gauge students' proficiency and understanding of the material.



Haward Technology is proud of its **90% pass rate** on all our API sponsored courses.





Course Objectives

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

- Get prepared for the next API 580 exam and have enough knowledge and skills to pass such exam in order to get the API 580 Inspector certificate
- Discuss API 580 and API 581 including the flexibility in application and mechanical integrity focused
- Identify the covered and not covered equipment as well as the basic risk assessment concepts
- Employ risk management and risk reduction and discuss the evolution of inspection intervals and due dates
- Carryout risk analysis and inspection optimization as well as differentiate relative risk and absolute risk
- Discuss risk-based inspection and the key elements of an RBI program
- Determine the consequence and probability for RBI, the various types of RBI assessment, precision versus accuracy and how RBI can help manage operating risks
- Discuss the relationship between RBI and other risk-based and safety initiatives
- Plan the RBI assessment, select a type of RBI assessment, estimate resources and identify the time required
- Collect data and information for RBI assessment and recognize the national and international codes and standards
- Identify the sources of site-specific data and information including damage mechanisms and failure modes
- Assess the probability of failure through probability analysis, identify the units of measure and determine POF analysis
- Assess the consequence of failure and identify the types of consequences analysis, volume of fluid released, consequence effect categories and determination of COF
- Carryout risk determination, assessment and management as well as risk management decisions and acceptable levels of risk
- Apply sensitivity analysis and establish acceptable risk thresholds
- Perform risk management with inspection activities as well as manage risk by reducing uncertainty through inspection
- Identify risk management opportunities from RBI results and establish an inspection strategy based on risk assessment
- Manage risk with inspection activities, manage inspection costs with RBI, assess inspection results and determine corrective action
- Achieve lowest life cycle costs with RBI as well as apply other risk mitigation activities, equipment replacement and repair
- Evaluate flaws for fitness-for-service and employ equipment modification, redesign and re-rating
- Apply emergency isolation, modify process, establish integrity operating windows and reduce inventory
- Illustrate blast-resistant construction as well as reassess and update RBI assessments
- Explain the importance of conducting an RBI assessment and discuss the roles, responsibilities, training and qualifications
- Implement RBI documentation, recordkeeping, mitigation and follow-up as well as summarize risk-based inspection pitfalls





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**.

Who Should Attend

This course is designed for those involved in risk based inspection methodologies and practices in refineries, gas, oil and petrochemical facilities. This includes inspection engineers and inspectors who are seeking API-580 certification. Other engineers, inspectors, maintenance staff, facility integrity personnel and asset managers who are considering or implementing risk based inspection systems will definitely benefit from this course.

Exam Eligibility & Structure

Exam candidates shall have the following minimum pre-requisites:-

Education	Years of Experience	Experience Required
BS or higher in engineering or technology	1 year	Any experience in the petrochemical industry
2-year degree or certificate in engineering or technology	2 years	Any experience in the petrochemical industry
High school diploma or equivalent	3 years	Any experience in the petrochemical industry
No formal education	5 or more years	Any experience in the petrochemical industry

Required Codes & Standards

Listed below are the effective editions of the publications required for this exam for the date(s) shown above. **Each student must purchase these documents separately and have them available for use during the class as their cost is not included in the course fees:-**

- The Body of Knowledge for the **API 580** exam is based on API RP 580 Risk-Based Inspection, 3rd Edition 2016.

API and ASME publications may be ordered through **Haward Publications** at +971-2-309-1714. Orders may also be faxed to +971-2-309-1716, or e-mail info@haward.cc. More information is available at www.haward.cc. When calling to order, please identify yourself as an exam candidate and/or API member.

Note: API and ASME publications are copyrighted material. Photocopies of API and ASME publications are not permitted. CD-ROM versions of the API documents are issued quarterly by Information Handling Services and are allowed. Be sure to check your CD-ROM against the editions noted on this sheet.

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.

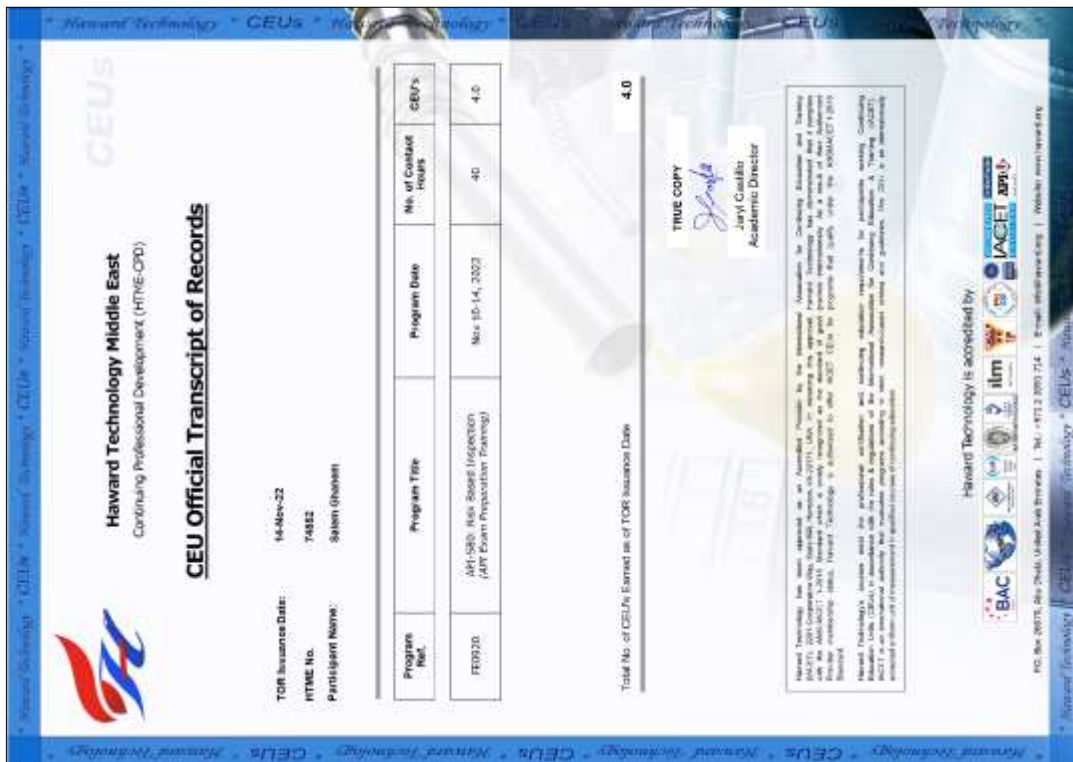


API Certificate(s)

API-580 certificate will be issued to participants who have successfully passed the API-580 examination.




- (2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.





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 **4.0 CEUs** (Continuing Education Units) or **40 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.

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.
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.
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.

Exam Fees

US\$ 550 per Delegate + **VAT**.

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. Steve Murphy (UK) is a **Senior Inspection Engineer** with almost **30 years** of extensive industrial experience within the **Oil & Gas, Refinery** and **Petrochemical** industries. His expertise widely covers in the areas of **Pressure Vessel Inspection (API 510), Piping Inspection (API 570), Risk Based Inspection (API 580), Damage Mechanisms (API 571), Aboveground Storage Tank Inspection (API 653), Asset Integrity Management, Welding & Fabrication, Piping Inspection, Pipelines, Risk-Based Inspection (RBI), Fitness-for-Service (FFS), Asset Integrity Management (AIM), Plant Inspection & Corrosion Engineering,**

Metallurgy, Corrosion & Prevention of Failures, Material Selection & Properties, Welding Technology, Welded Steel Tanks for Oil Storage, Cathodic Protection, Damage Mechanisms, Mechanical & Metallurgical Failure Mechanisms, Atmospheric & Low-Pressure Storage Tank Inspection, Welding Inspection & Metallurgy Pressure Design Thickness Calculation, Metallurgy, Corrosion, Mechanical Integrity Assessment, Vibration Analysis, Pressure & Hydrostatic Leak Testing, Pneumatic Leak Testing & Calculations, Preheating & Heat Treatment Requirements, Pressure Piping Design, Pressure Piping Inspection Practices, Piping Inspection, Repair & Re-rating, Corrosion & Remaining Life Calculation, Fabrication & Inspection, Conventional & Advanced Non-destructive Testing (NDT), Positive Material Identification (PMI), Pressure-Relieving Devices and Construction, Installation Fabrication, Erection, Inspection, Maintenance, Operation, Rating, Repair, Alteration, Reconstruction, Pigging, Integrity Assessment, Flaw Evaluation and Fitness-for-Service (FFS) of Piping. He is currently the **Plant API Inspector** wherein he is responsible for the statutory inspection of process plant and all pressurized equipment on the new three-train natural gas facility.

During his career life, Mr. Murphy has gained his practical and field experience through his various significant positions and dedication as the **Senior Project Quality Control Manager, Acting QA Manager, Site EPC Quality Manager, Asset Integrity Management Specialist, Quality Specialist, Asset Integrity Engineer, Quality Engineer, Senior Piping Inspector, Lead Corrosion Inspector, Statutory Inspector (TPI), Senior NDE Technician, Mechanical Surveyor, Quality Coordinator and Project Management Team Quality Control Representative** for various international companies like the Chuandongbei Gas Project, PT Donggi-Senoro LNG, Oceaneering – CABGOC (**Chevron**), **Fluor** Mid-East Ltd, **Fluor** Arabia Ltd, **ENGEN** Petroleum Refinery Ltd, Inspection Services – **Sasol** II, Badger Africa, Gasal Management Systems (Pty) Ltd. and **PETROSA**.

Mr. Murphy has a **Bachelor** degree in **Engineering** and **Foundation** degree in **Materials Fabrication & Engineering** from the **Open University, UK**. Further, he holds a **Diploma in Welding Technology** from the **TWI Cambridge, UK** and a **Certified Quality Assurance & Quality Control** from the **City & Guilds, UK**. Moreover, he is a **Certified Instructor/Trainer**, a **Certified Pressure Vessels Inspector (API 510)**, a **Certified Piping Inspector (API 570)**, a **Certified Corrosion & Material Specialist (API 571)**, a **Certified Risk Based Inspector (API 580)**, a **Certified Above Ground Storage Tank Inspector (API 653)**, a **NACE – CIP Coating Inspector Level 1** from the National Association of Corrosion Engineers (**NACE-USA**), a **Certified SAIW Level II Welding/Fabrication Inspector**, a **Certified CSWIP 3.2 Senior Welding Inspector**, a **Certified SAIW-SAQCC IPE (Inspector of Pressurized Equipment)** and a **SAIW Certified Level II** in **Magnetic Particle Testing (MT)**, **Liquid Penetrant Testing (PT)**, **Ultrasonic Testing (UT)** and **Radiographic Testing (RT)**. He is a **Registered Incorporated Engineer** by the Engineering Council (The Welding Institute) and has further delivered numerous courses, workshops, trainings, seminars and conferences worldwide.





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 API-580 Certification & Exam Code Books and Recommended Practices Required for the Exam: Body of Knowledge • Are You Qualified? • Studying for the Exam • Schedule a Computer Based Test (CBT) • Re-scheduling/Cancelling a CBT • ProProctor (Remote Exam) • What are the Pre-Test Questions? • Alternative Item Types (AITS) • What to Expect on Test Day
0930 – 0945	Break
0945 – 1100	Computer-Based API-580 Exam Tutorial Welcome & Exam Structure • Navigating through the Exam • Time Remaining • Flagging Questions
1100 – 1200	Computer-Based API-580 Exam Tutorial (cont'd) Answering Multiple-Choice Questions • Using the Calculator • Ending Exam Sections
1200 – 1300	Lunch
1300 – 1400	Overview of Risk-Based Inspection Framework of the RBI Process • Risk Management • Flexibility in Application • Mechanical integrity Focused • RBI Assessment benefits & Limitations • Terms, Definitions, Acronyms and Abbreviations
1400 – 1430	Risk Assessment Concepts What is Risk? • Risk Management & Risk Reduction • Risk Management • Relative Risk vs. Absolute Risk
1430 – 1530	RBI Concept, Types & Application The Evolution of Inspection Intervals and Due Dates • Damage Mechanisms and Failure Modes Requirements
1530 – 1545	Break
1545 – 1645	RBI Concept, Types & Application (cont'd) Consequence of Failure (COF) and Probability of Failure (POF) for RBI • Precision vs. Accuracy
1645 – 1700	Distribute Homework & Recap
1700	End of Day One

Day 2

0730 – 0745	Review of Day 1 & Homework Answers
0745 – 0930	RBI Concept, Types & Application (cont'd) Types of RBI Assessment • Using RBI for Risk Management
0930 – 0945	Break
0945 – 1030	RBI Concept, Types & Application (cont'd) Risk Management through Inspection • Using RBI to Establish Plans and Priorities
1030 – 1130	Roles, Responsibilities, Training & Qualifications Roles and Responsibilities of Team Leaders & Team Members • Equipment Inspector or Inspection Specialist • Corrosion & Process Specialists • Operations & Maintenance Personnel
1130 – 1230	Roles, Responsibilities, Training & Qualifications Management & Risk Analyst • Environmental and Process Safety Personnel • Financial/Business Personnel • Risk Assessment Personnel



1230 – 1330	Lunch
1330 – 1430	Data & Information Collection for RBI Assessment Data Needs for Qualitative RBI • Data Needs for Quantitative RBI • Data Needs for Semi-Quantitative RBI • Data Quality • Codes and Standards • Sources of Site-Specific Data & Information
1430 – 1530	Planning the RBI Program Organizing the Work Process • Essential Steps of an RBI Program • Establish Physical Boundaries of an RBI Assessment • Facilities & Process Units Screening • Equipment Item Screening
1530 – 1545	Break
1545 – 1630	Planning the RBI Program (cont'd) Utilities, Emergency & Off-Plot Systems • Establish Operating Boundaries • Start-up and Shutdown • Normal, Upset and Cyclic Operation • Operating Time Period • RBI Program Planning
1630 – 1645	Administer Quiz
1645 – 1700	Distribute Homework & Recap
1700	End of Day Two

Day 3

0730 – 0745	Review of Day 2 & Homework Answers
0745 – 0930	Damage Mechanism Review Understanding Damage Mechanisms and the Failure Mode is Important • Information Required for a DMR • Identifying Corrosion Rates and Damage Mechanisms • DM Data Resources • DMR Outcome Documentation • DMR Relationship with IOWs
0930 – 0945	Break
0945 – 1130	Assessing Probability of Failure (POF) Qualitative POF Analysis • Quantitative POF Analysis • Determination of POF • Determine the Effectiveness of Past Inspections • Determine the Effectiveness of Inspections
1130 – 1230	Assessing Consequences of Failure (COF) Qualitative Consequence of Failure (COF) Analysis • Semi-Quantitative Consequence of Failure (COF) Analysis • Categorizing Safety, Health and Environmental Consequence of Failure
1230 – 1330	Lunch
1330 – 1530	Assessing Consequences of Failure (COF) (cont'd) Volume of Fluid Release • Flammable Events (Fire and Explosion) • Releases of Toxic & Other Hazardous Fluids
1530 – 1545	Break
1545 – 1630	Assessing Consequences of Failure (COF) (cont'd) Production (Business Interruption) Consequence of Failure (COF) • Maintenance and Reconstruction Impact
1630 – 1645	Administer Quiz
1645 – 1700	Distribute Homework & Recap
1700	End of Day Three





Day 4

0730 – 0745	Review of Day 3 & Homework Answers
0745 – 0845	Assessing Consequences of Failure (COF) (cont'd) Factors for Estimating Consequence of Failure (COF) • Factors for Ranking Consequences
0845 – 0930	Risk Determination, Assessment & Management Determination of Risk • Event Tree Approach to Risk Assessments • Understanding Acceptable Levels of Risk
0930 – 0945	Break
0945 – 1130	Risk Determination, Assessment & Management (cont'd) Using Risk Assessment in Inspection and Maintenance Planning • Sensitivity Analysis • Risk Matrix & Plots • Risk Thresholds
1130 – 1230	Risk Management with Inspection Activities Managing Risk by Reducing Uncertainty through Inspection • Inspection Activities for Managing Risk
1230 – 1330	Lunch
1330 – 1530	Risk Management with Inspection Activities (cont'd) Identifying Risk Management Opportunities for RBI Results • Establishing an Inspection Strategy based on Risk Assessment
1530 – 1545	Break
1545 – 1630	Risk Management with Inspection Activities (cont'd) Managing Inspection Costs with RBI • Assessing Inspection Results • Achieving Lowest Life Cycle Costs with RBI
1630 – 1645	Administer Quiz
1645 – 1700	Distribute Homework & Recap
1700	End of Day Four

Day 5

0730 – 0745	Review of Day 4 & Homework Answers
0745 – 0900	Other Risk Management Methods Evaluating Flaws for Fitness-for-Service • Equipment Modification, Re-design and Re-rating • Emergency Isolation & Depressurizing/De-inventory • Modify Process • Water Spray/Deluge & Water Curtain • Blast-resistance Construction • Additional Risk Management Methods
0900 – 0930	Updating the RBI Assessment The Difference Between Evergreening & Reassessment • Why Conduct an RBI Reassessment?
0930 – 0945	Break
0945 – 1100	Updating the RBI Assessment (cont'd) Damage Mechanisms and Inspection Activities • Process and Hardware Changes
1100 – 1230	Updating the RBI Assessment (cont'd) RBI Assessment Premise Change • When to Conduct and RBI Reassessment
1230 – 1330	Lunch
1330 – 1530	RBI Documentation & Recordkeeping Documenting the RBI Management System
1530 – 1545	Break
1545 – 1615	RBI Documentation & Recordkeeping (cont'd) Documenting the Outcome of the RBI Assessment • Keys for Success
1615 – 1630	Course Conclusion
1630 – 1645	POST-TEST
1645 – 1700	Presentation of Course Certificate
1700	End of Course

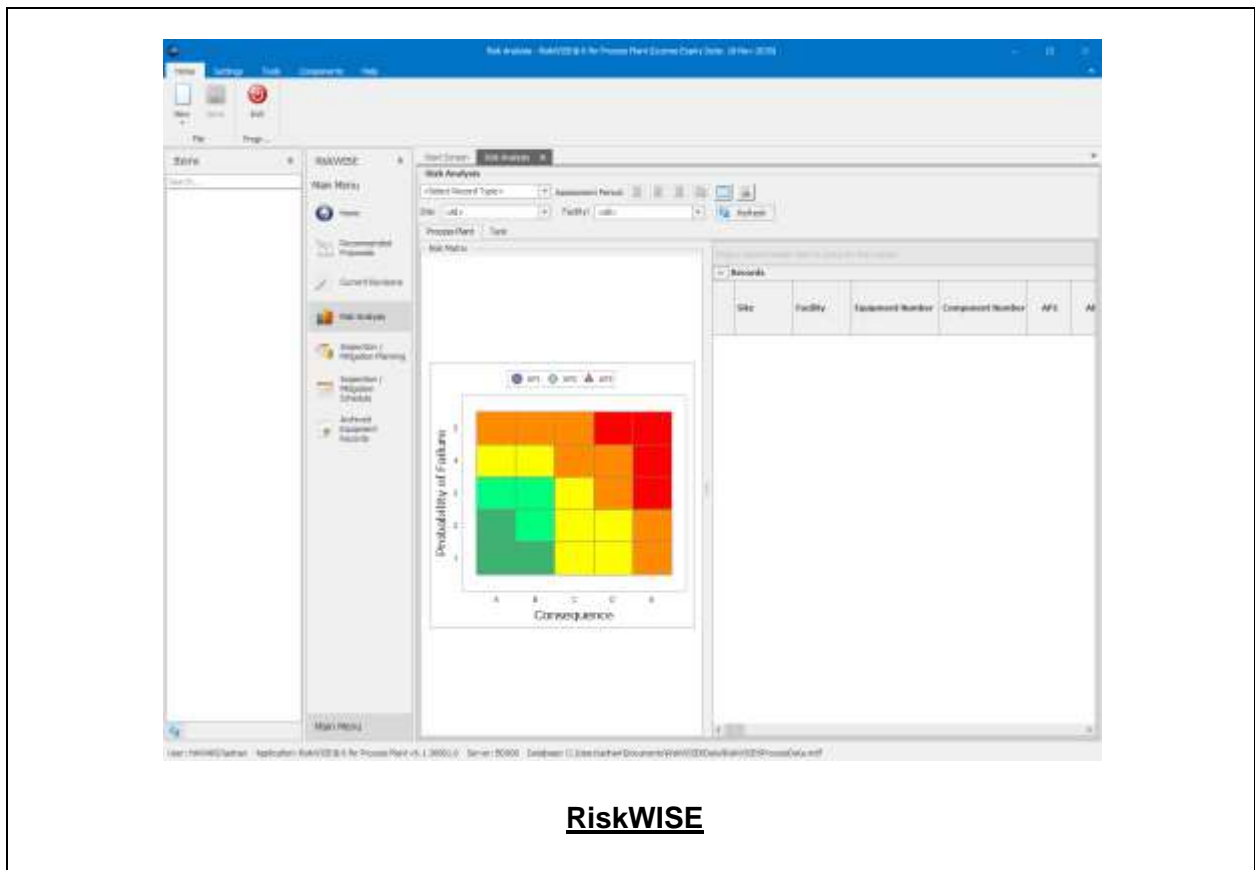


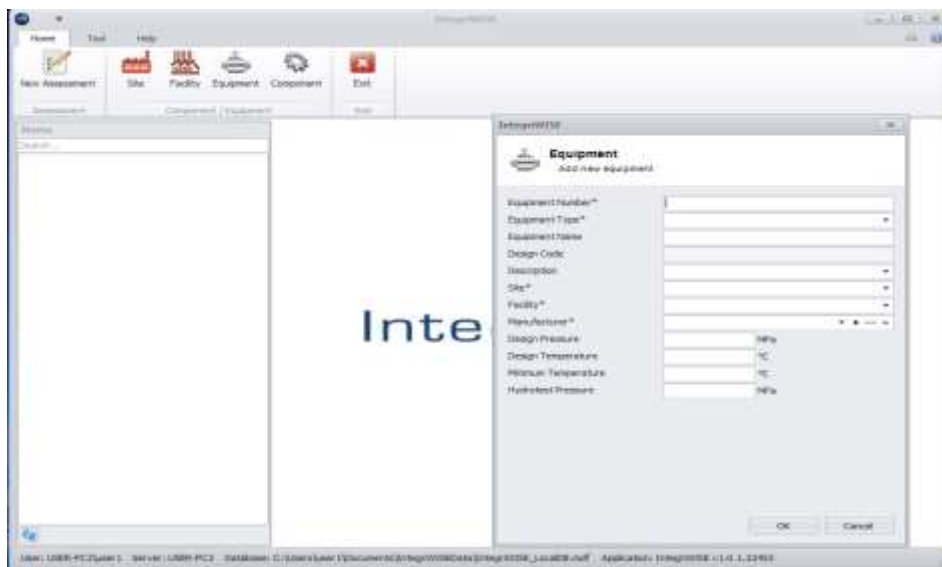
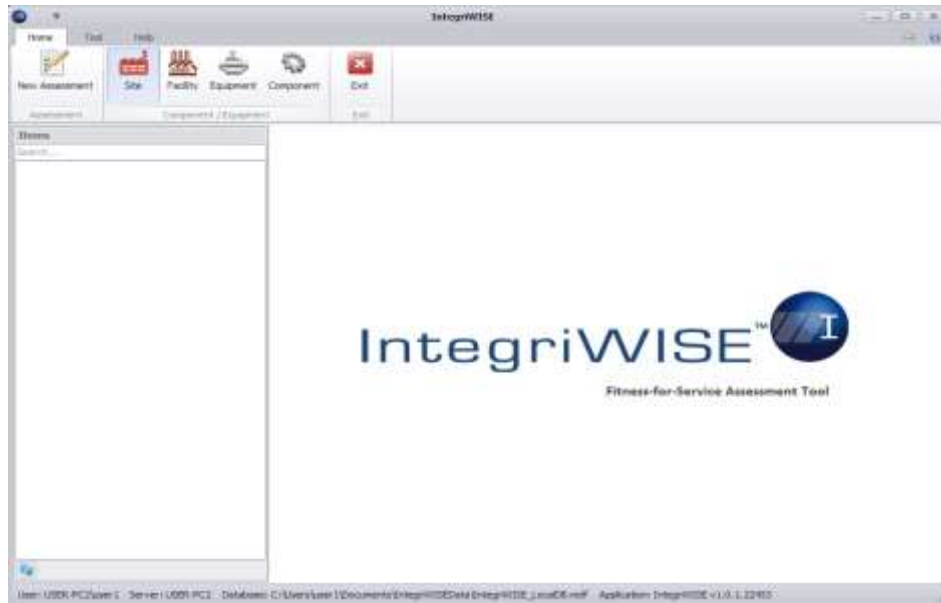
MOCK Exam

Upon the completion of the course, participants have to sit for a MOCK Examination similar to the exam of the Certification Body through Haward’s Portal. Each participant will be given a username and password to log in Haward’s Portal for the MOCK Exam during the 7 days following the course completion. Each participant has only one trial for the MOCK exam within this 7-day examination window. Hence, you have to prepare yourself very well before starting your MOCK exam as this exam is a simulation to the one of the Certification Body.

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 simulator “RiskWISE” and “IntegriWISE™”.





IntegriWISE™

Course Coordinator

Kamel Ghanem, Tel: +971 2 30 91 714, Email: kamel@haward.org

