



COURSE OVERVIEW FE0580-4D

API-579/580/581: Risk-Based-Inspection (RBI), Fitness-for-Service (FFS) and Repair Practices of Pipelines, Piping, Vessels and Tanks in Refineries, Gas, Oil and Petrochemical Facilities

Course Title

API-579/580/581: Risk-Based-Inspection (RBI), Fitness-for-Service (FFS) and Repair Practices of Pipelines, Piping, Vessels and Tanks in Refineries, Gas, Oil and Petrochemical Facilities

Course Date/Venue

September 16-19, 2024/ Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

FE0580-4D

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 presents a comprehensive and practical introduction and application of the latest techniques in Risk-Based Inspection (RBI) planning, and Fitness-For-Service (FFS) analysis of inspection results. It discusses practical techniques for the analysis of equipment, piping and pipelines defects and degradation. The focus of the course is on predicting degradation in service, setting optimum inspection intervals (API 580-581), projecting remaining life based on generic data corrected for plant specific conditions, and applying quantitative analysis for degraded conditions to determine whether equipment is fit for continued service or should be repaired or replaced (API 579-1/ASME FFS-1, ASME B31G, etc.).



The course includes a discussion on identification of API RP 571 damage mechanisms, risk management, and risk mitigation strategies. Requirements for input data and information, and the roles of the RBI Assessment Team will be described. Approaches to levels of RBI assessment and basis for implementation will be examined.

The exercise will give Delegates the opportunity to key elements for implementation of an RBI system to a process facility. The course presenters are independent of any commercial organization and the Course Notes are applicable to all commercially available systems.





Course Objectives

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

- Apply systematic techniques in Risk-Based-Inspection (RBI) and Fitness-For-Services (FFS) and identify the various repair practices of pipelines, piping, vessels and tanks in refineries, gas, oil and petrochemical plants
- Practice the analysis of defects and degradation of equipment, piping and pipelines
- Predict degradation in service and set optimum inspection intervals (API-580/581)
- Estimate the remaining life based on generic data corrected for plant specific conditions
- Employ quantitative analysis for degraded conditions to determine whether equipment is fit for continued service or should be repaired or replaced (API 579-1/ASME FFS-1, ASME B31G)

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 provides a wide understanding and deeper appreciation of risk based inspection, fitness-for-service and repair practices of pipelines, piping, vessels and tanks in refineries, gas, oil and petrochemical facilities in accordance with the international standards. Standard engineers, process, plant, maintenance, inspection and pipeline/piping engineers and inspectors who are responsible for the initial and continued integrity and cost-effective operation of equipment, piping systems and pipelines. Further, this course will interest all younger/graduate inspection engineers, mechanical engineers, graduate corrosion engineers, maintenance personnel and asset managers who are considering or implementing risk based inspection systems.

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: -

- 
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.



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 Magalios, CEng, PGDip (on-going), MSc, BSc, **Senior Finance & Management Consultant** with over **40 years** of extensive experience in the areas of **Project Scheduling & Cost Control**, **Finance Management Skills**, **Budgeting & Cost Control**, **Financial Modelling**, **Advanced Business & Financial Reporting**, **Enterprise Risk Management**, **Cost Estimating & Optimization Skills**, **Internal Audit**, **Oil & Gas Accounting & Performance Measurement**, **Budgeting & Cost Control**, **Cash Management & Credit Control System**, **Financial Planning Techniques**, **International Financial Reporting Standards (IFRS)**, **Revenue Assurance & Fraud Management**, **Debt/Collection Management**, **Budget Preparation Techniques**, **Oil & Gas Accounting**, **Budget & Cost Effectiveness**,

Project Planning, Scheduling & Cost Control Professional, **Effective Quality Management System (QMS)**, **QMS Framework**, **Quality Assurance Standards**, **QA Audit Process & Techniques**, **Coaching Skills**, **Coaching Plan**, **Mentoring Techniques**, **Communication & Listening Techniques**, **Office Administration**, **Office Management**, **Invoice Management**, **Administration Process**, **Administration Work Procedures**, **Facilitation & Leadership Skills**, **Human Resource Development**, **Psychometric Testing**, **Career Development & Competence**, **Succession Planning**, **Self-Development & Empowerment**, **Personal Learning Needs Identification**, **Critical Success Factors (CSFs)**, **Key Performance Indicators (KPIs)**, **Productivity Creativity & Thinking Modes**, **Human Resource Scorecard Management**, **Career Laddering**, **Fast-Track Career Progression Application**, **Knowledge Management**, **Customer Management**, **Leadership Skills**, **Presentation Skills**, **Negotiation Skills**, **Communication Skills**, **Emotional Intelligence**, **Performance Management**, **Contract Management**, **Quality Management**, **Commercial Strategy**, **Project Management**, **Risk Management**, **Leadership & Business Management**, **Human Resource Management**, **Planning**, **Budgeting & Cost Control**, **Business Development**, **Innovation**, **Organization Management & Business Consulting**, **Stakeholder & Supplier Evaluation**, **Data Collection & Information Gathering**, **Value & Supply Chain Management**, **Intellectual Property & Innovation Assessments**, **Logistics & Supply Chain Management**, **Budgeting & Cost Control** and **Marketing Management**. Currently, he is the **Chartered Professional Surveyor Engineer & Urban-Regional Planner** wherein he is deeply involved in providing exact data, measurements and determining properly boundaries. He is also responsible in preparing and maintaining sketches, maps, reports and legal description of surveys.

During his career, Mr. Magalios has gained his expertise and thorough practical experience through challenging positions such as a **Project Site Construction Manager**, **Construction Site Manager**, **Project Manager**, **Finance Manager**, **Deputy PMS Manager**, **Head of the Public Project Inspection Field Team**, **Technical Consultant**, **Senior Consultant**, **Consultant/Lecturer**, **Construction Team Leader**, **Lead Pipeline Engineer**, **Project Construction Lead Supervising Engineer**, **Lead Site Engineer**, **Senior Site Engineer Lead Engineer**, **Senior Site Engineer**, **R.O.W. Coordinator**, **Site Representative**, **Supervision Head** and **Contractor** for international Companies such as the Penspen International Limited, Eptista Servicios de Ingenieria S.I., J/V ILF Pantec TH. Papaioannou & Co. – Emenergy Engineering, J/V Karaylannis S.A. – Intracom Constructions S.A., Ergaz Ltd., Alkyonis 7, Palaeo Faliro, Piraeus, Elpet Valkaniki S.A., Asprofos S.A., J/V Depa S.A. just to name a few.

Mr. Magalios is a **Registered Chartered Engineer** and has **Master** and **Bachelor** degrees in **Surveying Engineering** from the **University of New Brunswick, Canada** and the **National Technical University of Athens, Greece**, respectively. Further, he is currently enrolled for **Post-graduate** in **Quality Assurance** from the **Hellenic Open University, Greece**. He has further obtained a **Level 4B** Certificates in **Project Management** from the **National & Kapodistrian University of Athens, Greece** and **Environmental Auditing** from the **Environmental Auditors Registration Association (EARA)**. Moreover, he is a **Certified Instructor/Trainer**, a **Chartered Engineer** of **Technical Chamber of Greece** and a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**. He has delivered numerous trainings, workshops, seminars, courses 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\$ 4,500 per Delegate + **VAT**. 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: Monday 16th of September 2024

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0915	<i>Overview of Codes & Standards API & ASME</i>
0915 – 1000	<i>Latest Developments in Integrity & Fitness-For-Service</i>
1000 – 1015	<i>Break</i>
1015 – 1100	<i>Overview of Material Strength & Toughness</i>
1100 – 1130	<i>Overview of Design Rules</i>
1130 – 1200	<i>Overview of Corrosion & Degradation Mechanisms</i>
1200 – 1230	Corrosion
1230 – 1245	<i>Break</i>
1245 – 1315	<i>Design Margins & Corrosion Allowance</i>
1315 – 1345	<i>Evaluation of Inspection Results</i>
1345 – 1420	<i>Flaw Assessment: A Practical Approach</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2: Tuesday 17th of September 2024

0730 – 0800	<i>Fitness-For-Service Overview API 579-1/ASME FFS-1</i>
0800 – 0830	Brittle Fracture Analysis
0830 – 0915	General Metal Loss Analysis
0915 – 0945	<i>Analysis of Wall Thinning & Remaining Life</i>
0945 – 1000	<i>Break</i>
1000 – 1045	Team Exercise: Wall Thinning Analysis
1045 – 1130	Calculate Initial Strength of Component
1130 – 1215	Calculate Remaining Strength of Corroded Equipment or Pipeline





1215 – 1230	Break
1230 – 1315	Predict Remaining Life & Failure Mode
1315 – 1400	Local Metal Loss Analysis
1400 – 1420	Pitting Corrosion Analysis
1420 – 1430	Recap
1430	Lunch & End of Day Two

Day 3: Wednesday 18th of September 2024

0730 – 0800	Blisters & Laminations Analysis
0800 – 0830	Team Exercise: Local Metal Loss Analysis
0830 – 0900	Analyze Remaining Strength of Component with Local Corrosion
0900 – 0930	Compare ASME B31G & API 579-1/ASME FFS-1 Results
0930 – 0945	Break
0945 – 1100	Distortions, Dents & Gouges Analysis
1100 – 1215	Introduction to Fracture Mechanics
1215 – 1230	Break
1230 – 1300	Crack Flaws Analysis & Fracture Mechanics
1300 – 1330	Fatigue Analysis & Remaining Life
1300 – 1420	Introduction to Risk-Based-Inspection API 580-581
1420 – 1430	Recap
1430	Lunch & End of Day Three

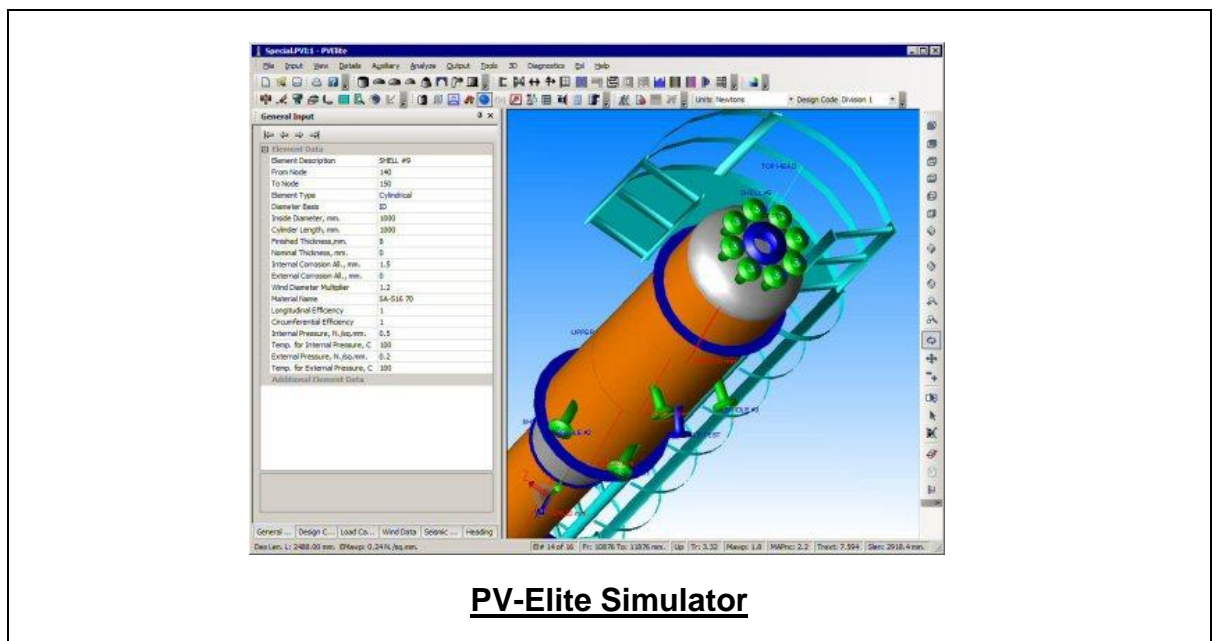
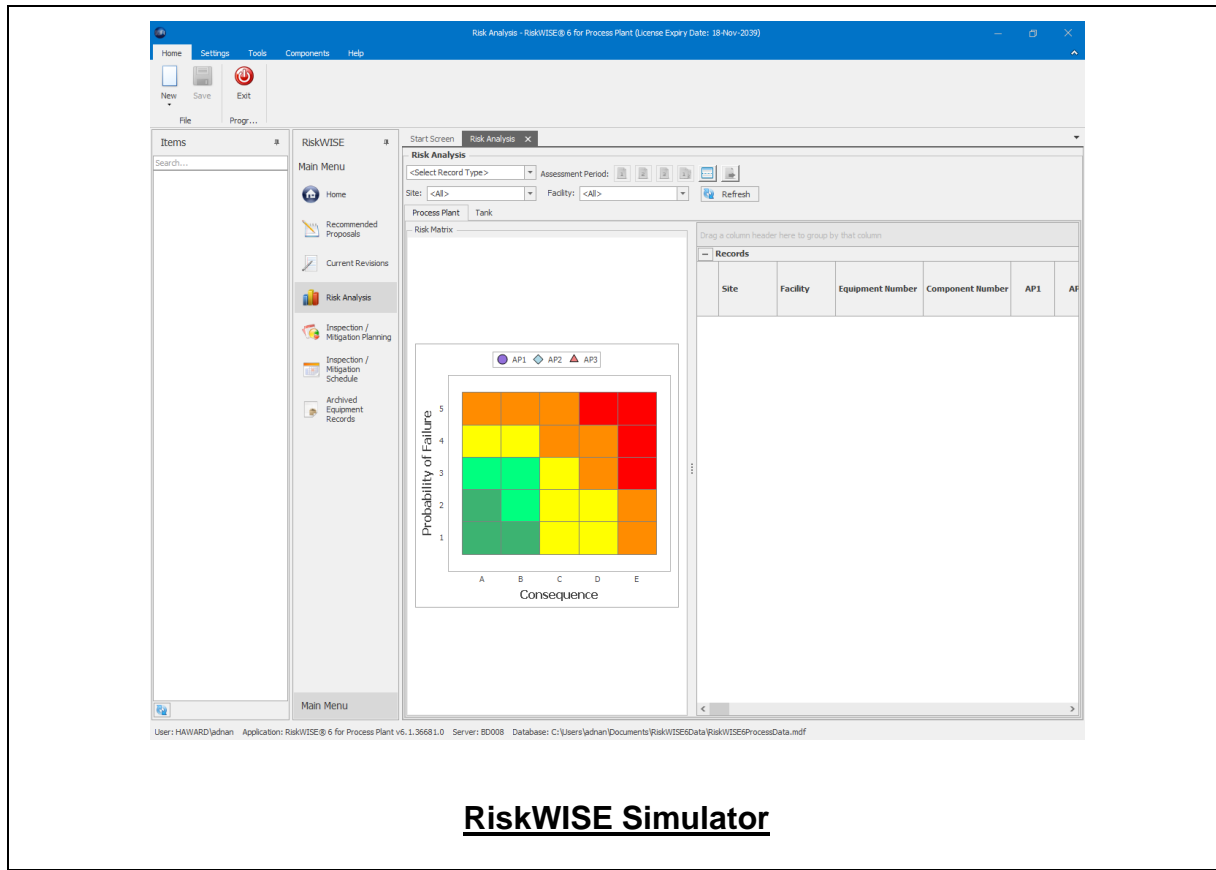
Day 4: Thursday 19th of September 2024

0730 – 0815	API 581 Failure Likelihood Analysis
0815 – 0845	Corrosion Loops & Failure Margins
0845 – 0915	API 581 Failure Consequence Analysis
0915 – 0930	Break
0930 – 1015	Preparation of Inspection Matrix
1015 – 1130	Examples of Plant RBIs
1130 – 1215	Team Exercise: Risk-BASED Ranking
1215 – 1230	Break
1230 – 1245	Determine Corrosion Rate
1245 – 1315	Calculate Likelihood & Consequence of Failure
1315 – 1345	Rank Systems & Equipment for Inspection
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 session 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. “RiskWISE”, “PV-Elite” and “IntegriWISE™”.





The image displays two screenshots of the IntegriWISE software interface. The top screenshot shows the main application window with a menu bar (Home, Tool, Help) and a toolbar with icons for 'New Assessment', 'Site', 'Facility', 'Equipment', 'Component', and 'Exit'. Below the toolbar is a search bar labeled 'Items' and a large central area displaying the 'IntegriWISE™ Fitness-for-Service Assessment Tool' logo. The bottom screenshot shows the same main window with an 'Equipment' dialog box open. The dialog box has a title bar 'IntegriWISE' and a subtitle 'Equipment Add new equipment'. It contains several input fields: 'Equipment Number *', 'Equipment Type *' (dropdown), 'Equipment Name', 'Design Code', 'Description', 'Site *' (dropdown), 'Facility *' (dropdown), 'Manufacturer *' (dropdown), 'Design Pressure' (input field with 'MPa' unit), 'Design Temperature' (input field with '°C' unit), 'Minimum Temperature' (input field with '°C' unit), and 'Hydrotest Pressure' (input field with 'MPa' unit). 'OK' and 'Cancel' buttons are at the bottom of the dialog. The status bar at the bottom of both screenshots shows: 'User: USER-PC2\user1 Server: USER-PC2 Database: C:\Users\user1\Documents\IntegriWISEData\IntegriWISE_LocalDB.mdf Application: IntegriWISE v1.0.1.22453'.

IntegriWISE™

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org

