



COURSE OVERVIEW ME1112 **ASME PCC-1: Flange Management**

Course Title

ASME PCC-1: Flange Management

Course Date/Venue

January 31-February 04, 2027/TBA Meeting Room, Waldorf Astoria Doha West Bay, Doha, Qatar

Course Reference

ME1112

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 ASME PCC-1: Pressure Boundary Bolted Flange Joint Assembly. It covers the ASME PCC-1 and its role in bolted flange joints; the scope and applications of ASME PCC-1 in petrochemical industries and legal and compliance requirements for BFJA; the flange types, classifications, gasket materials, selection criteria, bolting materials and properties and lubricants and their impact on bolted joint performance; the engineering principles of BFJA, safety considerations in bolted joint assembly, joint reliability and failure modes; the gasket selection criteria and proper gasket installation techniques; and the bolt tightening methods and principles.



Further, the course will also discuss the types of flange face finishes and measurement of flange surface roughness, detection of flange face defects and remedial actions for damaged flanges; the impact of temperature and pressure on bolted joints; the torque tightening procedures and tensioning methods for bolted joints; the importance of lubrication in achieving target preload, types of lubricants and their effects on torque values; and the methods for proper lubricant application.



During this interactive course, participants will learn the bolt load verification techniques, proper flange alignment, tools and techniques for measuring misalignment and corrective actions for misaligned flanges; the visual inspection techniques, ultrasonic testing of bolt preload and dye penetrant and magnetic particle testing; the leak testing methods, preventive maintenance, integrity management and troubleshooting common joint failures; the required documentation for BFJA compliance and ASME PCC-1 checklists and forms; and the inspection reports and failure analysis documentation, auditing and certification requirements.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an in-depth knowledge on pressure boundary bolted flange joint assembly in accordance with ASME PCC-1 standards
- Discuss ASME PCC-1 and its role in bolted flange joints, scope and applications of ASME PCC-1 in petrochemical industries and legal and compliance requirements for BFJA in operations
- Recognize flange types and classifications, gasket materials and selection criteria, bolting materials and properties and lubricants and their impact on bolted joint performance
- Explain the engineering principles of BFJA, safety considerations in bolted joint assembly and joint reliability and failure modes
- Employ gasket selection criteria, proper gasket installation techniques and bolt tightening methods and principles
- Recognize types of flange face finishes and apply measurement of flange surface roughness, detection of flange face defects and remedial actions for damaged flanges
- Explain the impact of temperature and pressure on bolted joints and apply torque tightening procedures and tensioning methods for bolted joints
- Discuss the importance of lubrication in achieving target preload, types of lubricants and their effects on torque values and methods for proper lubricant application
- Apply bolt load verification techniques, proper flange alignment, tools and techniques for measuring misalignment and corrective actions for misaligned flanges
- Carryout visual inspection techniques, ultrasonic testing of bolt preload and dye penetrant and magnetic particle testing
- Apply leak testing methods, preventive maintenance, integrity management and troubleshooting common joint failures
- Identify the required documentation for BFJA compliance, ASME PCC-1 checklists and forms, inspection reports and failure analysis documentation and auditing and certification requirements

Who Should Attend

This course provides an overview of all significant aspects and considerations of ASME PCC-1: pressure boundary bolted flange joint assembly for mechanical engineers, design and manufacturing professionals, quality assurance and inspection personnel, maintenance and reliability professionals, piping and pipeline inspectors, maintenance technicians, maintenance engineers, piping engineers, quality assurance/quality control (QA/QC) engineers, shop supervisors, project managers, lead technicians and other technical staff.



Course Certificate(s)

- (1) Internationally recognized Competency Certificates will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:-





- (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.

*Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology **

Haward Technology Middle East
Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-25
HTME No. 74851
Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
ME1112	ASME PCC-1: Flange Management	Nov 10-14, 2025	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Jaryl Castillo
Academic Director

Haward Technology has been approved as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 7201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2015 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2015 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 Association 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 is accredited by

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Certificate Accreditations

Haward's 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**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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 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.

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:



Dr. Tony Dimitry, PhD, MSc, BSc, is a **Senior Mechanical & Maintenance Engineer** with over **30 years** of industrial experience within the **Petroleum, Oil & Gas, Petrochemical, Nuclear & Power** industries. His expertise covers **Flange Assembly Method, Fabrication & Jointing, Jointing & Spool Fabrication, Butt Jointing, Joint & Spool Production, Pipe Cuttings, Flange Bolt Tightening Sequence, Hydro Testing, ASME PCC-1 & BFJA, Failure Analysis Methodologies, Machinery Root Cause Failure Analysis (RCFA),**

Preventive Maintenance & Condition Monitoring, Reliability Centred Maintenance (RCM), Risk Based Inspection (RBI), Root Cause Analysis (RCA), Planning & Managing Plant Turnaround, Scheduling Maintenance, Data Archive Maintenance, Master Milestone Schedule (MMS), Piping & Mechanical Vibration Analysis, Preventive & Predictive Maintenance (PPM) Maintenance, Condition Based Monitoring (CBM), Risk Based Assessment (RBA), Planning & Preventive Maintenance, Maintenance Management (Preventive, Predictive, Breakdown), Reliability Management, Rotating Equipment, Scheduling & Cost Control, Maximo Foundation, Maximo Managing Work, Asset Management Best Practices, Resource Management, Inventory Set-up & Management, Work Management, Automatic & Work Flows & Escalations, Vibration Analysis, Heat Exchanger, Siemens, Gas & Steam Turbine Maintenance, Pumps & Compressors, Turbo-Expanders, Fractional Columns, Boilers, Cryogenic Pumps for LNG, Electromechanical Maintenance, Machinery Alignment, Valves Selection, Installation & Maintenance, Valve Technology, Safety, Safety Relief Valve Sizing, Operation, Testing, Maintenance & Troubleshooting, Heat Exchanger Operation, Maintenance & Repair, Heat Exchanger Analysis, Shell & Tube Heat Exchangers, Engineering Drawings, AutoCAD & GIS Support, Retailed Engineering Drawings, Codes & Standards, Mechanical Diagrams Interpretation, Reading Engineering Drawings, Process & Project Drawings, Engineering Drawings Interpretation, Piping Layouts & Isometrics, P&ID Reading & Interpretation, Glass Reinforced Epoxy (GRE), Glass Reinforced Pipes (GRP), Glass Reinforced Vent (GRV), Mechanical Pipe Fittings, Flange Joint Assembly, Adhesive Bond Lamination, Isometric Drawings, Lubrication Technology, Bearing & Rotary Machine, Blower & Fan, Shaft Repair, Safety Relief Valves, Pipelines, Piping, Pressure Vessels, Process Equipment, Diesel Engine & Crane Maintenance, Tanks & Tank Farms, Pneumatic System, Static Equipment, FMEA, Corrosion, Metallurgy, Thermal and Electrical Modelling of Battery Problems. He is also well-versed in various simulators such as **i-Learn Vibration, AutoCAD, Word Access, Aspen One, Fortran, VB, C ANSYS, ABAQUS, DYNA3D, Ceasar, Caepipe, MS Project, Primavera, MS Excel, Maximo, Automation Studio and SAP.** Currently, he is the **Maintenance Manager** of the **PPC Incorporation** wherein he is responsible for the maintenance and upgrading of all **Power Station** components.

During his career life, Dr. Dimitry held a significant position such as the **Operations Engineers, Technical Trainer, HSE Contracts Engineer, Boilers Section Engineer, Senior Engineer, Trainee Mechanical Engineer, Engineer, Turbines Section Head, Professor, Lecturer/Instructor and Teaching Assistant** from various multinational companies like **Chloride Silent Power Ltd., Technical University of Crete, National Nuclear Corporation, UMIST Aliveri Power Station and HFO Fired Power Station.**

Dr. Dimitry has **PhD, Master and Bachelor** degrees in **Mechanical Engineering** from the **Victory University of Manchester** and the **University of Newcastle, UK** respectively. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and an associate member of the **American Society of Mechanical Engineers (ASME)** and **Institution of Mechanical Engineers (IMechE)**. He has further delivered various trainings, seminars, courses, workshops and conferences internationally.



Training Methodology

Our courses employ an interactive, learner-centred methodology that integrates theoretical knowledge with practical application. The training is delivered through a suitable combination of some or all of the following methods, selected according to the course content and learning objectives:

- Instructor-led presentations and facilitated discussions
- Practical workshops and participant presentations
- Hands-on exercises and real-world case studies
- Equipment demonstrations and technical drawings
- Hardware- and software-based simulations
- Gamification & Role Play in soft-skills courses only
- Virtual Reality (VR) and Augmented Reality (AR)
- Instructional videos and other relevant training resources

This blended approach encourages active participation, strengthens practical skills and supports the effective application of acquired knowledge in the workplace.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Sunday, 31st of January 2027

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Overview of ASME PCC-1 & BFJA <i>Introduction to ASME PCC-1 and its Role in Bolted Flange Joints • Scope and Applications of ASME PCC-1 in Petrochemical Industries • Legal and Compliance Requirements for BFJA in Operations • Key Terminologies and Definitions</i>
0930 – 0945	Break
0945 – 1030	Components of a Bolted Flange Joint Assembly <i>Flange Types and Classifications • Gasket Materials and Selection Criteria • Bolting Materials and Properties • Lubricants and Their Impact on Bolted Joint Performance</i>
1030 – 1130	Engineering Principles of BFJA <i>Bolt Load and Stress Distribution • Effects of Temperature and Pressure on Joint Integrity • Torque, Tension and Preload Relationships • Factors Affecting Bolt Relaxation and Creep</i>
1130 – 1215	Safety Considerations in Bolted Joint Assembly <i>Common Safety Hazards in Flange Joint Assembly • PPE and Safety Equipment Requirements • Lockout/Tagout (LOTO) Procedures for BFJA • Emergency Response for Flange Joint Failures</i>
1215 – 1230	Break



1230 – 1420	Joint Reliability & Failure Modes Common Failure Modes in Bolted Flange Joints • Causes of Leakage and Structural Failures • Inspection Techniques for Detecting Joint Degradation • Case Studies of BFJA Failures in the Petrochemical Industry
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: Monday, 01st of February 2027

0730 – 0830	Gasket Selection Criteria Types of Gaskets (Soft, Semi-Metallic, Metallic) • Chemical Compatibility and Temperature Resistance • Pressure Rating and Thickness Considerations • Role of Compression and Resilience in Gasket Performance
0830 – 0930	Proper Gasket Installation Techniques Handling and Storage Best Practices • Cleaning and Preparation of Flange Faces • Positioning and Alignment of Gaskets • Common Mistakes in Gasket Installation
0930 – 0945	Break
0945 – 1100	Bolt Tightening Methods & Principles Torque versus Tension Tightening Methods • Bolt Elongation and Strain Measurement • Impact of Lubrication on Torque Values • Industry Best Practices for Uniform Tightening
1100 – 1215	Flange Face Inspection Types of Flange Face Finishes • Measurement of Flange Surface Roughness • Detection of Flange Face Defects (Pitting, Scratches, Warping) • Remedial Actions for Damaged Flanges
1215 – 1230	Break
1230 – 1330	Impact of Temperature & Pressure on Bolted Joints Thermal Expansion and Contraction Effects • Pressure Fluctuations and Their Impact on Sealing Performance • Cold Flow and Creep Behavior of Gaskets • Methods to Compensate for Temperature-Induced Variations
1330 – 1420	Hands-on Workshop: Gasket Installation & Inspection Demonstration of Gasket Handling and Placement • Practical Exercises on Correct Flange Face Cleaning • Inspection of Flange Surfaces Using Standard Tools • Group Discussions on Best Practices
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: Tuesday, 02nd of February 2027

0730 – 0830	Torque Tightening Procedures Calculation of Correct Torque Values • Effect of Bolt Diameter and Material on Torque Requirements • Use of Calibrated Torque Wrenches • Stepwise Torque Application Methods
0830 – 0930	Tensioning Methods for Bolted Joints Principles of Hydraulic Tensioning • Comparison Between Tensioning and Torquing • Benefits and Limitations of Hydraulic Tensioning • Hands-on Demonstration of Tensioning Techniques
0930 – 0945	Break



0945 – 1100	Friction & Lubrication in Bolted Joints <i>Importance of Lubrication in Achieving Target Preload • Types of Lubricants and Their Effects on Torque Values • Methods for Proper Lubricant Application • Case Study: Impact of Lubrication on Bolt Load Accuracy</i>
1100 – 1215	Bolt Load Verification Techniques <i>Ultrasonic Bolt Elongation Measurement • Load-Indicating Washers and Direct Tension Indicators • Use of Strain Gauges for Real-Time Monitoring • Best Practices for Verifying Applied Bolt Load</i>
1215 – 1230	Break
1230 – 1420	Flange Alignment & Parallelism <i>Importance of Proper Flange Alignment • Tools and Techniques for Measuring Misalignment • Corrective Actions for Misaligned Flanges • Industry Case Studies on Flange Misalignment Issues</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: Wednesday, 03rd of February 2027

0730 – 0830	Hands-on Workshop: Torque & Tensioning Application <i>Practical Exercises on Bolt Torque Application • Use of Tensioning Equipment in Simulated Conditions • Troubleshooting Common Bolting Issues • Group Discussion on Best Practices</i>
0830 – 0930	Non-Destructive Testing (NDT) for Bolted Joints <i>Visual Inspection Techniques • Ultrasonic Testing of Bolt Preload • Dye Penetrant and Magnetic Particle Testing • Case Studies on NDT Applications</i>
0930 – 0945	Break
0945 – 1100	Leak Testing Methods <i>Hydrostatic Testing Procedures • Pneumatic Testing Principles • Pressure Drop and Bubble Leak Testing • Regulatory Requirements for Leak Testing in Petrochemical Industries</i>
1100 – 1215	Preventive Maintenance & Integrity Management <i>Routine Maintenance Schedules for Bolted Joints • Predictive Maintenance Techniques • Integrity Assessment of Aged Bolted Joints • Digital Monitoring and Data Logging</i>
1215 – 1230	Break
1230 – 1420	Troubleshooting Common Joint Failures <i>Root Cause Analysis for Bolted Joint Failures • Gasket Blowout and Bolt Failure Case Studies • Corrective Actions for Recurring Joint Leakage • Lessons Learned from Real-World Incidents</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 Four

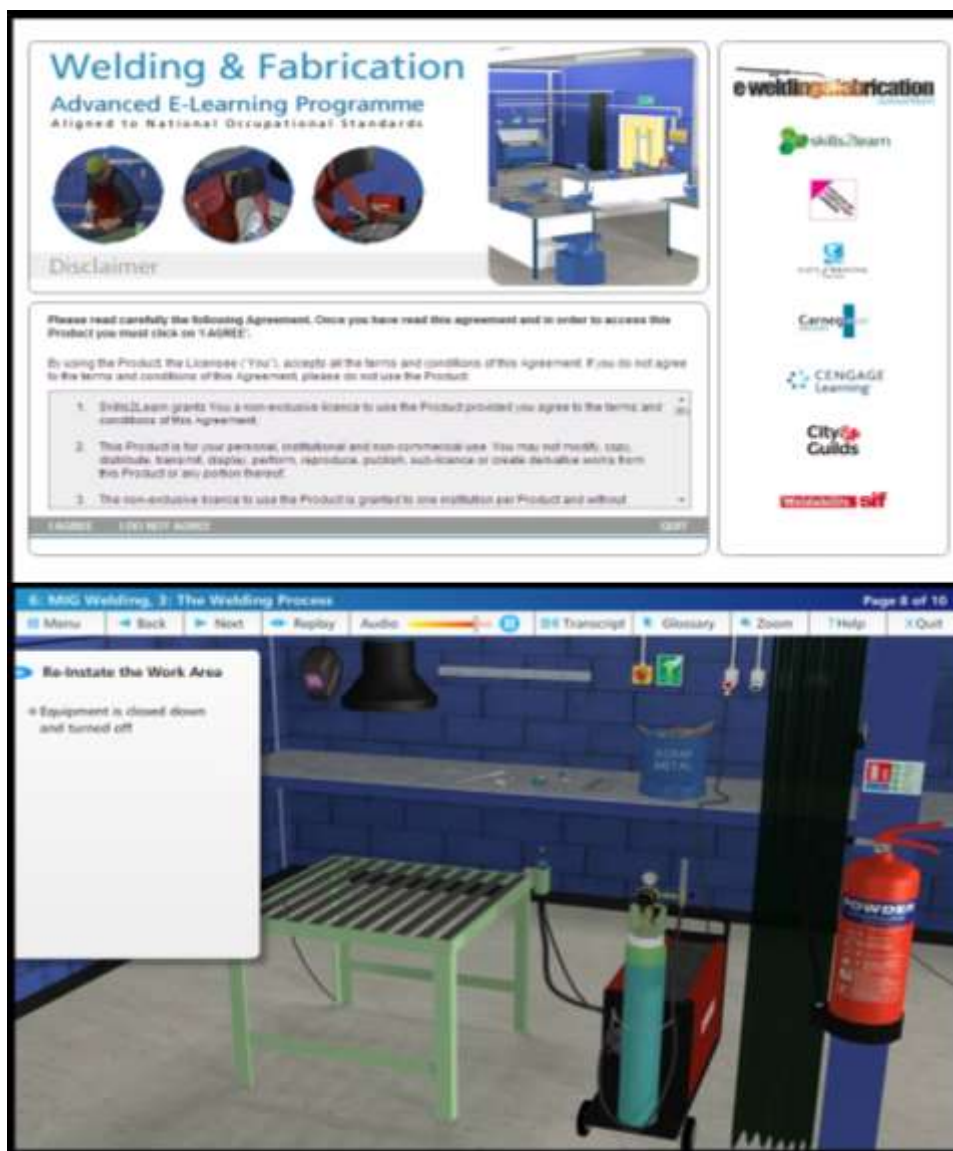


Day 5: Thursday, 04th of February 2027

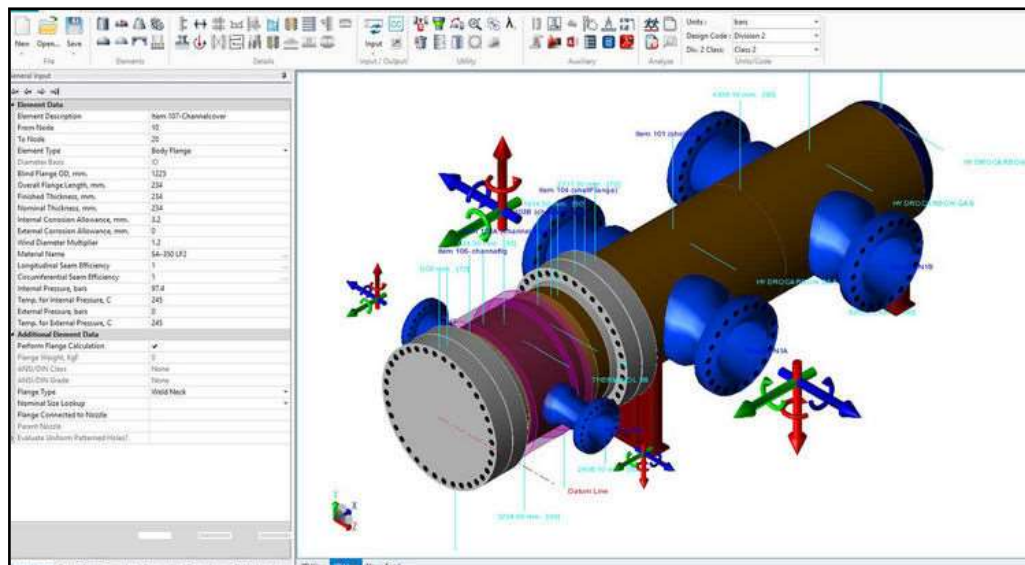
0730 – 0930	Documentation & Compliance with ASME PCC-1 <i>Required Documentation for BFJA Compliance • ASME PCC-1 Checklists and Forms • Inspection Reports and Failure Analysis Documentation • Auditing and Certification Requirements</i>
0930 – 0945	Break
0945 – 1100	Hands-on Workshop: Leak Detection & NDT Application <i>Demonstration of Hydrostatic and Pneumatic Testing • Practical Exercises on Ultrasonic Bolt Testing • Hands-on Experience with Leak Detection Tools • Group Discussion on Best Practices</i>
1100 – 1215	Review of Course Content <i>Summary of Key Learning Points • Interactive Q&A Session • Discussion on Real-World Applications</i>
1215 – 1230	Break
1230 – 1300	Practical Evaluation – Bolted Flange Joint Assembly <i>Hands-on Assessment of Gasket Installation • Bolt Tightening and Verification Exercises • Flange Alignment and Leak Detection Practical Test • Evaluation of Best Practices Implementation</i>
1300 – 1315	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about Topics that were Covered During the Course</i>
1315 – 1415	COMPETENCY EXAM
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Practical Sessions

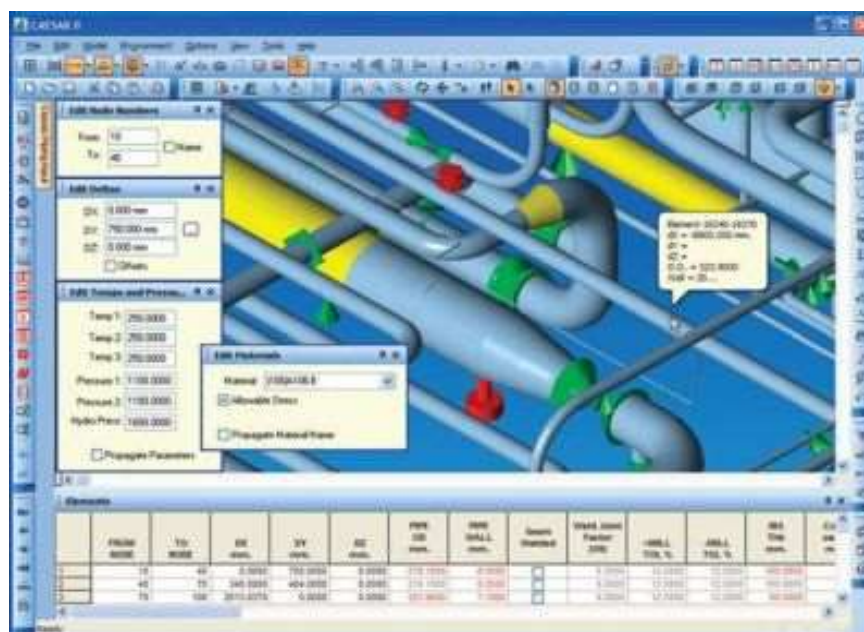
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout welding inspection using the “E-Welding & Fabrication”, “PV Elite”, “CAESAR II”, “PIPESIM”, “AutoPIPE”, “PIPE-FLO” and “Nozzle-Pro” simulator.



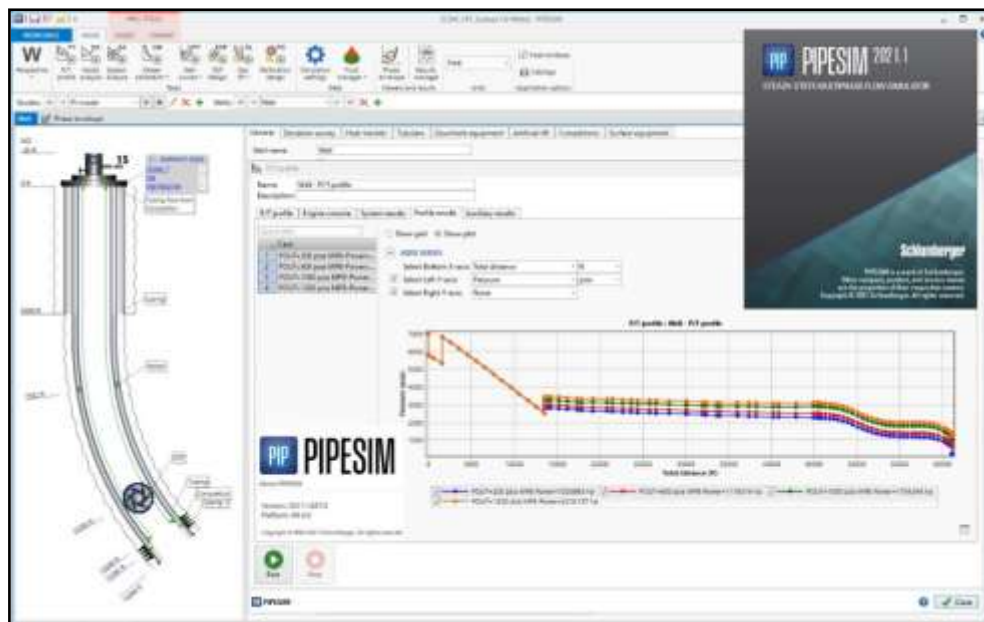
E-Welding & Fabrication



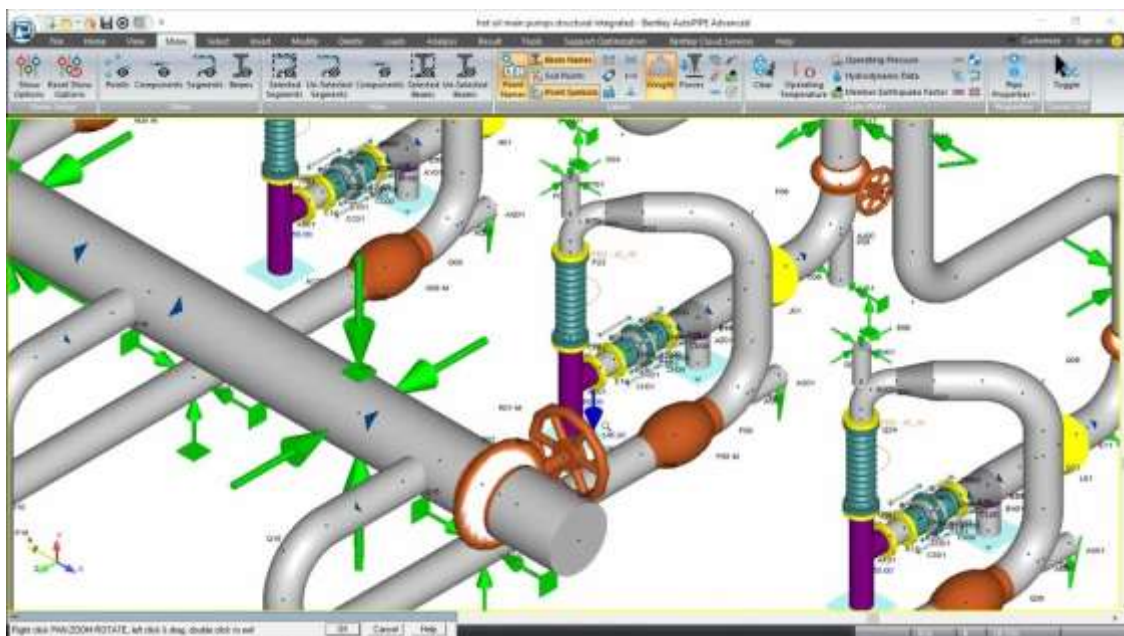
PV Elite



CAESAR II



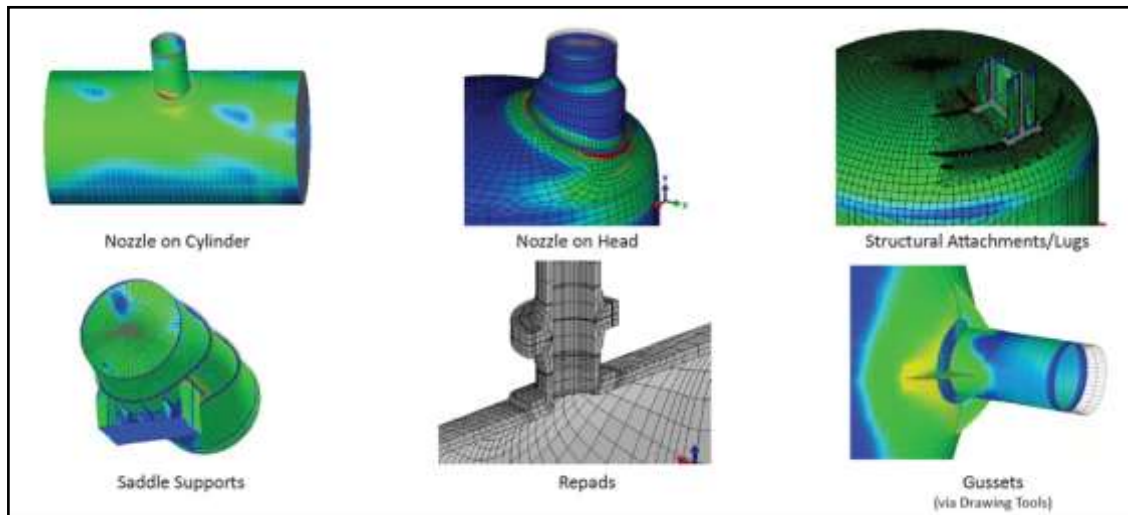
PIPESIM



AutoPIPE



PIPE-FLO



NozzlePRO

Course Coordinator

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