COURSE OVERVIEW ME0600
ASME B31.1 Power Piping Design, Analysis and Fabrication

Course Title
ASME B31.1 Power Piping Design, Analysis and Fabrication

Course Reference
ME0600

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 21-25, 2025	Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
3	July 27-31, 2025	Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA
4	October 05-09, 2025	Oryx Meeting Room, Double Tree by Hilton Al Saad, Doha, Qatar

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.

Worldwide competitiveness is forcing the need to construct more effective piping systems, possible only if existing piping codes and standards are understood and the intentions realized. This course brings you up to the minute on current Power Piping Code requirements and provides insight into how these requirements have evolved and what future changes in the Code may be expected.

The course explores the background, rules and trends in piping design, analysis, and fabrication, and the vital elements of power, industrial and institutional plant construction and maintenance – within the context of meeting the requirements and intent of ASME B31.1 and its appendices.

During this interactive course, participants will learn the principal failure modes of piping components and where to look for such failures; the differences between pressure component design and structural design; the layout and simplified analysis techniques; how to qualify nonstandard fittings and joints; the stress intensification factors; the common and less common welding processes, advantages and disadvantages; the fabrication and examination rules and their bases; and the various code for operation and maintenance.

Course Objectives

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

- Apply and gain an in-depth knowledge on ASME B31.1 power piping design, analysis and fabrication
- Identify code intentionally simplified and how to deal with special and complex piping problems
- Discuss the principal failure modes of piping components and where to look for such failures
- Describe the differences between pressure component design and structural design
- Layout and simplified analysis techniques
- Determine how to qualify nonstandard fittings and joints
- Develop stress intensification factors
- Recognize common and less common welding processes, advantages and disadvantages
- Distinguish fabrication and examination rules and their bases
- Employ various code for operation and maintenance

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 provides an overview of all significant aspects and considerations of ASME B31.1 power piping design, analysis and fabrication for engineering entering the piping design and analysis field, practicing piping engineers requiring background on Code compliance and trends in piping design, analysis and fabrication, piping fabricators and suppliers wishing to understand the relationship of fabrication and manufacture to the design and construction of piping systems and QA/QC personnel

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: -

- 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.

- 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. Steve Magalios, CEng, PGDip (on-going), MSc, BSc, is a **Survey & Pipeline Engineer** with almost **40 years** of extensive **On-shore/Offshore** experience in the **Oil & Gas**, **Construction**, **Refinery** and **Petrochemical** industries. His expertise widely covers in the areas of GIS, ArcInfo, ArcView, GIS, Spatial Analysis & Modeling, Geographical Information System **(GIS)**, **Pipeline** Operation & Maintenance, **Pipeline** Systems, **Pipeline** Design & Construction, **Pipeline** Repair Methods, **Pipeline** Engineering, Pipeline Integrity Management System (**PIMS**), **Pipeline** Pigging, Piping & Pipe Support Systems, **Piping** Systems & Process Equipment, **Piping** System Repair & Maintenance, **Piping** Integrity Management, Computer Aided Design (**CAD**), **Building & Road** Design Skills, **Civil Engineering Design**, **Structural Reliability** Engineering, **Road** Construction & Maintenance, **Concrete Structures & Building Rehabilitation**, **Reinforced Concrete Structures Protection**, **Geosynthetics & Ground Improvement Methods**, **Blueprint** Reading & Interpretation, **Blue Print** Documentation, Mechanical **Drawings**, **P&ID**, **Flow Diagram** Symbols, **Land Surveying** & Property Evaluation, **Cartographic** Representation, Soil Classification, **Cadastral Surveying** & Boundary Definition, **Project Engineering** & Design, **Construction** Management, **Project Planning** & Execution, **Site Management**, **Site Supervision**, Effective **Resource Management**, **Project Evaluation**, **FEED** Management, **EPC Projects** Design, **Project Completion & Workover**, Quality Control and Team Management. He is also well-versed in Lean & Sour Gas, Condensate, **Compressors**, **Pumps**, Flare Knockout Drum, Block **Valve** Stations, New Slug Catcher, Natural **Gas Pipeline** & Network, Scraper Traps, Burn Pits, Risk Assessment, HSE Plan & Procedures, Quality Plan & Procedures, Safety & Compliance Management, Permit-to-Work Issuer, ASME, API, ANSI, ASTM, BS, NACE, ARAMCO & KOC Standards, MS Office tools, **AutoCAD**, **STAAD-PRO**, Autodesk Map and various programming languages such as FORTRAN, BASIC and AUTOLISP. 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**, **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 Ingeneria 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's** and **Bachelor's** degree 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 has delivered numerous trainings, workshops, seminars, courses and conferences 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.
Doha	**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.

Course Program

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

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction***
0900 – 0930	***Section I*** *Piping History ● Code Philosophy ● General Requirements ● Organization*
0930 – 0945	*Break*
0945 – 1100	***Section II*** *ASME B31.1 Operations and Scope ● Scope Philosophy ● Piping Design Criteria*
1100 – 1230	***Section III*** *Failure Modes ● Stress Categories-Sustained (Primary) Stresses ● Cyclic (Secondary) Stress Ranges ● Basis of Allowable Stresses Acceptance Criteria*
1230 – 1245	*Break*
1245 – 1330	***Section IV*** *Piping Design Conditions ● Normal Design Loads ● Consideration for Unusual Loads ● Load Categorization*
1330 – 1420	***Workshop (1)*** *Problem Set*
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 – 0830	***Workshop (1)*** *Review*

0830 – 0930	***Section V*** *Piping Design Criteria ● Allowable Stresses ● Stress Ranges ● Cyclic Stress Ranges ● Variations from Normal Operation System (External Load) Design: Weight ● Occasional Load Stress*
0930 -0945	*Break*
0945 – 1100	***Section VI*** *Pressure Design of Straight Pipe ● Determining Wall Thickness ● Joint Efficiency Factors and Manufacturing Quality Factors*
1100 – 1230	***Section VII*** *Component (Pressure) Design: Pressure-Temperature Ratings and Schedule or Weight Designations Determining Wall Thickness ● Joint Efficiency Factors and Manufacturing Quality Factors*
1230 – 1245	*Break*
1245 – 1420	***Workshop (2)*** *Problem Set*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Workshop (2)*** *Review*
0830 – 0930	***Section VII (cont'd)*** *Bends and Elbows ● Area Replacement Rules for Branch Connections ● Qualification of Standard and Non-Standard Components ● Expansion Joints*
0930 -0945	*Break*
0945 - 1230	***Section VIII*** *Guarding Against Piping Collapse ● System (External Load) Design: Weight ● Occasional Loads (Earthquake and Wind) ● Consideration of Dynamic Loads ● Special Piping Systems: Boiler External Piping ● Pressure Relief Piping ● Instrument Piping*
1230 – 1245	*Break*
1245 – 1330	***Section IX*** *Flexibility Analysis ● Fatigue Considerations ● Stress Intensification Factors and Stress Indices ● Combinations of Loads ● Flexibility Analysis*
1330 – 1420	***Workshop (3)*** *Problem Set*
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	***Workshop (3)*** *Review*
0930 – 0945	*Break*
0945 – 1100	***Section X*** *Cold Spring*
1100 – 1230	***Section XI*** *Stress Intensification Factors and Stress Indices*

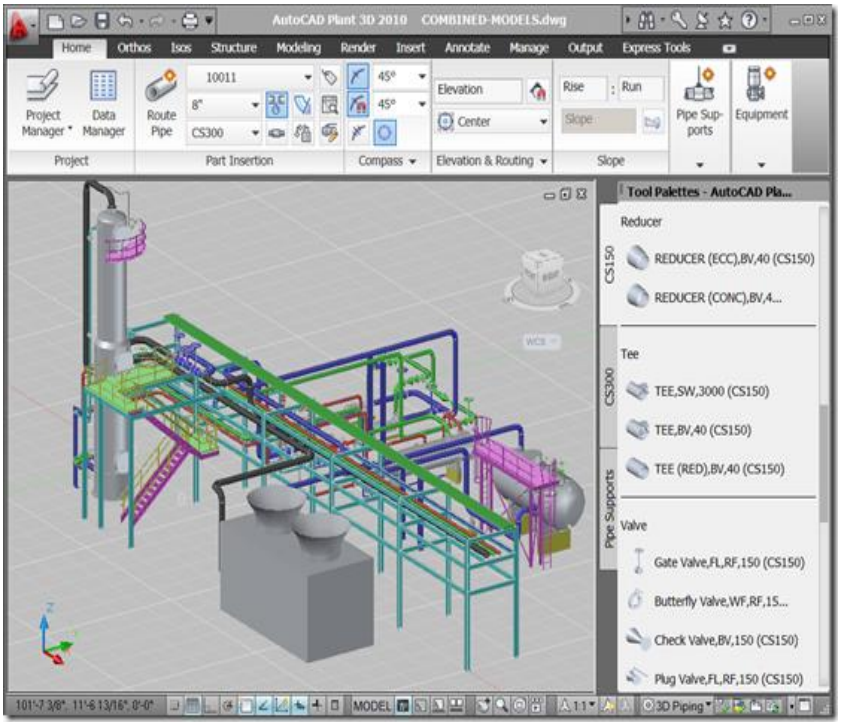
1230 – 1245	*Break*
1245 – 1420	***Workshop (4)*** *Problem Set*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Workshop (4)*** *Review*
0830 – 0930	***Section XII*** *Simplified Analysis Methods ● Layout Techniques ● Equipment and Piping Layouts*
0930 – 0945	*Break*
0945 – 1130	***Section XIII*** *Pipe Support Design ● Allowable Stresses ● Hanger Design*
1130 – 1230	***Section XIV*** *Requirements for Specific Piping Systems ● Boiler External Piping (BEP) ● Non Boiler External Piping ● Instrument ● Control and Sample Piping*
1230 - 1245	*Break*
1245 – 1345	***Workshop (5)*** *Problem Set*
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 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 our state-of-the-art "Autocad Piping Software" Simulator.



Autocad Piping Software

Course Coordinator

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