

Process Piping

ASME Code for Pressure Piping, B31

AMIR ESMAEILI *FIEAust CPEng NER APECIIntPE(Aus) RPEQ ASME B31.3 IRG*

- Over 17 years of experience in the Oil & Gas Industry.
- NER Oil & Gas Pipeline and Mechanical
- Worked in *Oil & Gas Refineries, Petrochemical Plants, Large size - High Pressure Transportation Pipelines* all located in the Persian Gulf.

WORKSHOP SUMMARY

The aim of this two day workshop is to provide participants with an understanding of the principles and minimum requirements of *ASME B31.3, Pressure Piping Code*.

This course is designed for mechanical, structural and civil engineers who wish to understand the principles involved in Process Piping.

This workshop will cover the minimum requirements for "Design, Calculations, Material Selection, Fabrication-Assembly-Erection and Examination-Inspection-Testing" in accordance with the most globally recognised reference, *ASME B31.3 Process Piping Code*.

All sessions provide worked examples, tutorial exercises and solutions.

DAY ONE (8.30 - 9.00 Registration)

9.00 - 10.30 Session 1

- MATERIALS

- Scope and Definitions
- Relevant Codes and Standards
- Materials used in Process Piping
- Ferrous vs Non Ferrous materials
- Steel requirements (eg carbon content, austenitic s/s)
- Minimum wall thicknesses
- Temperature limitations
- Impact requirements
- Tutorial



10.30 - 11.00 Morning Tea

11.00 - 12.30 Session 2

- DESIGN BASICS

- Design Temperatures (Maximum and Minimum)
- Allowable stresses in Tension
- Pipe Ratings
- Correlation of Fitting vs Class
- Requirements for Bolting and Welding
- Tutorial

12.30 - 1.30 Lunch (Provided at Venue)

1.30 - 3.00 Session 3

- DETAILED DESIGN I

- Elastic Limit vs Offset vs Proportional Limit
- Yield Strengths for Ferrous and Non Ferrous piping
- Weld Joint Quality Factor
- Forged Fittings, Socket Welding and Threaded
- Threaded Joints vs Corrosion
- Factory Made Wrought Butt-welded Fittings
- Branch Connections
- Tutorial

CALCULATORS REQUIRED

3.00 - 3.30 Afternoon Tea

3.30 - 5.00 Session 4

- DETAILED DESIGN II

- Pressure Design of Components
- Pipe Thickness vs Allowable Stress vs Joint Efficiency
- Design of Elbows
- Design of Miter Bends
- Design of Blanks

DAY TWO

9.00 - 10.30 Session 5

- DETAILED DESIGN III

- Design for Sustained Bending Moments, Torsional moments, and for Sustained Longitudinal Forces
- Cyclic Loading vs Stresses
- Tutorial



10.30 - 11.00 Morning Tea

11.00 - 12.30 Session 6

- FABRICATION

- End Preparation
- Typical Butt Weld requirements
- Typical Fillet Weld requirements
- Preheating Requirements
- Post Weld Heat Treatment Requirements (PWHT)
- Minimum Holding Times at Temperature for Control Thickness
- Exemptions
- Tutorial

12.30 - 1.30 Lunch (Provided at Venue)

1.30 - 3.00 Session 7

- ASSEMBLY AND ERECTION

- Alignment Requirements
- Bolt Length and Nut requirements
- Bolt Torque requirements
- Gasket requirements
- Tutorial

3.00 - 3.30 Afternoon Tea

3.30 - 5.00 Session 8

- INSPECTION, EXAMINATION, TESTING

- Visual vs Radiographic examination and testing
- Checking for Undercuts, Lack of Fusion, Incomplete Penetration
- Slag Inclusion checks including Surface Porosity
- Hydrostatic Leak testing and Sensitive Leak testing
- Low Temperature, Pressure and Fluid testing
- Crack issues



5.00 - 5.15 Certificate of Attendance & Feedback sheets

COURSE COST

- 2 day course – **AUD\$1,570 pp**

DATES, VENUES & REGISTRATION

- *Registration form (back of catalogue)*
- Visit our website www.etia.net.au

FURTHER INFORMATION

- Office (02) 9899 7447
- Mobile 0413 998 031
- Email registrations@etia.net.au