



2KG TRAINING

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## ASME B31.3: PROCESS PIPING

Presenter: Jim Meyer

### ABOUT THE PRESENTER: Jim Meyer



Jim E. Meyer, P.E., has over 45 years of experience in refining petrochemical, chemical, power generation and industrial facilities. He is a principal engineer at CDM Smith, a full service engineering and architectural firm, located in Wadsworth Ohio. Jim is experienced in overall project coordination/management, pressure equipment, piping design, analysis, specifications, support design, mechanical system requirements and documentation requirements. In particular, areas of his technical competence include ASME piping and pressure vessel codes, stress analysis, field troubleshooting piping system support, vibration, and expansion problems.

Jim is a member of ASME and has been involved in the ASME B31.1 and ASME B31.3 Section committees for over 40 years. He is currently, Chair of the ASME B31 Standards Committee, Chair of the B31 Mechanical Design Committee and serves on the ASME Board on Pressure Technology Codes and Standards. Jim has also served as Chair of the ASME B31.3 Process Piping Section Committee and Chair of ASME B31.1 Power Piping Code Section Committee.

Most recently, Jim co-authored chapters in the ASME Boiler and Pressure Vessel Companion Guide, 5th Edition, covering the ASME B31.1 Power Piping Code and the B31.3 Process Piping Code. Past projects and work experience has involved major oil refineries, petrochemical plants, fossil, nuclear, solar and alternative energy generation, as well as cryogenic and vacuum test facilities.

2KG Training have partnered with ASME in New York for our first live virtual course, to be presented by Jim Meyer. Jim is currently Chair of the ASME B31 Standards Committee and has co-authored chapters on B31.3 Code in the ASME Boiler and Pressure Vessel Companion Guide. He is currently the most sought after ASME B31.3 trainer worldwide and you should not miss this opportunity to learn from his vast wealth of knowledge.

Number of days: 4

CPD Points: 4

### Live Virtual Classroom

2KG Training Live Virtual Courses offer participants the same instructors, training systems, course materials, personal support, and face-to-face engagement with instructors and other participants that they would expect to find in a conventional classroom.

The ASME B31.3 Process Piping Live Virtual Course brings participants together in a virtual classroom, where they receive training from an expert via a live video link. Participants are interconnected via audio and video, enabling them to interact both with the instructor and with their classmates. Learners can speak to their instructor at any time to ask questions, request assistance, and instructors can provide hands-on support.

### Who Should Attend

**Intended for** manufacturers, users, constructors, designers, and others concerned with the design, fabrication, assembly, erection, examination, inspection, and testing of piping, plus all potential governing entities.

### Description

ASME has been defining piping safety since 1922. ASME B31.3 contains requirements for piping typically found in petroleum refineries; chemical, pharmaceutical, textile, paper, semiconductor, and cryogenic plants; and related processing plants and terminals. It covers materials and components, design, fabrication, assembly, erection, examination, inspection, and testing of piping.

## COURSE OUTLINE

### **This Code applies to piping for all fluids including:**

- (1) raw, intermediate, and finished chemicals;
- (2) petroleum products;
- (3) gas, steam, air and water;
- (4) fluidized solids;
- (5) refrigerants; and
- (6) cryogenic fluids.

Also included is piping that interconnects pieces or stages within a packaged equipment assembly.

### **Key changes to this revision include:**

Added specific permission for the owner to designate a representative to carry out selected responsibilities required by this Code, and noted that the owner retains ultimate responsibility for the actions of the representatives.

### **Flange Design**

Added the ASME B&PV Code Section VIII, Division 2, para. 4.16 flange calculation method as an acceptable way to design flanges for B31.3 applications. The Division 2 procedure considers pressure, gasket seating, and externally applied axial forces and net-section bending moments.

### **Stress Intensification and Flexibility Factors**

Added specific references to ASME B31J-2017 as a resource for stress intensification and flexibility factors as an alternate to Appendix D.

### **High Cycle Fatigue**

Added Appendix W, which describes an alternate method for evaluating high cycle fatigue when specified by the owner. The method is intended to be used when the number of significant stress cycles exceed 100,000.

A significant stress cycle is defined as a cycle with a computed stress range greater than 20.7 MPa (3.0 ksi) for ferritic and austenitic steels. For other materials, or corrosive environments, all cycles shall be considered significant unless otherwise documented in the engineering design. The existing rules provide an acceptable method of evaluating piping systems for fatigue when the number of significant stress cycles is less than or equal to 100,000. The piping cyclic loadings may be due to thermal expansion, anchor motion, vibration, inertial loads, wave motion or other sources.

### **Heat Treatment for Attachment Welds**

Added explicit language requiring heat treatment for structural attachments welded directly to pressure-containing materials when the piping is required to be heat treated.

### **Visual Examination**

Added a definition for readily-accessible: those surfaces that can be examined from not more than 600 mm (24 in.) and at an angle not less than 30 degrees to the surface to be examined.

Increased visual examination required for normal fluid service welds from 5% random to 100%.

### **High Pressure Piping Fatigue Analysis**

A fatigue analysis is required for all piping systems in Chapter IX High Pressure Fluid Service. In previous editions, this analysis was permitted to be performed in accordance with the BPV Code, Section VIII, Division 2 or Division 3. Division 2's fatigue analysis involves using a standard S/N curve to determine the design fatigue life. Division 3 also allows an S/N curve approach, but only if it can be shown that the piping component will fail in a leak-before-burst mode. Otherwise, a more rigorous fracture mechanics evaluation is required. The Division 3 S/N analysis contains several requirements that are not included in Division 2, such as surface finish and mean stress corrections. Because the Division 2 approach is less precise than the Division 3 approach, wherever possible, Division 2 was eliminated as an option for the required Chapter IX fatigue analysis.

B31.3 is one of ASME's most requested codes. It serves as a companion to ASME's B31.1 Code on Power Piping as well as to the other codes in ASME's B31 series. Together, they remain essential references for anyone engaged with piping.

Careful application of these B31 codes will help users to comply with applicable regulations within their jurisdictions, while achieving the operational, cost and safety benefits to be gained from the many industry best-practices detailed within these volumes.



Registration Form



Number of days: 4
CPD Points: 4

How to register for the course:

- 1. Complete this registration form and fax it to Phindi Mbedzi: Tel: 011 325 0686 Fax: 011 325 0488 Email: phindi@2kg.co.za
2. Acknowledgement will be emailed to you.
3. Final confirmation and details will be faxed or emailed to you approximately 7 days before the commencement of the seminar.

Cancellation Policy:

By signing and returning the registration form, the authorizing signatory on behalf of the stated company is subject to the following terms and conditions.

- All cancellations must be received in writing
Any cancellations received less than 3 working days before the date of the event, the full fee will be payable and no refunds or credit notes will be given.
If a registered delegate does not cancel and fails to attend the Workshop, this will be treated as a cancellation and no refund or credit note will be issued.

Delegate information:

Title: Surname: Name:
Full Company name: Job Title:
Postal Address (to which invoice must be sent):
Code: VAT number:
Tel: fax:
Cell: Email:

Contact/ Accounts information:

Title: Surname: Name:
Tel: fax:
Cell: Email:

Please tick the course that you would like to attend:

25-28 January 2021
Live Virtual Classroom
R15 725.00 (excl VAT)

Currently Unavailable a Date to be Advised
CedarWoods of Sandton, Johannesburg
R18 500.00 (excl VAT)

I have read and agreed to all the conditions of registration as stipulated in this brochure.

Signature

Date

For more info and to register contact Phindi Mbedzi on tel: 011 325 0686 or cell: 071 125 6188 and email: phindi@2kg.co.za or visit www.2kg.co.za