



2KG TRAINING

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## ASME B31.3 Process Piping

**Presenter: Dr. Ing. Daniel Baloš**

### ABOUT THE PRESENTER: DR. ING. DANIEL BALOŠ



Dr. Ing. Daniel Baloš is a Senior Consultant with over 28 years of expertise in Asset Integrity, Risk-Based Inspection (RBI), Fitness for Service, and Damage Mechanisms—especially within the oil, gas, and refining sectors. He has a strong technical focus on the practical application of ASME VIII-1 and ASME B31.3 standards, which underpin his work in ensuring the safety and reliability of high-pressure equipment and process piping systems.

His academic background includes an MSc in Mechanical Engineering, with a specialization in applicative IT and industrial management, and a PhD focused on applying data mining techniques to model material behavior in high-temperature components. Throughout his career, Dr. Baloš has led and contributed to more than 20 EU-funded projects, as well as numerous national initiatives in material research and project management.

In his professional journey, he has developed a comprehensive understanding of materials, degradation mechanisms, and inspection methods—skills that are critical in the oil and gas refining industry. His leadership in RBI and asset integrity projects is evidenced by successful implementations in key regions, including projects in Kuwait, Qatar, and across Europe. Additionally, he has played a pivotal role in establishing RBI standards and procedures, contributing to international standardization efforts and the development of specialized tools for RBI assessment in refining equipment.

Dr. Baloš has also been a dedicated educator and mentor, delivering design and Asset Integrity courses and training programs since 2005 across Germany, the Netherlands, Serbia, Romania, China, Vietnam, Myanmar, Egypt, Turkey, and Malaysia. He continues to develop innovative training materials and new courses designed to advance professional expertise in asset integrity and risk management, with a focus on the rigorous standards that drive the oil and gas refining industry.

**Number of days: 4**

**CPD Points: 4**

## AIM OF COURSE

The lack of commentary, or historical perspective, regarding the B31.3 Code requirements for process piping design and construction is an obstacle to the designer, manufacturer, fabricator, supplier, erector, examiner, inspector, and owner who want to provide a safe and economical piping system.

This intensive four day course, through the use of hundreds of examples shown and personal experiences of the instructor, demonstrates how the B31.3 Code has been correctly and incorrectly applied.

This seminar explains the principle intentions of the Code and why the Code is not a handbook. Attendees come away from this seminar with a clear understanding of how piping systems fail & what the Code requires the designer, manufacturer, fabricator, supplier, erector, examiner, inspector and owner to do to prevent such failures.

The focus of the seminar is to enhance participants' understanding and application of the B31.3 Code. Instruction is further enhanced by in-class problem solving, directly applying the rules and equations of the B31.3 Code for specific design and operating conditions to illustrate correct applications

## WHO SHOULD ATTEND

- Piping engineers & designers who need an understanding of the requirements for compliance and the trends of Code changes for piping design and analysis, fabrication, examination, and testing.

# SPECIAL REQUIREMENTS

Attendees are required to bring a scientific calculator.

| MAIN TOPICS  |
|--|
| <div><div>Day 1 – Introduction &amp; Fundamentals of Piping Design</div><div>Welcome &amp; Course Overview<ul style="list-style-type: none"><li>Instructor and participant introductions</li><li>Training objectives, structure and deliverables</li><li>Overview of ASME B31.3 scope and application</li></ul></div><div>Introduction to ASME B31.3 Code<ul style="list-style-type: none"><li>General definitions, scope and fluid-service classifications</li><li>Code structure, clause organization and chart navigation</li></ul></div><div>Material Selection &amp; Requirements<ul style="list-style-type: none"><li>Basis for material selection; listed vs. unlisted components</li><li>Material strength, allowable stresses and design-stress calculation</li><li>Corrosion allowance and temperature-rating considerations</li></ul></div><div>Pressure Design &amp; Components<ul style="list-style-type: none"><li>Pressure–temperature ratings per ASME B16.5</li><li>Pressure-design criteria for pipes, flanges, valves and fittings</li></ul></div><div>Case Study: Applying material selection and pressure-design rules to a sample piping schematic</div></div> |
| <div><div>Day 2 – Advanced Design &amp; Flexibility Analysis</div><div>Flanges, Valves &amp; Fittings<ul style="list-style-type: none"><li>Flange specifications, gasket selection and torque requirements</li><li>Valve types, end-connections and B31.3 compliance checks</li></ul></div><div>Flexibility Analysis<ul style="list-style-type: none"><li>Objectives and load types (sustained vs. displacement)</li><li>Stress-intensification factors and use of SIF tables</li><li>Expansion-joint types, application criteria and placement</li></ul></div><div>Layout &amp; Support<ul style="list-style-type: none"><li>Piping-system layout best practices; loop orientation</li><li>Support types, spacing guidelines and spring hangers</li><li>Thermal-expansion management strategies</li></ul></div><div>Category M Fluid &amp; High-Pressure Systems<ul style="list-style-type: none"><li>Special design, fabrication and inspection requirements for Category M</li><li>Pd×V thresholds and high-pressure fabrication controls</li></ul></div><div>Case Study: Perform flexibility analysis on a Category M loop with expansion-joint integration</div></div>          |

## Day 3 – Fabrication, Installation & Quality Assurance

### Fabrication & Installation Practices

- Welder qualifications, WPS/PQR records and procedure qualification
- Heat-treatment, forming techniques and dimensional tolerances

### Inspection & Examination Methods

- RT, UT, MT and PT: scopes, acceptance criteria and responsibilities
- Extent-of-examination planning and reporting conventions

### Testing Procedures

- Leak-testing methods and evaluation criteria
- Hydrostatic vs. pneumatic testing procedures and safety controls

**Case Study:** Develop a fabrication, inspection and testing plan for a field-erected spool

## Day 4 – In-Service Inspection, Fitness-for-Service & Repairs

### API 570 In-Service Piping Inspection

- Inspection planning, intervals and damage-mechanism focus
- Inspection techniques and acceptance criteria for live systems

### ASME FFS-1 / API 579 Fitness-for-Service

- Levels 1–3 assessment approaches and acceptance criteria
- Damage evaluations: corrosion, erosion, cracks and shell distortions
- Remaining-life calculations and life-extension techniques

**Case Study:** Apply API 570 findings to an API 579 assessment, including shell-distortion evaluation

### ASME PCC-2 Repairs & Alterations

- Repair philosophy: temporary vs. permanent and compliance requirements
- Repair methods: welding, composite and mechanical techniques
- Selection criteria and implementation best practices
- Examples of PCC-2 repairs on piping components

### Course Summary, Assessment & Closing

- Comprehensive review and knowledge check
- Final Q&A, participant feedback and certificate distribution

## Registration Form

### How to register for the course:

1. Complete this registration form and fax it to Phindi Chauke: Tel: 011 325 0686 Fax: 011 325 0488 Email: [phindi@2kg.co.za](mailto: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 7 working days before the date of the event, the full fee will be payable and the delegate can attend the next scheduled training course.
- In case of insufficient applications for the workshop 2KG reserves the right to cancel the seminar. Applicants will be informed and all fees will be refunded immediately.

### 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:

#### Conventional Classroom

- ☐ 17 – 20 November 2025 (4 Days)  
**Johannesburg**  
**R20 500.00 (excl VAT)**

#### Live Virtual Classroom

- ☐ Date to be advised (4 Days)  
**Live Virtual Classroom**  
**R16 400.00 (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 Chauke on tel: 011 325 0686 or cell: 071 125 6188 and email: [phindi@2kg.co.za](mailto:phindi@2kg.co.za) or visit [www.2kg.co.za](http://www.2kg.co.za)