

Workshop: Expansion Joints in Piping

In this 2-hour workshop, Zdravko Ivancic a highly experienced piping engineer and trainer will take us through real project cases where expansion joints were introduced to eliminate overstressed locations identified in the field . You will see step-by-step how incorrect joint selection (e.g. axial-only joints or untied bellows) led to design or site issues, and how recalculation, including proper treatment of pressure thrust, resolved them.

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THURSDAY 8 OCT 2026
(3-5PM CEST)

0 MODULES

2 PDH

0 HOURS

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WHAT YOU'LL LEARN

Expansion joints (or expansion bellows) are often added to piping systems after stress analysis identifies overstressed locations due to thermal expansion or displacement loads. In this workshop, Zdravko Ivancic presents practical examples from industry projects where expansion joints were introduced to bring systems into compliance with ASME B31.3 allowable stresses.

You will follow the actual calculation steps used to justify design changes. This includes verifying imposed axial and lateral movements, checking bellows capacity, and reassessing sustained, expansion and occasional load cases after modifications. Specific examples are discussed where the wrong type of expansion joint was initially selected, for example, axial joints installed in systems dominated by lateral displacement, resulting in continued overstress.

Particular attention is given to bellows without tie-rods and the correct treatment of pressure thrust in piping stress models. Incorrect modelling of pressure thrust is a frequent cause of review comments and field problems. The Workshop also addresses recurring practical issues: improper supporting, failure to follow installation procedures, insufficient protection during construction, and lack of inspection and maintenance. The emphasis is on calculation, modelling discipline and engineering judgement.

SKILLS YOU'LL GAIN

- ✓ understand how expansion joints are used to resolve sustained and displacement overstress identified in ASME B31.3 flexibility analyses
- ✓ can distinguish between axial, lateral and combined movement requirements and select the correct joint configuration (single, universal, tied, etc.)
- ✓ are able to evaluate cases where axial-only joints were incorrectly applied to systems governed by lateral displacement
- ✓ understand the function of tie-rods and the consequences of using bellows without tie-rods
- ✓ can calculate and correctly model pressure thrust forces in a piping stress model and assess their effect on anchors and equipment loads

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ABOUT THE INSTRUCTOR

Zdravko Ivancic, M.Eng.

Zdravko Ivančić is a stress-analysis engineer with more than 20 years of experience in pipe stress and flexibility analysis, pipe-support design and FEA for process and power-plant systems. He is an expert in ASME B31.1, ASME B31.3, EN 13480 and ASME BPVC Section VIII, Division 2.

WHO THIS COURSE IS FOR

- ✓ Those involved in conducting or reviewing a piping flexibility analysis.

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COURSE CONTENT