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Safety Tips: Piping Installation

Contemporary piping engineering technology among owners, operators and engineers for today involves three very important criteria - Safety, Operability and Cost Saving.

In today's industry, Safety is the sacred cow. To be able to justify if an installation is safe, first of all, it must be safe by design.

The most important criteria for determining allowable stresses is stated per ASME B31.3 1999 Paragraphs 302.3.5 and 302.3.6 "Limits of Calculated Stresses Due to Sustained Loads and Displacement Strains", and "Limits of Calculated Stresses Due to Occasional Loads."

To limit supply the calculated stresses to these criteria, the following conditions have to be considered.

- Fluid services (Para. 300.2)
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- Design temperature (Para. 301.2) and pressure (Para. 301.3)
- Ambient effects (Para. 301.4)
- Basis for allowable stresses (Para. 302.3)
- Dynamic effects (Para. 301.5)
- Weight effects (Para. 301.6)
- Thermal effects (Para. 301.7)
- Pressure and temperature variation (Para. 302.2.4)

Once the criteria is selected and established, the next step is the selection of the most appropriate methods for finding solutions with the required degree of accuracy. Specifically the allowable thermal stress under internal operating pressure conditions is 30,000 psi. When internal operating pressure decreases the allowable stress increases per Paragraph 302.3.5, ASME B31.3