

POSITION STATEMENT

NON-ASME CERTIFIED PRESSURE RELIEF VALVES USED FOR THERMAL EXPANSION RELIEF IN CERTAIN PIPING SYSTEMS

Definition

A thermal expansion relief valve is a pressure relief device used on piping systems to prevent overpressurization caused by the thermal expansion of a limited volume of trapped process fluid. A thermal expansion relief valve is normally used on piping systems where cryogenic liquids or cold gases can be trapped between two valves or between two devices. Thermal expansion relief valves are also called line block safeties, pop safeties, or thermal relief valves.

Question

Are non-ASME certified pressure relief valves suitable for the purpose of relieving pressure due to thermal expansion in a blocked-in portion of a piping system containing cryogenic or refrigerated process fluids?

Answer

Non-ASME certified pressure relief valves may be used to relieve pressure due to thermal expansion of a blocked-in portion of a piping system containing only cryogenic or refrigerated process fluids.

NOTE—Process fluids include nitrogen, oxygen, argon, helium, hydrogen, ethylene, liquefied natural gas (LNG), carbon dioxide, and nitrous oxide.

Reasons

ASME B31.3, *Process Piping*, section 322.6.3 (a) states “Pressure relieving devices required by paragraph 301.2.2(a) shall be in accordance with the BPV code Section VIII, Division 1, UG-125(c), UG-126 through UG-128, and UG-132 through UG-136, excluding UG-135(e) and UG-136(c).” Based on the exclusion of the noted sections, ASME B31.3 does not require pressure relieving devices used on the piping system to carry the marking of a UV or UD stamp [1]. In addition, the exclusion also negates the ASME requirement for certification of the valve capacity.

NOTE—In Canada, these devices are recognized for their relieving abilities and are registered as Category G fittings (pressure relief devices). See CSA B51-14, *Boiler, Pressure Vessel, and Pressure Piping Code Part 1, Table 1, Categories of Fittings* [2].

Thermal expansion relief valves are not meant to be serviced or periodically retested and shall be replaced and disposed of when there is evidence of damage or malfunction. The compressed gas industry has primarily used these valves for thermal expansion relief on piping systems based on their historical reliability and performance. CGA member companies have successfully used these devices in thousands of installations worldwide for more than 60 years.

Thermal expansion relief valves should have at minimum a 5-year visual inspection (or more frequently based on site conditions and operating history) to ensure that:

- the outlet is open and free to discharge;
- there are no signs of corrosion, cracks, or other mechanical damage;
- the marked set pressure is suitable for the service and components being protected;

- no leaks are found; and
- the adjacent piping is not deformed.

References

Unless otherwise specified, the latest edition shall apply.

[1] ASME B31.3, *Process Piping*, American Society of Mechanical Engineers, www.asme.org

[2] CSA B51-14, *Boiler, Pressure Vessel, and Pressure Piping Code*, Canadian Standards Association, www.csagroup.org

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NOTE—Technical changes from the previous edition are underlined.

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