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30 September 2019

Emelia Addo
Stakeholder Engagement Manager
Standards Australia

By email: emelia.addo@standards.org.au

Dear Emelia,

Thank you for the opportunity to comment on the Ai Group representative's negative ballot on draft AS 1357.1 *Valves primarily for use in heated water systems Part 1 Protection valves*. We have outlined below Ai Group's response, on behalf of our members, to the modified clauses highlighted by Standards Australia in the ballot draft. We have also suggested changes to the draft to provide a way forward for the project.

In coming to the recommendations below Ai Group has:

- i. consulted with our Water and Plumbing Products Cluster (WPPC) – noting that this group was also consulted before the negative ballot was cast;
- ii. consulted specifically with our valve and hot water system manufacturer/supplier members;
- iii. formed a working group of 12 members to develop the response;
- iv. worked with 2 members (with temperature and pressure relief valve expertise) to craft the text for the response; and
- v. consulted with our trade and public policy team.

Ai Group recognises the importance of international trade in contributing to the prosperity of the Australian economy. We believe that participation in the global market should require adherence to International Standards wherever possible. Ai Group supports the World Trade Organization's requirements that technical regulations "*are not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to trade.*" Ai Group also believes that Australian Standards should not be written to restrict innovation. Standards should be developed to outline performance requirements and outcomes rather than defining prescriptive requirements around a product, service or system.

Notwithstanding these objectives, Ai Group believes that standards makers should balance the need for free trade and innovation against the community's expectation of confidence in the safety of products used in everyday life. A hot water system is a pressure vessel that poses a significant risk to the user if protection mechanisms such as Temperature and Pressure Relief (TPR) valves do not exist or do not function correctly. A number of incidents in the USA have occurred where hot water cylinders have exploded resulting in massive damage to property and injury to people due to

either the non-existence of or incorrect functioning of a relief valve. Australia, for over five decades, has enjoyed a near perfect safety record (i.e. minimal injuries or fatalities from hot water system failure) which is attributable to the correct functioning of the TPR valve.

It is against this back drop that Ai Group members have significant concerns with the proposed modifications to the ballot draft of AS 1357.1. The changes proposed allow “alternative designs” to TPR valves that will have minimal (or no) field testing data to back them. Such changes present an unacceptable risk to the community that should not take second place to commitments to free-trade and innovation. Members are also concerned that during the course of the project the onus has been placed on them to show why proposed changes may be unsafe. This is inconsistent with the “precautionary principle” that places the burden of proof on risk not on the side of safety noting that this principle underpins product safety practice in Australia.

In this submission Ai Group is proposing that Clause 4.2.4 be altered to align it with the latest version of ANSI Z21.22-215. Member believe that this is a common-sense position that, whilst acknowledging another round of public comment is likely to be required, strikes a balance with free-trade, innovation and safety objectives.

SPECIFIC COMMENTS

1.1 Clause 4.1 *General*

SA Comment

The clause outlines general performance requirements for TPR valves. It now includes following statement:

“Once installed, any part of the valve that extends inside the inner wall of water heater should be protected from build-up of deposits that may lead to valve failure.”

Ai Group comment

Members *do not support* the change to the Standard in this form.

This issue is related to the ability of the TPR valve to perform its primary function of preventing the explosion of a storage water heater container and a secondary function of limiting water wastage from the container. It is well known that the anode in a vitreous enamel lined water heater can cause mineral deposits to form on metallic components that are exposed to the water in the container and electrically connected to the anode. It is most important that any such deposits do not prevent the valve from opening in the presence of excessive pressure or temperature and do not prevent the valve from sealing under normal operating conditions.

Our main concerns with the draft are:

- The use of the word “should” means that this text is informative in nature, rather than being a requirement of the Standard.
- The text cannot be used to demonstrate fitness-for-purpose as there are no performance solutions that can be verified.

To overcome these concerns, we recommend that the word “shall” be used, and that guidance be given about the assessment of conformity with the requirement, as follows:

“Once installed, any part of the valve that extends inside the inner wall of water heater shall be protected from build-up of deposits that may lead to valve failure.

Note: Conformance with this requirement may be established by confirming that valve failure does not occur after (i) exposing the valve to conditions that are representative of normal use for a period of time consistent with normal use; or (ii) exposing the valve to conditions that are demonstrated to accelerate the build-up of anode deposits for an appropriate period of time.”

1.2 Clause 4.2.3 Provision for drainage

SA Comment

The following requirement was added to the clause:

“Valves designed for horizontal installations only shall have positive drainage.”

Ai Group comment

Members *support* this addition to the clause.

1.3 Clause 4.2.4 Total flow area

SA Comment

The following requirement was added to the clause and a commentary to allow alternate designs to Figure 4.1 and provide guidance to CABs in assessing the alternate products.

“A valve of alternate design to Figure 4.1 shall meet the minimum requirements of Table 4.1, as relevant to the alternate valve design.

*“**C4.2.4** Column 4 “Minimum total flow area” only refers to the particular areas within a valve design depicted in Figure 4.1. Any alternative valve design that does not include these particular areas will still require a drain connection that will have to meet the requirements of Column 2, an inlet connection that will have to meet the requirements of Column 3, Minimum flow areas of any body passage that must meet the requirements of Column 5 and also meet the requirements of Column 6.”*

Ai Group comment

Members *do not support* the proposed change.

The interpretation of the existing requirement is straightforward when used in the context of valves that are consistent with the arrangement depicted in Figure 4.1. When this Standard is applied to valves that are not consistent with Figure 4.1, the new requirement is too open to interpretation by CABs. This may compromise safety of a relief valve that protects pressure vessels installed in the majority of households.

We also point out that the existing wording of Clause 4.2.4 is based on the original requirement in US standard ANSI Z21.22. Furthermore, the wording of this requirement has changed significantly in the 2015 edition of the ANSI Standard.

Clause 4.2.4 of ANSI Z21.22-2015 currently states:

“The total area of any body flow passage, except the orifice, shall not be less than the difference between the inlet connection area and the thermostatic element area. In determining this area, any area in a corner which would not be included in a circle 3/16 in. (4.8mm) in diameter with its insides adjacent to the sides of the flow area shall not be included.”

In order to be consistent with the latest revision of ANSI Z21.22, we propose to **remove** columns 4 and 5 of Table 4.1, **delete** the text of Clause 4.2.4 in the draft and **replace** with the following:

“The minimum total flow area at any cross-section within the valve body, except the orifice, shall not be less than the difference between the inlet connection area and the temperature probe cross-sectional area. In determining total flow areas, any area in a corner that would not be included in a circle of 5 mm in diameter, and with its sides tangential to the sides of the flow area, shall not be included (see Figure 4.1(b)).”

In making the above proposed change, reference to a specific embodiment / arrangement is removed and there is a defined means for determining the flow area. Whilst not copied verbatim from Z21.22, the method of determining the flow area is consistent in approach and would be a straightforward modification to the existing draft.

Ai Group is advised that Clause 4.2.4 of ANSI Z21.22-2015 had been previously circulated to the committee for consideration however there was inadequate time for it to be considered before the release of the ballot draft.

1.4 Clause 4.10 Marking

SA comment

The following text was added

Item (d) “Horizontal use only, for valves designed for horizontal installations only.”

Ai Group comment

Members *support* this addition.

1.5 Appendix A *Demonstrating conformity to this standard*

SA comment

The product certification text was removed and it now aligns with ABCB's WMCS.

Ai Group comment

Members *support* this modification

Our representatives would welcome the opportunity to refine/review the wording with Committee WS-026. If these changes can be made then Ai Group supports the publication of the draft standard.

We look forward to discussing this further with Standards Australia.

Your sincerely

A handwritten signature in black ink, appearing to read 'J Thomson', written in a cursive style.

James Thomson