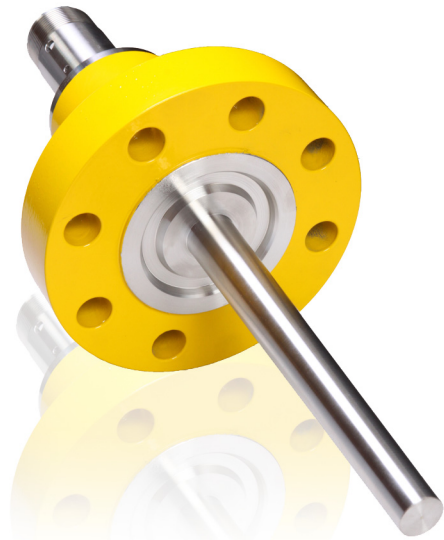


Thermowells

What you should know about stress calculations and flanges



Introduction

Thermowells are used to protect delicate temperature measuring equipment from process fluids but, perhaps more importantly, they also form part of the containment of the process fluids. As measurement specialists we are all very aware of the needs of our instrumentation and the best practices for ensuring accuracy and a long service life. However, thermowells present challenges that impact on peoples' safety, the environment and the process plant.

ABB prides itself on the professionalism of its engineering and has a zero tolerance policy toward unethical behavior. The business gained from these two values is vital to our long-term success.

Recent news items will not have escaped the attention of many of our customers; news that could have a serious impact on the viability of the organizations involved. Explosions and leaks of hydrocarbons can destroy lives and livelihoods.

What can we do?

The selection and supply of thermowells may be a small part of the safety of a process plant but every small part has an impact; a plant is only as safe as its weakest part. There are three vital things that we must understand:

- Thermowell stress calculation
- Flange specifications
- Material control and verification

When these are understood, we can ensure that the thermowell supplied is fit-for-purpose and, providing the information supplied to us is correct, safe to use. No compromise will be accepted on safety.

ABB engineers have the tools to help you calculate the correct dimensions for thermowells according to the ASME PTC 19.3 TW-2010 standard. The result of the calculation is a certificate that details the thermowell and the process conditions supplied by the customer.

Thermowell calculation guide v1.3

ASME and other International bodies are clear about the need for all flanges to be made from a forging or from plate material. Flanges manufactured from bar (even forged bar) are not acceptable. In Europe, the Pressure Equipment Directive (PED) makes the supply of anything other than a forged or plate flange illegal. ABB engineers are available to discuss this with you and ensure that you comply with the needs of the international standards.

Thermowells – beware of imitations

Working with customers to select the correct material for a thermowell is the start of the process of material control. This also involves ensuring and proving that the material supplied and used is correct. Factory controls, providing traceability of supplied materials to the mill and / or forging house of origin, are another vital component. Many customers also require verification of the chemical composition of the material using techniques such as X-ray PMI (positive material identification).



Fig. 1 X-ray PMI testing

Where to get advice?

Your temperature PLS can provide advice and guidance on all of these aspects. Factory specialists are available to provide thermowell stress calculations.

For more information please contact:

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