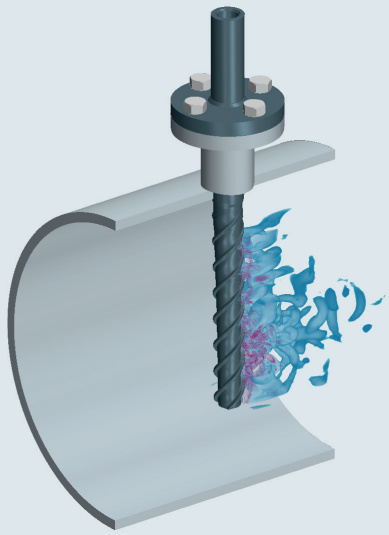
iTHERM TwistWell TT15x

Barstock thermowell with helix design for high velocity applications

The alternative for harsh process conditions where standard thermowells fail due to vortex induced vibrations!

- Reduction of vortex induced vibrations (VIV) by more than 90%
- Effectiveness of the design verified by an independent 3rd party agency
- Static loads can be calculated acc. ASME PTC 19.3 TW
- Easy installation for all nozzle sizes starting from 1" / DN25



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The background

Thermowells are inserted into the process and are exposed to harsh process conditions like high pressures and high flow velocities, especially in pipes.

There are calculation methods to determine if a thermowell withstands the process conditions, like the DIN 43772 calculation or according to ASME PTC 19.3 TW, taking static loads as well as dynamic loads into consideration.
For critical applications, standard thermowells might not pass this thermowell calculation and corrective actions like changing the diameters and immersion length will not be sufficient or make the measured results unusable.

The problem – Vortex induced vibrations (VIVs)

A Kármán vortex street is a phenomenon in fluid dynamics that occurs when a fluid, such as air or water, flows around a solid object. When flowing around the object, the fluid separates from the surface and creates vortices downstream of the object. These vortices create an alternating pattern that is known as a Karman vortex street.

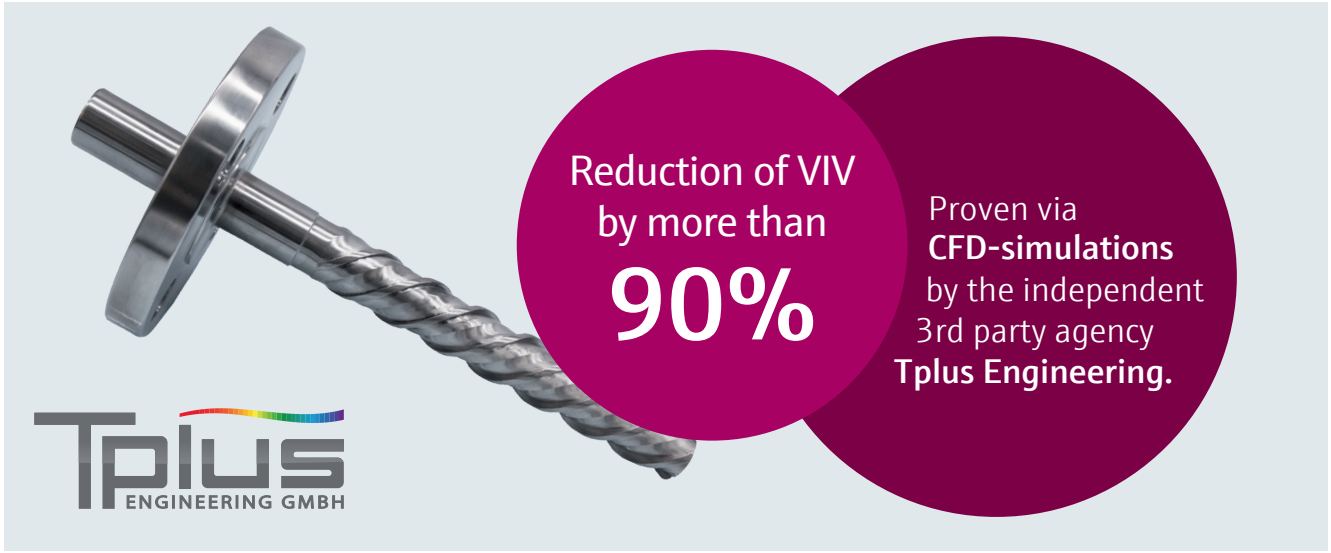
Vortex-induced vibrations (VIVs) are caused by these alternating forces on the object. They can induce damage or even destroy the object if they become too strong, therefore they have the greatest effect on the stress on the thermowell.
Meanwhile several techniques have been developed to mitigate VIVs, such as modifying the shape or surface properties of the object.

The product design – proven in use

The idea for the product design of our iTHERM TwistWell is similar to the common procedure for industrial chimneys, using a helix geometry .

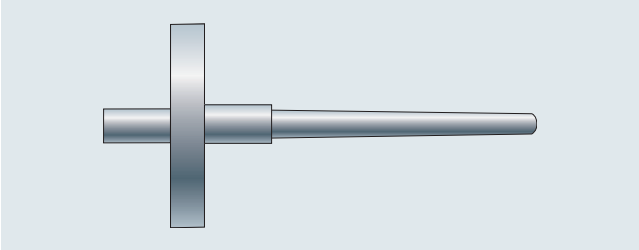
Our barstock thermowell with the patented helical design drastically reduces VIVs and reliefs the thermowell of the high dynamic stresses. At the same time the dimensions still grant a long immersion into the process and standard diameters for an optimal temperature measurement result.

The result – a huge damping effect

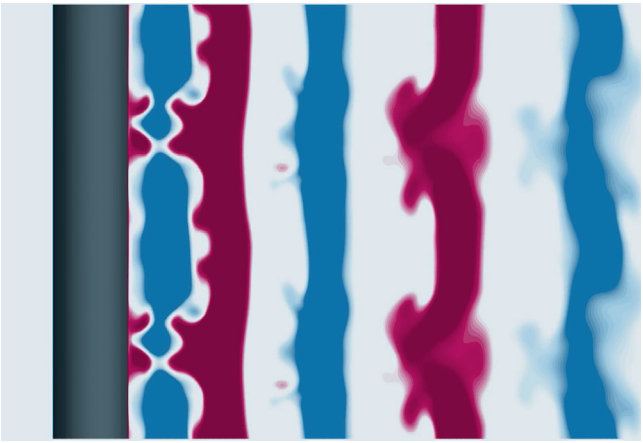


Simulation of a standard thermowell

In case of a thermowell with a cylindrical shape each vortex is formed alongside the complete length of the thermowell inducing high vibrations on the thermowell stem.



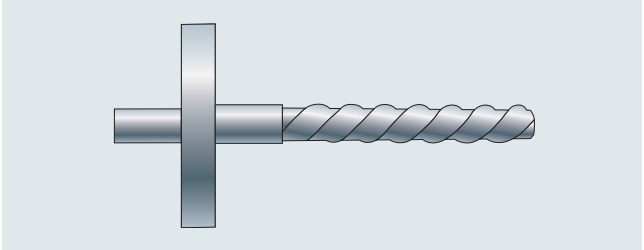
Top view of the thermowell

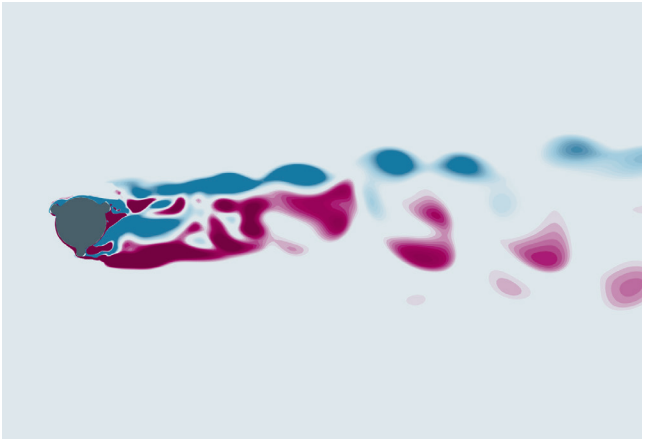


Side view of the thermowell

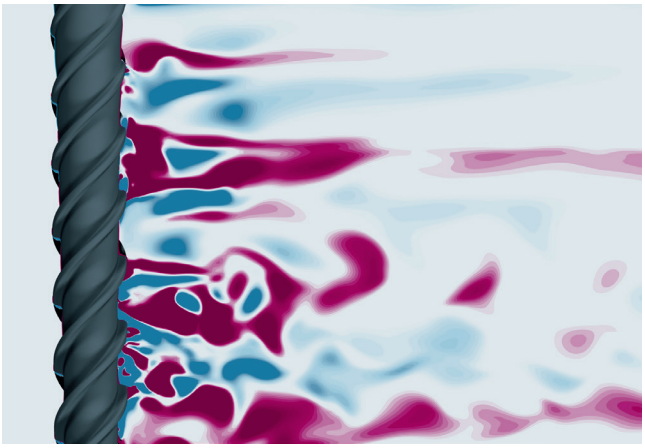
Simulation of the iTHERM TwistWell

The helix design of the iTHERM TwistWell prevents vortices alongside the complete length of the thermowell stem. This results in a drastic mitigation of vortex shedding effects.





Top view of the TwistWell



Side view of the TwistWell

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