DAILY
THERMETRICS

Daily Helix Thermowell (DHTW™)

Utilizing VE Technology®

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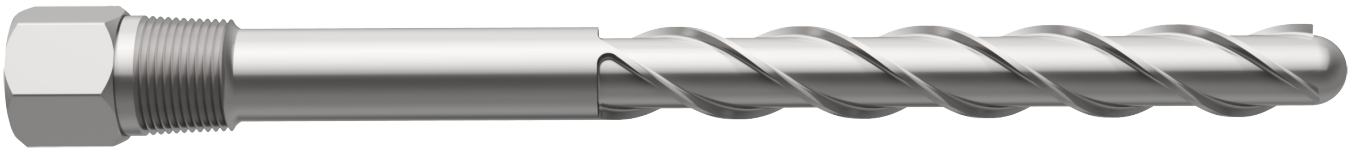
US PATENT 11,105,716B2 AND WORLDWIDE PATENTS AND APPLICATIONS PENDING

Your best choice for high velocity applications when conventional thermowells fail the frequency ratio of ASME PTC 19.3 TW-2016

Thermowells in High Velocity Streams

The problem with traditional cylindrical thermowells is the vortex-induced vibrations (VIV) generated as the flow passes the thermowell. Conventional cylindrical thermowells that fail the ASME PTC 19.3 frequency need to incorporate one of the following conventional designs:

Conventional Design	Deficiency
No Measurement or a Shortened Thermowell	- Not at the proper immersion - Does not meet the specifications for locations of measurement
Velocity Collar	- Labor intensive installation - Not generally recommend by ASME
Increased Diameter and Mass	- Decreased response time and accuracy - Transfers vibration to the nozzle



Introducing the DHTW™

Eliminates the need for wake frequency calculations based on ASME PTC 19.3 TW-2016

Ideal Immersion Depth	**Ideal Diameter**
Most Accurate Temperature Measurement	**Easy to Install / Can be used in Existing Applications**

Daily Helix Thermowell (DHTW™) utilizing VE Technology®

VE Technology® incorporates a combination of helical strakes and a rounded tip that break up vortices caused by the flow around the thermowell. This technique has been successfully utilized in other industries and is now available for the thermowell industry.

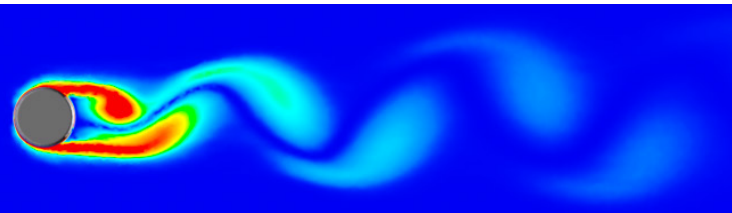
*The DHTW™ is based on the static elements of the **ASME PTC 19.3 TW-2016**, including steady state and pressure.*

Steady State

The steady state stress is calculated by the Von Mises calculation and must not exceed the allowable stress.

Pressure

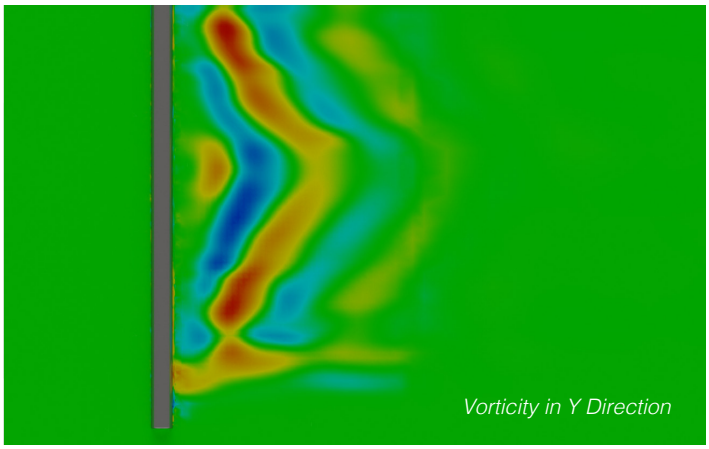
The allowable pressure is checked at design temperature along the thermowell; this includes the flange/threads, shank, and tip. The required thickness can be calculated per *ASME Section VIII Div 1, Paragraph UG-28*.



Vorticity Magnitude

Standard Cylinder

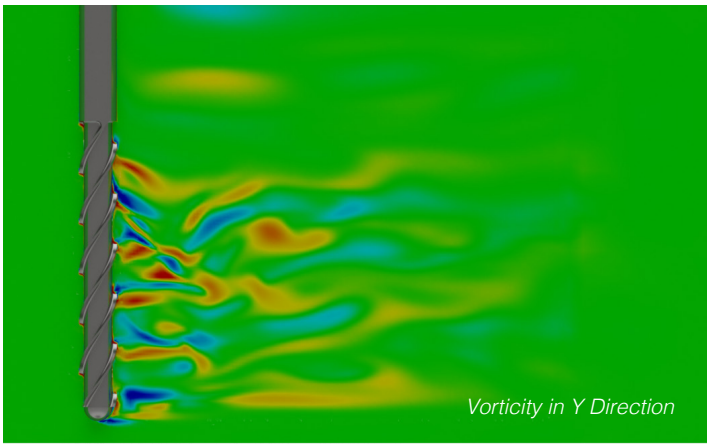
A standard cylinder (normal thermowell) obstructs the flow, causing large vortices in the wake and increasing the amplitude of the vibrations.



Vorticity in Y Direction

Standard Cylindrical Thermowell

The wake produces large vortices that extend the length of the portion of the thermowell that is exposed to the flow. The oscillation of these vortices is what causes the vortex-induced vibrations. If the frequency of the vortex shedding approaches the natural frequency of the thermowell, then failure can occur.



Vorticity in Y Direction

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The vortices produced by the wake of the helical strake are much smaller and non-uniform. The combinations of these smaller vortices, compared to the thermowell, are negligible when assessing vortex inducted vibrations. Since the smaller vortices are shed non-uniformly, the vortex shedding will not cause resonation at the thermowell's natural frequency.

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