

# Innovative Temperature Measurement with Rosemount Twisted Square Thermowell

Accurately measure process temperature without compromising safety



## CHALLENGE

Thermowells in flow are subjected to dynamic and static forces that if not accounted for could lead to thermowell failure. The ASME PTC 19.3 TW is recognized as the global standard for designing safe and reliable thermowells. However, calculations done to avoid vortex induced vibration (VIV) issues are very challenging and often require modifying the thermowell design with reduced lengths and increased diameters. In some cases there are no possible thermowell design solutions thus leaving designers with no thermowell options at all.

## OUR SOLUTION

The Rosemount™ Twisted Square™ Thermowell is a revolutionary design manufactured specifically to eliminate the concern of VIV that can lead to thermowell stem failure. It damps the vibrations by over 90%, drastically reducing the dynamic stresses experienced by the thermowell. This allows the Twisted Square to operate in process conditions that a conventional thermowell can not.

The Twisted Square also doesn't experience the frequency limitations that conventional thermowells are plagued with. Its unique design simplifies the thermowell design process and greatly reduces the risk of thermowell failures with its ability to handle applications with changing process conditions.

### WHAT IF YOU COULD ACCURATELY MEASURE PROCESS TEMPERATURE WHILE...

...reducing thermowell failures?

...improving and simplifying thermowell design process?

...optimizing thermowell inventory stock?

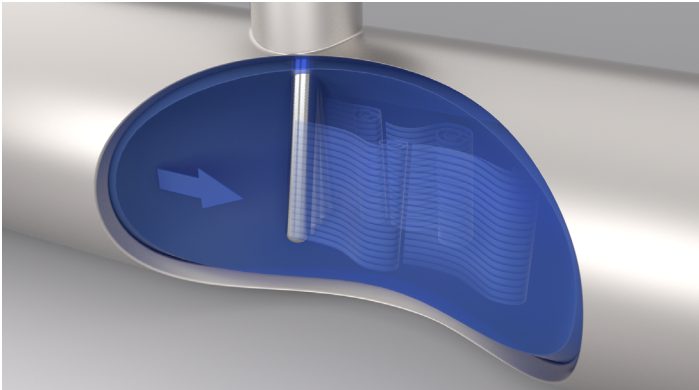


For more information visit  
[www.Emerson.com/RosemountTwistedSquare](http://www.Emerson.com/RosemountTwistedSquare)  
or contact your local Emerson™ Sales Representative

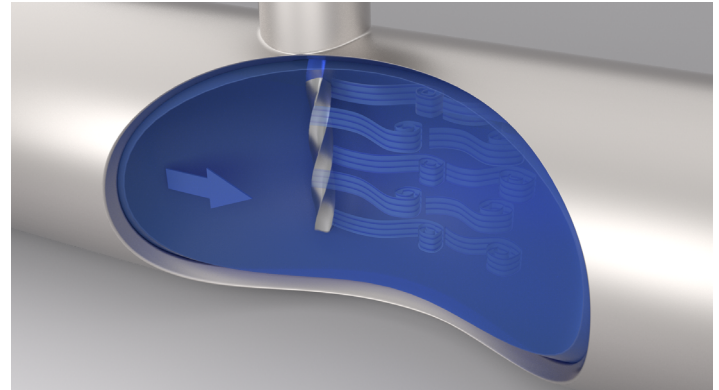


# The Twisted Square eliminates over 90% of harmful and damaging dynamic stresses

## HOW IT WORKS



Conventional thermowells have a circular cross section which allows organized vortices to shed in sheets along the axial length of the stem. The uniform pressure from the vortices apply alternating forces on the thermowell. These forces are greatly magnified by VIV and can lead to thermowell fatigue failure.



The Twisted Square's sharp edges and helical profile provide continuously changing separation points for vortex shedding along the axial length of the stem. The vortices are forced out of phase, preventing them from becoming synchronized along the span, significantly damping dynamic stress levels and eliminating concern of VIV.

Rosemount's test data conclusively show that dynamic stress levels on the Twisted Square are damped by over 90% compared to a conventional thermowell. Video of the testing also reveals the drastic reduction in vibration amplitude. The unique design of the Twisted Square eliminates concern of VIV, so calculations only require static stress and hydrostatic pressure evaluation based on criteria of the ASME PTC 19.3 TW—drastically simplifying thermowell calculations and reducing engineering time. The Twisted Square is available in numerous mounting styles, materials and can be ordered as a complete point solution with a sensor and transmitter factory assembled.

## TWISTED SQUARE BENEFITS

- No Wake Frequency or Dynamic Stress Calculations
- Improves reliability and reduces risk
- Eliminates over 90% of dynamic stress
- Greatly reduces the risk of thermowell failures with changing process conditions (Start-up, Shut down, Events)
- Easily expand to new applications
- Ability to increase velocities for more through-put
- Allows for longer insertion lengths for better temperature accuracy
- Avoid complicated & expensive pipe modifications
- Reduce Inventory (one thermowell fits all)
- Use the same thermowell in different process conditions

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