Aircom StrakeWell™

Product Application

The Aircom Helical Strake Thermowell or StrakeWell™ is Aircom's proven solution for temperature measurement applications where common smooth shank thermowells cannot withstand higher velocity process flow conditions.

These specialized thermowells have been designed to significantly suppress vortex-induced vibration (VIV) on thermowell shanks in those applications where a standard tapered smooth surface thermowell does not meet the requirements of the ASME PTC 19.3 standard.

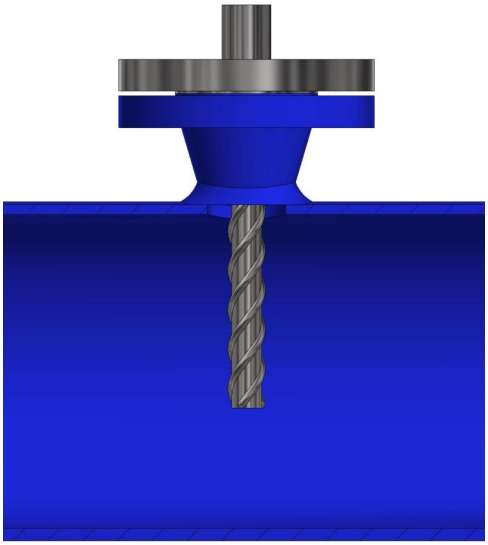
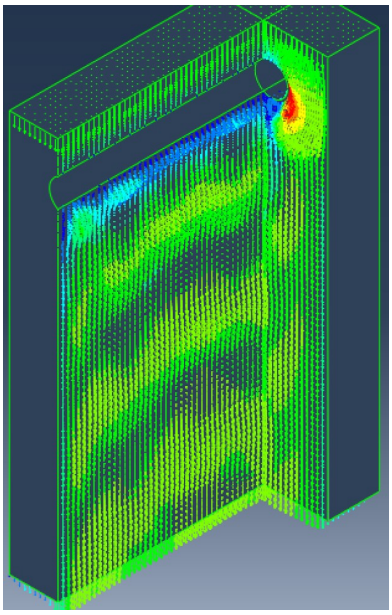
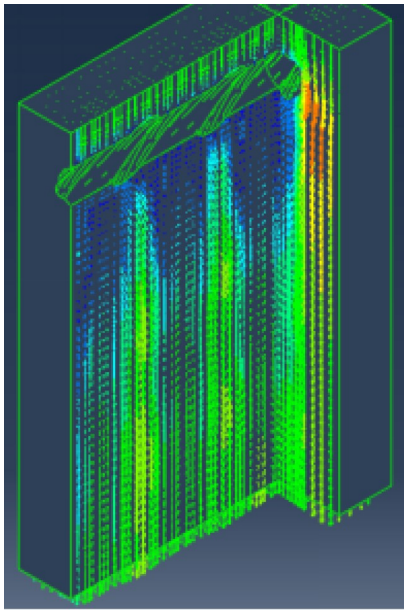


Figure 1



VIV is a phenomenon that can occur in thermowells when the smooth shank is placed in the path of a flowing fluid. As the fluid contacts the shank it separates around the surface in a very uniformed pattern because of the smooth surface. As the fluid flow rejoins, a wake will form that occurs across the entire shank of the thermowell. Figure 1 is a demonstration of this phenomenon occurring using computational fluid dynamics (CFD). The wake is observed by the blue coloring, and the alternating waves produced from the wake can be observed down stream in Figure 1 represented by grey and green coloring. The oscillating forces from the wake act on the shank and can cause it to resonate or vibrate at certain frequencies. As the frequency of the wake approaches the natural frequency of the shank it can cause the thermowell shank to break at it's support plane.

Figure 2



When the helical strake geometry is introduced to the smooth surface the fluid coming into contact does not separate evenly across the shank. The strake significantly suppresses the uniform wake from forming. As a result, the oscillitating forces have a limited influence on the thermowell shank. Figure 2 shows this result using CFD analysis.

Research carried out by Aircom Instrumentation and others are demonstrating that introducing helical geometry to smooth thermowells can eliminate or reduce into the 90th percentile the VIV effects on thermowell shanks. For further information, don't hesitate to contact us directly.

Figures 1 and 2 are from an engineering study carried out by Pi Engineering Inc. on behalf of Aircom

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