thermo-electra
temperature sensor solutions

Weteringweg 10
2641 KM Pijnacker
The Netherlands

Phone: +31 (0) 15 36 21 200
Email: info@thermo.nl
Internet: www.thermo-electra.com

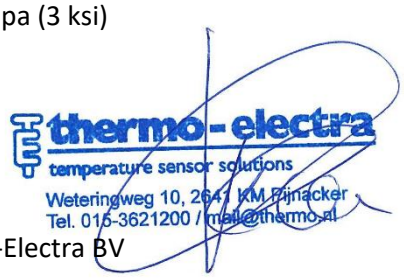
Bankrelation
Rabobank Zuid-Holland Midden
BIC: RABONL2U
IBAN: NL84 RABO 0137 3627 65

TCE 101 Certificate of Conformity for Wake frequency calculations

Minimal values for Wake frequency Calculations according ASME PTC 19.3 2016

When, for example, the speed of process fluids is slow enough, the amount of energy that is deposited by the process fluid on to the thermowell, is not enough to cause Metallic Fatigue Failure. Below the minimal conditions for the Wake frequency Calculations are stated. If these conditions are met, the risk of Metallic Fatigue Failure is neglectable, and the need for Wake frequency Calculations lapses.

1. Process Fluid Velocity, V < 0.64 m/s (2.1 ft./sec)
2. Wall Thickness, (A - d) ≥ 9.55 mm (0.376 in)
3. Unsupported Length, L ≤ 0.61 m (24 in)
4. Root and Tip Diameter (A and B) ≥ 12.7 mm (0.5 in)
5. Maximum Allowable Stress, S ≥ 69 Mpa (10 ksi)
6. Fatigue Endurance Limit, Sf ≥ 21 Mpa (3 ksi)



Signed by: Kris van den Ende

Function: Technical Director Thermo-Electra BV

Disclaimer

Although these limits are met, these parameters could still excite the in-line resonance and cause sensor failure due to the high vibration that exists at resonance.

If these criteria are not met, or if there is a chance of stress corrosion or material embrittlement due to fluid interaction (which would cause a change to the fatigue endurance), the designer must fully evaluate the thermowell design.