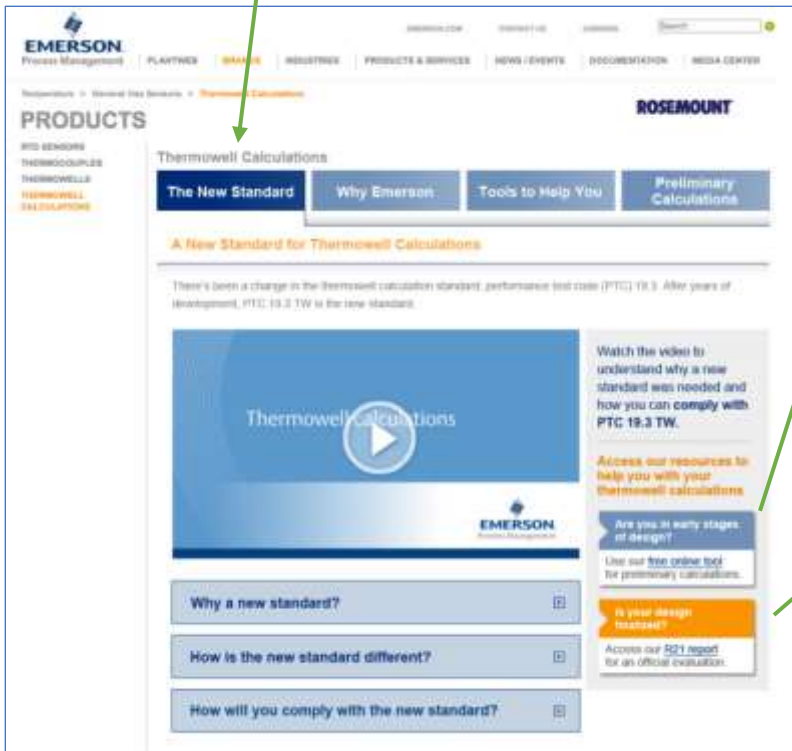


Website Copy & Design

Former URL: www.rosemount.com/ThermowellCalc

Home Page – The New Standard



Why a new standard?

The old standard—PTC 19.3—was limited in scope and overly simplistic. As a result, there were significant variances in thermowell calculations. In addition, more advanced methods such as finite element analysis and experimental results caused many in the industry to move away from a strict reading of PTC 19.3.

How is the new standard different?

The new standard—PTC 19.3 TW—features a number of enhancements:

- **Inclusion of stem profiles**
- **More accurate natural frequency equations** that reflect real-world effects resulting from installation
- **Ideal (or theoretical) natural frequency is corrected** for adding a sensor and the mounting style
- **The Strouhal number**—used to calculate the vortex shedding rate—was set at 0.22 in PTC 19.3 and now is calculated
- **Perpendicular and in-line oscillation are considered**

Why is this IMPORTANT?

Why is this IMPORTANT?

Why is this IMPORTANT?

Home Page – Why Emerson

Thermowell Calculations

The New Standard | **Why Emerson** | Tools to Help You | Preliminary Calculations

A Leader in Thermowell Calculations

For over 20 years, Emerson Process Management has been a leader in accurate thermowell calculating. In 2010, along with other vendors, users, agencies and academia, we helped the American Society for Mechanical Engineers (ASME) update the thermowell calculation standard from PTC 19.3 to PTC 19.3 TW.

We understand all aspects of the thermowell calculation standard and are adept at helping businesses comply with this new calculation. In fact, our expert calculation team performs over 35,000 thermowell calculations each year.

When you partner with Emerson Process Management for thermowell calculation, you can count on:

- Knowledge**—We perform a calculation with the requested thermowell geometry, material and process conditions. If the design doesn't meet ASME requirements, we'll make recommendations for achieving an acceptable outcome.
- Traceability**—Emerson Process Management keeps on file every calculation report and background information. If you use the report in the days, weeks or years to come, we can provide a new one.
- Consistency**—We use industry-standard ASME material properties in every calculation so you are ensured of consistent and correct results. In addition, all Rosemount thermowells are manufactured with these properties, so you are guaranteed the report will match your thermowell.
- Capacity**—Emerson Process Management performs over 35,000 calculations per year and can handle even the largest projects with quality and consistency.
- Quality reports**—Our reports include all customer information, process data, thermowell information and the output of the ASME standard calculation. This includes a clear identification of whether or not the thermowell is acceptable for the process conditions and the exact reasons why.



Access our resources to help you with your thermowell calculations

Are you in early stages of design?
Use our [free online tool](#) for preliminary calculations.

Is your design finalized?
Access our [R21 report](#) for an official evaluation.

Home Page – Tools to Help

Thermowell Calculations

The New Standard | Why Emerson | **Tools to Help You** | Preliminary Calculations

Tools to Help You to Comply with the New Standard

It's important that you have confidence in your thermowell calculations. Making sure you are in compliance with the new PTC 19.3 TW standard is an important first step to accurate calculations.

Emerson Process Management can help you in a variety of ways:

- Watch the video** to better understand PTC 19.3 TW and see how it covers all geometry and more.
- Read the white paper** for an in-depth examination of thermowell calculations.
- Gather a preliminary calculation** using our free online tool. Simply complete the required information and hit the "submit" button. You'll receive an immediate pass/fail score.
- R21** Let us help you with an official calculation using our R21 report. Send it to your salesperson when ordering your thermowells. Find your salesperson [here](#).



Looking for other information?

Velocity Collars—If you are considering a velocity collar, think again. [Let us tell you why.](#)

ASME and the New Standard—Check out what ASME has to say about 19.3 TW.

Home Page – Preliminary Calculations

Thermowell Calculations

The New Standard | Why Emerson | Tools to Help You | **Preliminary Calculations**

Preliminary Calculation Tool

EMERSON Process Management | THERMOWELL CALCULATIONS | ROSEMOUNT

Download Report Template (Help) (View)

Select Unit: (Metric) (US Customary) *** Fields are mandatory** **Contact Information**

Fluid Properties

Dynamic Fluid Viscosity (cP) [cP] Fluid Density (g/cc) [g/cc]

Fluid Physical State: Liquid (L) Operating Temperature (°F) [°F]

Process Fluid Velocity (ft/s) [ft/s] Mass Flow Rate (lb/hr) [lb/hr]

Operating Pressure (PSI) [PSI]

Pipe Specification

Select Standard: ANSI/ASME B31.3 (g) Wall Thickness (in) [in]

Schedule Number: Not Applicable (N) Inside Diameter (in) [in]

Support Height to Pipe Center (ft) [ft] Standard Length (ft) [ft]

Thermowell Data

Thermowell Style: Straight Stem (S) Mounting Configuration: Flanged Port Penetration (F) Stem Material: ACTM A-193 (A) Tip Diameter (in) [in]

Root Diameter (in) [in] Tip Diameter (in) [in]

Tip Diameter (in) [in] Root Diameter (in) [in]

Minimum Length (ft) [ft] Reduced Diameter Length (ft) [ft]

Calculate Reset

Assumptions

- Material Properties
- Flow Velocity
- Average Material Density
- Density Factor
- Surface Roughness

RESULTS

0 0 0 3 4 8

Would You Like To Order An Official Calculation?

© 2012 Emerson Process Management. All rights reserved.
Thermowell Calculations are based on the process data provided by the user. The user is responsible for ensuring the thermowell material is compatible with the process fluid including identification of stress corrosion or embrittlement effects. These calculations are intended to be used in choosing thermowells for specific applications. Calculations conform to ASME PTC 19.3 TW 2010 and are not meant to be a guarantee against failure. This report is only valid with respect to thermowells purchased and supplied by Emerson Process Management or authorized with our quality standards.

EMERSON IT SOURCE