

What's New in TANK 2020

The latest TANK release delivers a number of significant new and extended capabilities in response to current market requirements, as well as direct feedback from the growing TANK community. The following changes have been made to TANK.

TANK V2020

Code Updates

- No changes.

Configuration

- Updated to support API-650 12th Edition, Addendum 3, August 2018 material database. (CR-TX-29811, CR-TX-29810)
- Updated to support API-620 12th Edition, Addendum 1, November 2018 material database. (CR-TX-29873, CR-TX-29810)
- TANK now supports the Intergraph Smart® Licensing application.

Input Processor and Analysis

- Updated TANK to implement the new Hexagon PPM on-line documentation site, so that our users can enjoy the benefits of this delivery system for documentation. (CR-TX-29084)

Output Processor and Reports

- Updated TANK to implement the Addendum 3 update for the API-650 12th Edition code for top wind girders. Specifically, Paragraph 5.9.5.2 requires special parameters for top wind girders that are located > 2ft from the top of the tank. If the distance from the top of the tank to the top wind girder (user input) is greater than 2 ft, a note referencing the requirements in Paragraph 5.9.5.2 is printed in the report. (CR-TX-29863)
- Updated TANK to implement the Addendum 3 update for the API-650 12th Edition code for frangible roof, for a new requirement for nominal thickness of lowest shell course cannot be less than 1/4 in. for frangible roofs. If roof otherwise meets requirements for frangibility, if the nominal thickness of the lowest shell course is greater than 1/4 in, no frangible roof calculations should happen. If less than 1/4 in., frangible roof calculations should print in the roof output report. (CR-TX-29864)
- Updated TANK to implement the Addendum 3 update for the API-650 12th Edition code in the self-supporting cone thickness calculation. (CR-TX-29865)

Version 10.00 Changes (10/18)

Code Updates

- No changes.

Configuration

- The interface has been updated.

Input Processor and Analysis

- Improvements in nozzle analysis when using API 620.

Output Reports

- Minor fixes and improvements in several reports.

Version 9.00 Changes

Code Updates

- Updated the software to support API 579-1/ASME FFS-1 code. For more information, see [API 579 Calculations](#). (RI-TX-19664)

Configuration

- Eliminated the use of the configuration file. Previously, TANK used the configuration file to define the configuration settings. TANK now saves the configuration settings directly to the registry. Click **Save as Default** on the **Configuration** dialog box to override the current configuration settings saved to the registry. (CR-TX-13015)
- Added the check box **Uncorroded Thickness for Seismic Calculations** in the **Configuration** dialog box to allow the uncorroded thickness to be used in the **Seismic Analysis Results** report as defined by the specification in API 650, Appendix E. (CR-TX-22130)

Input Processor and Analysis

- Updated the user interface of the **Material Database Editor** to be consistent with TANK. (CR-TX-18573)
- Removed the **API-653 Specific Tank Data** section from the **General Tank Data** tab when a code other than API 653 is selected in the **API Design Code** field. (CR-TX-19544)
- Updated TANK to properly convert temperature values when changing units. Previously, if you changed units from Imperial to metric, TANK converted temperature fields with defined values but incorrectly converted temperature fields with undefined values or values

- set to 0. TANK no longer converts temperature values for fields with undefined values or values set to 0 when changing units. (CR-TX-10949)
- Updated the user interface to gather additional information and perform calculations per **API 2000, 7th Edition**. The API 2000 7th report indicates the latest code updates. For more information, see [Venting Requirements](#). (CR-TX-22173)
- Updated the user interface of the **Material Database Editor** to require a unique material name when adding information to the database before clicking **Save**. (CR-TX-9933)
- Updated the user interface to include a user-derived annular plate thickness in the [Tank Data Tab \(General Tank Data\)](#). TANK uses this user-derived value in the calculations instead of the computed value from the code. (CR-TX-10169)

Output Reports

- Added the **Generate PDF File** option to the **Output Processor**. The new **Generate PDF File** option allows you to publish all output reports to PDF in one click. (CR-TX-18571)
- Added a warning to the **Roof Evaluation/Design & Appendix F** report that indicates when a tank roof does not meet minimum thickness requirements as specified by API 650. (CR-TX-19627)

Introduction

TANK is a software tool for the design and analysis of large storage tanks using the API-620, API-650, and API-653 design codes. TANK incorporates interactive dialogs for user input, input validation to avoid run time errors, and extensive diagnostics to assist in problem resolution.

This manual provides detailed instructions for the configuration and operation of the program. Additionally, cell-specific help for guidance and information can be launched by pressing F1. For installation information, refer to the TANK Installation Guide.

You can link directly to this book using <https://docs.hexagonppm.com/go/TANK>

Program Capabilities

TANK incorporates the major considerations of API-650 Section 5 and several of the Appendices. These include:

- Shell course thickness and fluid height computations according to either the variable point method or the one foot method.
- Wind girder computations for the top and up to five intermediate girders.
- Minimum metal temperature reporting.
- Shell course thickness and fluid height computations according to Appendix A.
- Seismic computations according to Appendix E.
- Internal pressure considerations according to Appendix F.
- Grillage computations according to Appendix I.
- Material modifications due to temperature according to Appendix M.

- Cycle Life computations according to Appendix M.
- Nozzle flexibilities and limiting loads according to Appendix P, including the limiting load interaction diagrams.
- Stainless Steel considerations according to Appendix S.
- External pressure computations according to Appendix V.
- Duplex Stainless Steel considerations according to Appendix X.
- An alternate nozzle stiffness calculation routine according to PVP-1279.
- Tank sizing/costing scratch-pad.
- A **Material Database** editor.

TANK also incorporates the following considerations from API-620:

- Shell course thickness computations according to Section 5.10.
- Maximum compressive stress calculations according to Section 5.5.
- Roof analysis according to Section 5.10.
- Analysis of nozzles on the roof of a tank.
- Vacuum analysis.

TANK also incorporates the following considerations from API-653:

- Material modifications according to Section 2.3.
- Shell Settlement evaluation according to Appendix B.
- Retiring thicknesses and remaining corrosion allowance.
- Corroded hydrotest case
- Shell thickness evaluations using individual joint efficiencies and “L” locations
- Bottom Plate minimum thickness determinations
- Hydrotest heights

TANK can also design or analyze a supported cone roof according to the procedures outlined in Brownell & Young. TANK also incorporates venting computations from API-2000.

TANK relies extensively on data specified in the API codes. This includes the material data from Table 5.2, and digitized data from Appendix P. Other data tables have also been incorporated into the program where necessary.

Every effort is made to ensure that TANK is up to date with the current codes.