



PMT TANK BROCHURE



Industries -

- Tank Terminals
- Refinery & Petrochemicals
- Utilities
- Chemical Plants
- Pharmaceuticals
- Pulp & Paper
- Oil & Gas
- Power Plants
- Utilities
- Water Treatment
- Fertilizer Plants
- Airports

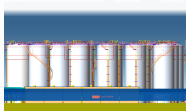
Segments -

- End Users/ Government Agencies/ Plant Owners
- Engineering, Procurement, Construction (EPC) Companies
- Fabricators
- Engineering Consulting Firms

01

FEATURES/CAPABILITIES

1. Welded Storage Tank Design.
2. API 650 Latest Standard – 13th Edition.
3. API 650 Latest Standard – 13th Edition, Annex A.
4. API 650 Latest Standard – 13th Edition, Annex S.
5. API 650 Latest Standard – 13th Edition, Annex J.
6. Shell Course thickness calculations (1-Foot Method / Variable-Design-Point Method).
7. Wind Pressure calculations.
8. Wind girder Design calculations.
9. External Pressure Design calculations.
10. Wind calculations.
11. Seismic calculations.



12. Self-supported / Supported Cone & Dome Roof Design calculations.
13. Uplift and Anchor Design calculations.
14. Insulation Weight calculation.
15. Counterbalance calculation.
16. Foundation load data.
17. Nozzle Neck thickness calculations.
18. Nozzle Local Load Calculations as per Annex P API 650.
19. Impact testing check as per API 650 guidelines.
20. (Standard / Custom) Material Library.
21. Step by Step Detailed Calculations.
22. Proper Code References with Clauses, Tables & Flow charts.

02

INPUT DATA

Input Data has been organized in such a way that, the user has to input minimal data to design the storage tank, which would be linked automatically to dependent sections wherever required. It also enables the quick definition of input for the accurate design of oil storage tanks to the American Petroleum Institute (API) 650 standard.

03

DYNAMIC DATA INPUT AND OUTPUT

The software has dynamic Input and Output capabilities. That means every change in user Input data has real-time output results with cascading effect. This enables the users to dynamically change input data/ Parameters, if required in tank design later or prior, and thereby view updated calculations.

04

MATERIALS AND CODES

The Latest Edition of API 650 has been implemented in tank design software, complying with the material database as per Table 5.2a of API 650 standard. That is, this includes wide range of commonly used carbon steel materials such ASTM A36, ASTM A516 Gr.70, ASTM A537 Cl.2, EN 10025 S 275 J0/ J2, EN 10025 S355 J0/ J2/ K2, CSA G40.21M 260W/ 300W/ 350W, ISO 630 S275 Gr C/D, ISO 630 S355 Gr C/D, etc. for user selection.

Also to comply with Annex S material database as per Table S.1a of API 650 standards. That is commonly used stainless steel material such ASTM A 240M Type 201-1, 201LN, 304, 304L, 316, 316L, 317 & 317L for user selection.

The material database includes automatically calculated allowable stress values as well for both Design and Test conditions as per API 650 Code. Additional PMT Tank software has a feature and the ability to add user-defined custom material.

05

TANK DESIGN CONFIGURATIONS

This software supports a wide range of tank design configurations such as cone, dome, and Open top floating roof. A most common type of cone and dome-roof configurations with curb angle (detail b & d) and compression ring (detail i & j) as per Annex F API 650 are also included for user selection. Also, the user has the simplicity of selecting a self-supported or supported cone/dome type of roof as per design requirements.

06

TANK SHELL DESIGN METHODS

The software has capabilities of performing shell thickness calculations as per the 1-foot Method including Annex A, S & J guidelines as well as variable design point method as required by API 650 code. The user has the ability of selected the design the of shell thickness calculation method, based on which required shell thickness evaluation and calculations would be performed.

07

WIND AND SEISMIC CALCULATIONS

Wind pressure and wind calculations can be performed as per various codes and standards such as Indian (IS 875 Part 3), American (ASCE 7-05 / 7-10 / 7-16), UBC 1997 & BS 6399: Part 2. So, users can specify user-defined wind load and perform wind stability calculations as per API 650 guidelines.

Seismic calculations can be performed as per various codes and standards such as Indian (IS 1893), American (ASCE method), UBC 1997, Non-ASCE & site-specific parameters in line with Annex E API 650 requirements.

08

ANCHORAGE AND FOUNDATION LOAD DATA

Users can determine whether the tank would require anchor bolts or not based on uplift cases provided in API 650. Therefore, anchorage requirements are checked as per wind, seismic, and roof design calculations along with counterbalancing weight check (if required) as per API 650 code, and accordingly, the size and quantity of anchor bolts are evaluated. Anchor attachment design is also performed to check localized stresses as per AISI Steel Plate Engineering Volume II, Part V: Anchor Chair Design.

Accordingly, foundation load data would be generated for the storage tank, which will include the following loads for foundation design as software output.

- a. Empty, Operating and Hydro test weight.
- b. Horizontal wind shear forces on the shell, Vertical wind force on roof.
- c. Total wind moment at the base.
- d. Seismic shear force at the base.
- e. Seismic ring wall and slab overturning moment at the base.

09

NOZZLE NECK THICKNESS AND LOCAL LOAD ANALYSIS

Additionally, the user can perform nozzle local analysis as per Annex P API 650 (if required) for shell nozzles located on the tank based on the same tank input parameters as per design calculation. Also, nozzle neck required thickness calculations can be performed by software in line with API 650 code guidelines.

10

ANALYSIS OUTPUT AND REPORT GENERATION

Users can generate analysis output and report, which would include the entire summary of design calculations. Only applicable configurations and sections would be part of the report as per calculations.



We, P-Mech Technologies (PMT), create Design Software Products for Energy & Industrial Space globally; by augmenting human potential and bringing the finest technology to practice. Our purpose is to Proactively Seek and Help People Lead a Better Life.

www.pmechtech.com

info@pmechtech.com