

Tank Emissions Calculation Software

TankESP™ is a tank emissions calculation software product suite that uses the emission estimation procedures from Chapter 7 of U.S. EPA's Compilation of Air Pollutant Emission Factors (AP-42) for volatile organic compound (VOC) emissions from storage tanks.

TankESP is widely regarded as the most accurate tank emission calculation tool in the market because it was designed by one of the authors of AP-42 Chapter 7.1. It also resolves the technical issues with TANKS 4.09d* and provides additional functionality for non-routine emissions events.



Storage tanks are an integral part of operations for petroleum refineries, chemical manufacturing plants, and large organic liquid logistics terminals. Recently, the U.S. EPA proposed enforcement initiatives focusing on emissions from organic liquid storage tanks. Facilities should review their current tank emission compliance demonstration methodologies to ensure they are appropriate and defensible in the event of an EPA review.

Easy To Use and a Robust Database

TankESP is available as a Runtime application, written in VBA for Microsoft® Access®. While supported by a back-end database, TankESP also has tabular front-end input forms that allow for easy block copy and paste functions to quickly populate throughput and product data for routine emission calculations. TankESP also accommodates copying an existing site's data as a new site in order to easily create "what-if" scenarios for permitting purposes.

The product design follows the standard database architecture where the code resides in the 'front-end' and the data reside in tables in the 'back-end'. This allows replacement of the front-end during a software upgrade while retaining all of the historical data in the back-end, thus avoiding the need to reenter data.

Accurate, Reliable Calculations

With over 70+ equations and 100+ variables, the AP-42 storage tank methodologies are not simple emission calculations. TankESP provides an easy-to-use, intuitive user interface to calculate the following emission calculations:

- **Working and standing losses** - Estimates working and standing losses from storage tanks, correctly applying EPA's current AP-42 emission factors and equations for annual and monthly emission estimates
- **Short-term emission estimates** - Applies TCEQ methodology to estimate maximum short-term (pound/hour) emission estimates
- **Floating-roof landing losses** - Estimates emissions from floating-roof landings using AP-42 methodology
- **Tank cleaning emissions** - Estimates emissions from tank cleanings using the new AP-42 methodology
- **Speciated emissions** - Calculates speciated emissions for each type of emissions event, as well as emissions of total VOCs; speciated emissions may be further tracked as TRI, HAP, or by other group designations
- **Flashing emissions** - Calculates flashing emissions from production field tanks using the Laboratory GOR method

Advanced Features

TankESP includes many time-saving features, including but not limited to:

- **Changes in services** - Accommodates mid-month changes in service, calculating the emissions for a given service based on the number of days that the tank was in that service

*EPA's TANKS 4.09d, the emission calculation tool historically used for tank emissions, is no longer supported or recommended for use by the U.S. EPA due to documented technical deficiencies. <https://www3.epa.gov/ttnchie1/software/tanks/>

- **Tank changes** – Adjusts emission estimates to account for a change in tank construction (such as putting a dome roof on an open-top external floating-roof tank) while maintaining historical records of estimated emissions based on the prior tank configuration for the period before the change
- **Control device efficiency** – Accounts for the control efficiency when vapors are routed to a control device
- **Reporting** – TankESP PRO and TankESP FX can be customized to provide reports for permitting, agency reporting, and internal compliance tracking.

Software Product Suite Overview

The next generation of the TankESP Software Product Suite offers the same basic industry-leading tank emissions calculations software, just in a variety of formats and pricing to meet different levels of storage tank emission calculation requirements. The full product line is:

- Compatible with 32-bit and 64 bit Windows 7/8/10, Windows Vista and Windows Server 2008/2012
- Able to export emissions data and reports into MS Excel Worksheets
- Includes the latest (draft) AP-42 revisions by US EPA
- Stores tanks and service data
- Calculates both working loss and standing loss

TankESP PRO offers customers the most comprehensive set of software features and database functions for tank emission calculations in the industry today. Version 5.0 allows the user to select either the latest (draft) AP-42 revisions by US EPA or the pre-revision version of AP-42. The software's user interface is simple and intuitive to use, and is supported by a robust database that can support the most complex tank emission calculations. The product has no limits on the number of tanks, stocks, or pure chemicals that can be added to the database. TankESP PRO estimates routine (working and standing) losses, non-routine (floating roof landing and tank cleaning) emissions, maximum short-term emission rates, flashing losses, and speciated emissions from both floating-roof tanks and fixed-roof tanks. The product also estimates emissions from low-pressure fixed-roof tanks and tanks that are heated and/or insulated. TankESP PRO accommodates changes in tank construction and mid-month changes in service, and supports export of custom report configurations.

TankESP FX is limited to only calculating emissions from fixed-roof tanks. This software includes all features and functionality of TankESP PRO but only includes the revised version of AP-42 Chapter 7 methodology. TankESP FX addresses all fixed-roof tank scenarios including low-pressure tanks, tanks that are heated and/or insulated, and production field tanks with flashing losses. The product applies the Laboratory GOR method to estimate flashing loss.

TankESP LT is a light version of TankESP PRO that calculates monthly and annual working and standing loss for both fixed-and floating-roof tanks, using the (draft) revised version of AP-42 Chapter 7 methodology. This product does not accommodate mid-month changes of service, nor does it calculate floating roof landing loss, tank cleaning emissions, flashing loss, or short-term emission rates. It includes standard emission reports only so no report customization is supported. As such, this product is similar in functionality to the EPA TANKS 4.09D software, but with the revised AP-42 equations.

Tank Emission Consulting Services

BREEZE Software is a division of Trinity Consultants, international consulting company that assists customers with environmental permitting and compliance management as well as broader environmental performance issues such as sustainability, climate change, product lifecycle analysis, and ISO 14000/EMS.

In addition, Trinity provides a broad spectrum of tank emission consulting services, such as tank design data, tank fittings data, and tank activity data as well as custom, on-site training. Trinity can also provide complete permit application support for tank projects from strategy to emission calculations, through permit application preparation and support with state and local agencies. With the EPA enforcement initiative imminent, it is critical that facilities operating large storage tanks ensure their emission calculation methodologies are accurate.

For a software demonstration or to learn more about our tank emission consulting services, contact BREEZE at **+1 (972) 661-8881** or breeze@trinityconsultants.com.

