breeze ESP+™

Web-Based Emissions Calculation Solution

BREEZE ESP+™ is a web-based application for estimating emissions from storage tanks as well as from other sources that are commonly found at terminal and pipeline facilities, including catch pans, combustion units, control devices, and much more. ESP+ uses the emission estimation procedures from Chapter 7 of U.S. EPA's (EPA) Compilation of Air Pollutant Emission Factors (AP-42) for volatile organic compound (VOC) emissions from storage tanks.

Differences Between BREEZE ESP+ and TankESP

BREEZE TankESP™ is widely regarded as the most accurate tank emission calculation tool on 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[1] and provides additional functionality for non-routine emissions events.

BREEZE ESP+ inherits all the functions and methodologies of TankESP in the ESP+ Tank Module, while also providing users with the ability to estimate emissions from many other sources found at terminal and pipeline facilities. Additionally, ESP+ is web-based application giving users more robust performance and flexibility.

Web-Based Platform

BREEZE ESP+ is a multi-tenant Software-As-A-Service (SAAS) hosted by Trinity Consultants using commercial Relational Database Management System (RDBMS). RDBMS is a web-based application that can be accessed from most any browser (e.g., Google Chrome, Microsoft Edge, Internet Explorer, Firefox, etc.) and from any major operating system (e.g., Windows, Linux, Mac OS). This means that:

- Users can access the web-based application without installation and software unlock
- The data of a given company can be shared among the users within the company
- Utilization of a three-level company-division-site data structure and a two-level admin-normal user privilege structure is utilized

The three-level data structure and two-level privilege structure provides more flexibility for the company and users. For example, a company can include multiple divisions, based on region (e.g. Northeast, Southwest, Mid-continent), office branch (e.g. Houston Office, Dallas Office), or business (e.g. Terminals, Refineries). With ESP+, each division has its own sites, user-defined meteorological locations, stocks, emission factors, etc., and only the users with access to that division can view and edit the data within that division. Admin users can view and edit the data in all divisions, manage normal users, and grant normal users the access to appropriate divisions, making it easy for companies to manage their data and users.

Source Modules

ESP+ estimates emissions from the following types of sources that are commonly found at terminal and pipeline facilities:

- **Catch Pans** - Catch pans include pans, buckets, or barrels into which drippings may accumulate, such as at the loading rack or from proving operations.
- **Combustion Units** - The types of combustion units addressed are boilers, heaters, furnaces, engines, and turbines. Combustion devices used for vapor control are not addressed in this module, but rather are addressed under Control Devices.
- **Control Devices** - This module addresses carbon adsorption systems (VRUs), enclosed combustion devices (VCUs), and flares, and accounts for products of combustion in addition to applying the control device efficiency to the vapor load.
- **Equipment Leaks** - Equipment leaks are accounted for either by applying AP-42 factors or by entering results from LDAR monitoring.
- **Line/Vessel Openings:** This module addresses the opening of a line, such as a pig trap, and the opening of a vessel, such as a filter or prover.
- **Loading Operations** - Emissions from loading operations result from the displacement of vapors from the cargo compartment of a tank truck, rail car, or marine vessel while it is being loaded, accounting for capture and control efficiency if the loading is controlled.
- **Sumps/Oil-Water Separators** - Sumps and oil-water separators typically receive runoff of surface water from areas where there may be drips or spillage, such as at truck racks.
- **Storage Tanks** - This module includes emissions from floating roof landings and tank cleanings as well as routine standing and working losses.

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- **Vacuum Trucks** - The vacuum trucks addressed by this module are those with air movers at the exhaust of the truck tank to pull liquid into the truck tank.

Easy To Use

ESP+ utilizes information entry forms and tabular data entry tables to streamline and simplify the data entry process. The tabular data entry tables have a spreadsheet-like grid of input cells (data grid), similar to a spreadsheet, allowing users to insert or delete rows, copy and paste data entries, and export the entry data to an Excel spreadsheet or a CSV file. The tabular data entry tables also include filter and sorting functions. Emission estimate results can be viewed in the tabular tables or be reported to Excel spreadsheets.

Accurate, Reliable Calculations

Emission calculations can involve dozens of equations and hundreds of variables, making them complicated and time-consuming. ESP+ provides an easy-to-use, intuitive user interface to calculate the following emission calculations:

- **Working and Standing Losses (Tank Module)** – 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.
- **Floating-Roof Landing Losses (Tank Module)** – Estimates emissions from floating-roof landings using the current AP-42 methodology.
- **Tank Cleaning Emissions (Tank Module)** – Estimates emissions from tank cleanings using the current AP-42 methodology.
- **Flashing Emissions (Tank Module)** – Calculates flashing emissions from production field tanks using the Laboratory GOR method.
- **Short-Term Emission Estimates** – Estimates maximum hourly emissions (pound/hour) for all source modules. For the Tank Module, ESP+ applies TCEQ and API methodologies to estimate maximum short-term emissions.
- **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.

Advanced Features

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

- **Changes in Services (Tank Module)** – 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.
- **Source Changes** – Adjusts emission estimates to account for a change in source 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 source configuration for the period before the change.
- **Control Device Efficiency** – Accounts for the control efficiency when vapors are routed to a control device.
- **Reporting Options** – An embedded detailed report that includes all the information in the U.S. EPA TANKS 4.09d "detail" report is provided for the Tank Module. Custom reports can be generated to include the fields of interest for permitting, agency reporting, and internal compliance tracking. Accommodates grouping multiple sites, sources, or chemicals into site sets, source sets, or chemical sets, respectively, for custom reporting purposes.
- **Custom Data** – Accommodates custom data of stocks, flash gases, pure chemicals, meteorological locations, and emissions factors.
- **Site Data Duplication** - Accommodates a one-click function for copying an existing site's data as a new site to easily create "what-if" scenarios for permitting purposes.
- **TankESP Database Compatibility** – Compatible with the BREEZE TankESP backend database file, from which the data, after uploading the backend database file into ESP+, will automatically appear in the ESP+ database.

Subscription Details

ESP+ is available on a subscription basis, and we provide users with a variety of subscription options so that each user can select the option that works best for their needs. We offer four subscription modules that vary in capability and price (BREEZE ESP+ TankESP LT, BREEZE ESP+ TankESP FX, BREEZE ESP+ TankESP PRO, and BREEZE ESP+ PRO), as well as one powerful add-on tool (Sitewide Rolling Emission Report) that is compatible with three of the four modules. For more information, details about the four modules and add-on tool can be found below. Please also click here to view a tabular comparison of the four modules.

ESP+ TankESP LT is a light version of TankESP PRO that calculates monthly and annual working and standing losses for both fixed- and floating roof tanks, using the revised version of AP-42 Chapter 7 methodology. It 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 U.S. EPA TANKS 4.09D software, but with the revised AP-42 equations.

ESP+ TankESP FX is limited to only calculating emissions from fixed roof tanks. It 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.

ESP+ TankESP PRO offers customers the most comprehensive set of features and database functions for tank emission calculations in the industry today. It allows the user to select either the latest AP-42 methodologies by US EPA or the pre-revision version of AP-42. The 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.

ESP+ PRO includes all features and functionality of TankESP PRO. Additionally, it estimates emissions from other types of sources (i.e., Catch Pans, Combustion Units, Control Devices, Equipment Leaks, Line/Vessel Openings, Loading Operations, Sumps/Oil-Water Separators, and Vacuum Trucks).

Add-On Tool: Sitewide Rolling Emission Report

The Sitewide Rolling Emission Report is a powerful add-on available for BREEZE ESP+ TankESP FX, ESP+ TankESP PRO, and ESP+ PRO. This optional tool, available for purchase separately, automatically combines emissions from all tank and non-tank sources at a site and calculates the monthly rolling sum, including speciation.

Without this add-on, users managing multiple tank and non-tank sources must manually merge emissions data and calculate the rolling sum - a process that can be both tedious and time-consuming. By adding the Sitewide Rolling Emission Report to an existing subscription, users can streamline their workflow and focus on higher-priority tasks while BREEZE ESP+ handles the heavy lifting.

Related Consulting Services

Trinity Consultants is an international consulting company that helps organizations overcome complex, mission-critical challenges in EHS, engineering, and science through expertise in consulting, technology, training, and staffing. We have decades of experience with assisting 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 emission consulting services, such as migration of source and activity data, custom report design, as well as both off-the-shelf and custom, on-site training. Trinity can also provide complete permit application support for terminal source projects from strategy to emission calculations, through permit application preparation and support with state and local agencies.

For an ESP+ demonstration or to learn more about our related consulting services, contact us at +1 972.661.8881 or breeze@trinityconsultants.com.

Related Products and Services

- BREEZE TankESP
- Tank Services
  - Consulting Services
  - Tank Roof Design Services
- Training

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

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