

# SmartProcess™ Tank



*Improve inventory insight, quality tracking and safety by using Emerson's SmartProcess Tank package*

- Integrate the inventory management software with the terminal or plant control system
- Enhance visibility of tank status and movements
- Expand your process monitoring and automation capabilities.
- Improve safety with better alarm management

## Introduction

Tanks contain large quantities of materials with significant commercial value and hence the importance of safeguarding quality, and controlling operations related to storage and movements. The rise in the number of products and the increasing customer and market demands, have resulted in logistical, environmental and inventory challenges that can be solved with the use of proper instrumentation and control systems. This also provides an opportunity to improve the way tanks and terminals are managed, by integrating tank gauging systems with the site's automatic control system.

Emerson provides SmartProcess Tank, an application that leverages the advantages of the Rosemount TankMaster Inventory Software and DeltaV to automate your inventory monitoring process. It provides you with complete visibility to what is happening in the tanks in your facility.

## Benefits

**Integrate the inventory management software with the terminal or plant control system.** SmartProcess Tank is native to the DeltaV Control System, and it can be easily integrated to the Rosemount TankMaster Inventory Management Software through OPC Data Access 2.0 (OLE for Process Control), an open industry standard, which eliminates the need for costly customized hardware and software integration.

### Enhance visibility of tank status and movements.

SmartProcess Tank modules provide easy and quick access to important information such as a Tank Properties display to track up to 80 chemical properties for materials stored in tanks. SmartProcess Tank also selects automatically the appropriate volume correction factors consistent with the material displayed for each tank. Prevents errors in operating the tank farm by alerting the operators when a tank is reaching a desired target, or when a target level is being reached faster than the permitted rate.

### Expand your process monitoring and automation capabilities.

Adding SmartProcess Tank with Tank Master allows you to completely automate your inventory measurement process and can help you improve tank utilization. Control pumps, motor operated valves, lineups, tank heating/cooling, overfill protection and more. Using SmartProcess Tank to monitor for tank blanketing, steam usage, and mixer usage can also help you manage utilities costs.

### Improve safety with better alarm management.

SmartProcess Tank not only provides useful alarms to alert the operator of unsafe levels or temperatures, but it is also preconfigured to alert unexpected product movements. Built-in alarm summaries, provide complete alarm information, organized by priority or time. This allows operators to easily access on the most important alarms and quickly determine the proper response

## Product Description

The SmartProcess Tank package contains the DeltaV tank modules database and graphic files necessary to provide basic IO logic and display for connecting Emerson's Rosemount TankMaster Inventory Management Software to DeltaV. All visualization, I/O and alarms are handled by DeltaV. TankMaster provides calculations for measuring custody-transfer certified temperature and pressure-compensated volumetric and mass inventory values. Supporting documentation is also provided.

### SmartProcess Tank preconfigured features

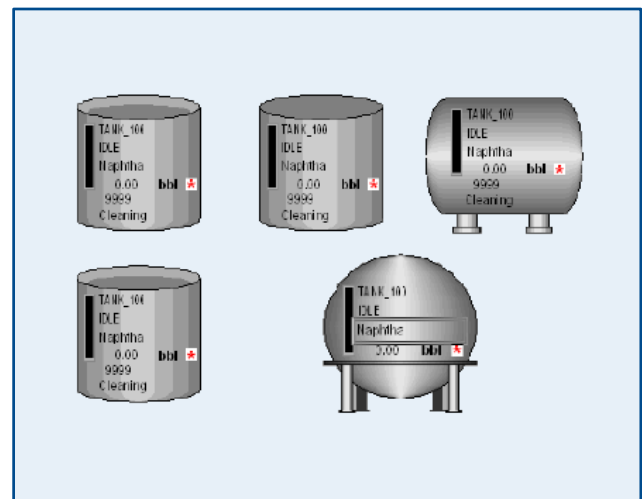
SmartProcess Tank provides built-in features for easy information access that help tank farm operations. These include DeltaV graphics and tools, like dynamos, faceplates and detailed displays, which are preconfigured for use with the Tank Modules. These are easy to customize to fit your operational philosophies and work preferences.

### Tank Dynamos

Various tank dynamos are provided for cylindrical, floating roof cylindrical, spherical, and horizontal (bullet) tanks. Dynamos are a convenience at configuration time, because they are pre-configured and provide a toolset allowing for custom tank graphic screens to be created quickly and accurately. The standard Tank dynamos display the following information.

- Tank ID
- Tank Description
- Operational State
- The name of the material in the tank
- A percent level bar chart indicator
- Gross Standard Volume
- An indication if alarms are present
- An indication if any inputs are currently being simulated
- Time to Limit
- Operator comment

Other less frequently needed data are accessed by the faceplate and detail display in drill-down fashion



*Tank dynamos included with SmartProcess Tank*

### Tank Faceplates

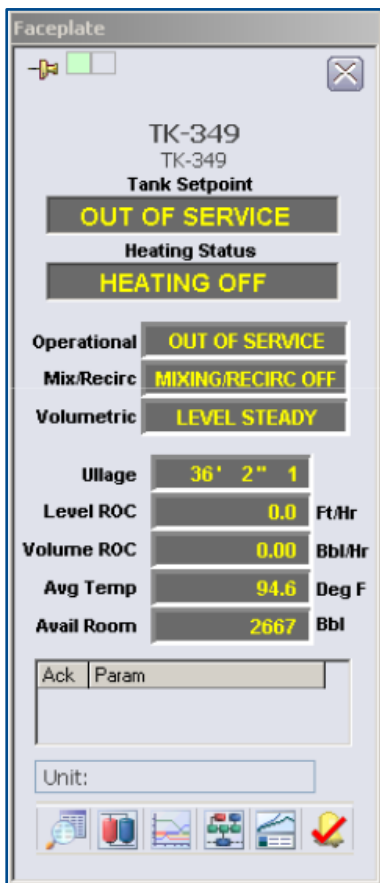
Clicking the dynamo causes the tank faceplate to pop up, in order to display additional information. Tank Faceplates contain the following operational information:

- Tank ID
- Tank Description

- Tank Setpoint
- Tank Heating Status
- Operational State
- Mix/Recirculation Status
- Volumetric Status
- Level expressed in height units
- Level Rate of Change
- Volume Rate of Change
- Average Temperature
- Available Room
- A table of existing alarms that are currently active
- Acknowledge of Tank Alarms

In addition, there is a set of action icons that select the following:

- Historical Trend Display
- Detail Display Pop-up

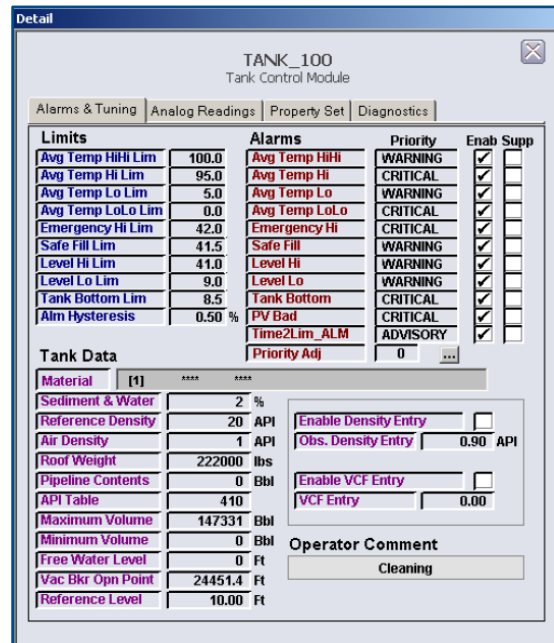


Example of a Tank Faceplate showing operational information for a given tank

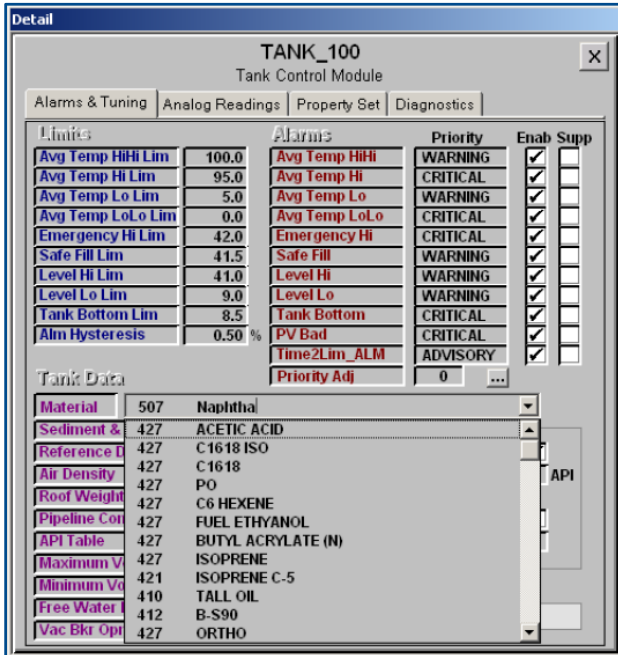
### Tank Detail Display

Tank Detail Displays are graphical objects used to show additional data for the tank. Generally, it displays any data that is not visible on either the Tank Dynamo or the Tank Faceplate. It is invoked by selecting an action icon on the faceplate. Because of the relatively large volume of data, the Detail Display organizes the data into tabbed windows. Each window shows some logical grouping of data. The detail faceplate has four tabs with the following names and information:

- Alarms & Tuning: This tab provides manual data entry fields and a predefined drop-down list for selecting materials in the tanks which is linked to VCF (volume correction factor) values, and updates the product ID and name parameters, which are displayed in the dynamo. The security these and other various manual entry parameters can be customized per site through the standard DeltaV Security features
- Analog Readings: Tank volumes calculated by TankMaster are shown in this tab along with the actual levels and temperatures read by the gauge. Additional miscellaneous information about the tank is also provided on this page.
- Property Set: The Tank Property Set can have up to 80 chemical properties for the material. The values in these Property Sets can come from either manual entries, LIMS interface, analyzers or quality predictors.
- Diagnostics: This tab provides information in case abnormal conditions are detected while the tank module is running



Example of the Detail Display showing the Alarms & Tuning Tab



Material selection from a predefined drop-down list on the Tank Detail Display

### Tank Alarms

Alarm prioritization, presentation and management, focus the operator on the most important alarms. The SmartProcess Tank Modules includes basic alarms such as:

- Warning and critical level alarms
- Warning and critical temperature alarms

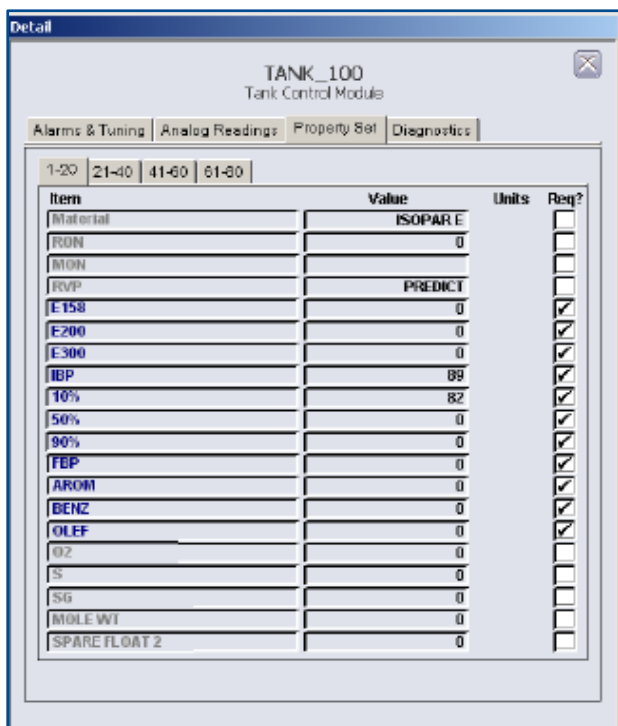
It also provides some of the following useful alarms:

- Unexpected movement detected while tank is out of service
- Alarming when the tank is nearing an operator target or max/min limit.
- Level rate-of-change limit violated

Additional alarms, alarm criticality, alarm string, alarm color, etc. can be configured as custom for any individual site requirements.

### SmartProcess Tank Annual Support

Application support is provided through the Emerson Global Service Center. Annual Support includes guaranteed access to new versions, enhancements and updated documentation along with unlimited telephone and remote support of the application. With an Application Support agreement, you can rest assured that expert help is only a phone call away and your SmartProcess Tank will remain current with future system upgrades. The first year SmartProcess Tank support is required. Subsequent years are optional.



Example of a the Detail Display showing the Property Set Tab

## Ordering Information

Description	Model Number
SmartProcess Tank for DeltaV - 5 tanks	VF1057T5
SmartProcess Tank Volume Calculations - 5 Tanks	VF1057CT5
SmartProcess Tank for DeltaV - 20 tanks	VF1057T20
SmartProcess Tank Volume Calculations - 20 Tanks	VF1057CT20
SmartProcess Tank for DeltaV - 50 tanks	VF1057T50
SmartProcess Tank Volume Calculations - 50 Tanks	VF1057CT50
SmartProcess Tank for DeltaV - Max tanks	VF1057TMX
SmartProcess Tank Volume Calculations - Max Tanks	VF1057CTMX
Annual Application Support for SmartProcess Tank - 5 tanks;	VF1057S1
Annual Application Support for SmartProcess Tank - 20 tanks;	VF1057S2
Annual Application Support for SmartProcess Tank - 50 tanks;	VF1057S3
Annual Application Support for SmartProcess Tank - Max tanks;	VF1057S4

## Related Products

**Rosemount TankMaster Inventory Management Software.** A powerful easy-to-use Windows-based inventory management software package. It provides configuration, service, setup, inventory and custody transfer functions for Rosemount tank gauging systems. Provides calculations for converting tank level into temperature and pressure-compensated volumetric and mass inventory values.

## Prerequisites

- DeltaV 11.3 or higher
- Appropriate DeltaV hardware

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