Advanced Solutions

Honeywell

Experion® Tank Monitor

Standalone Tank Monitoring Solution for Oil Refineries, Tank Farms & Terminals

Honeywell's Experion Tank Monitor (ETM) enables operations personnel to collect, validate and manage accurate information on the status of storage tanks and ensures that inventory information is comprehensively monitored for improved safety.

Benefits include:

- **Reduced losses** from tank spills and lost suction incidents because of increased monitoring capabilities of Experion Tank Monitor including notification of upcoming events that gives operating personnel time to react and avoid potential problems.

- **Reduced inventory** through tighter control and monitoring which allows the use of running tanks.

- **Elimination of data re-entry and errors** by collecting data from various systems, presenting to operator in a common user interface and storing as a common record for re-use.

Experion Tank Monitor's Tank Group Display enables the operator to easily view information for up to eight tanks in a single tank group

Key Capabilities

Experion Tank Monitor is component of Honeywell's Profit® Movement Suite which is part of the Profit Blending and Movement Solution. Experion Tank Monitor provides the following key capabilities that support tank monitoring for

improved safety, reliability, sustainability and profitability of facilities.

- Comprehensive Tank Calculations
- Flexible Tank Gauging Systems Support
- Manual Data Entry Support
- Accurate Tank Volume Calculations
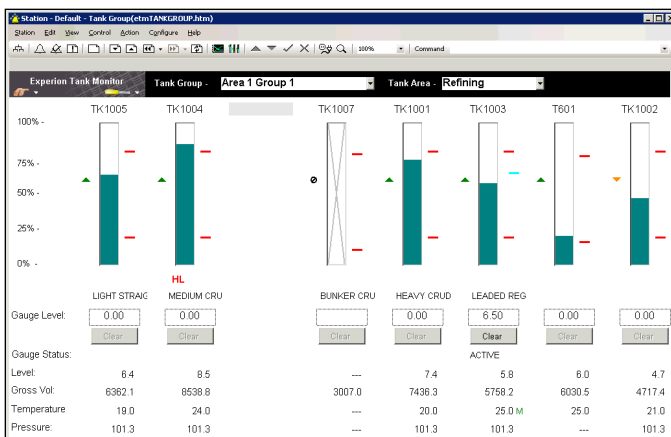- Tank Flow Detection
- Extensive Tank Monitoring and Alarms

A number of these key capabilities are described below:

Comprehensive Tank Calculations

At the heart of Experion Tank Monitor is the capability to provide a broad range of tank calculations that support accurate monitoring of tank information. Using automatically collected data or manual entries for level, temperature, material density, percent sediment and water, etc., together with reference data, Experion Tank Monitor collects and records tank parameters such as:

- Gross and net volume
- Volume correction factor
- Available capacity
- Pumpable volume
- Water volume
- Gross and net mass
- Flow rate
- Time to alarm
- Time to gauge

These parameters can be used as the basis for alarms or alerts to the operator to ensure safe, efficient operation of the tanks.

Flexible Tank Gauging Systems Support

Experion Tank Monitor supports various tank gauging systems through a variety of interfaces including:

- Servo
- Float
- Tape
- Radar

All tank gauging systems' data is validated for bad values to ensure that accurate data is used for tank calculations.

Manual Data Entry Support

While much of the information for Experion Tank Monitor is collected automatically, some information is only available through manual entry, or when field instrumentation is unavailable, manual entry capability is required. Experion Tank Monitor enables the operator to manually enter data collected in the field or values normally collected from tank gauging systems, including tank level, temperature, density, percent sediment and water, and pressure values. Also, Experion Tank Monitor can be used to enter the manual tape level and water level readings as well as the last water drain operation. In addition, the expected tank flow direction can be entered for optional tank movement tracking:

Accurate Tank Volume Calculations

Accurate tank volume calculations are imperative for successful tank monitoring. Experion Tank Monitor ensures accurate tank volume calculations through the following.

1. Reference data that includes:

   - Reference density
   - Stop gauge level or volume
   - Volume, temperature, pressure and density alarm limits
   - Tank measurement units

2. Support for the following tank geometries:

   - Floating roof
   - Fixed roof

3. Application of tank volume correction factors:

Volume correction is used to express the volume of the tank material under reference conditions. Reference temperatures can be 15 °C, 20 °C, 60 °F or 68 °F. The volume correction calculations are performed whenever there is a significant change in the tank's temperature or measured density, and are based on tank geometry, as well as type, tank temperature, vapor pressure (for pressurized tanks), reference or actual

density. Calculations conform to API 2540 (1980 Editions) or ASTM D1250 standards.
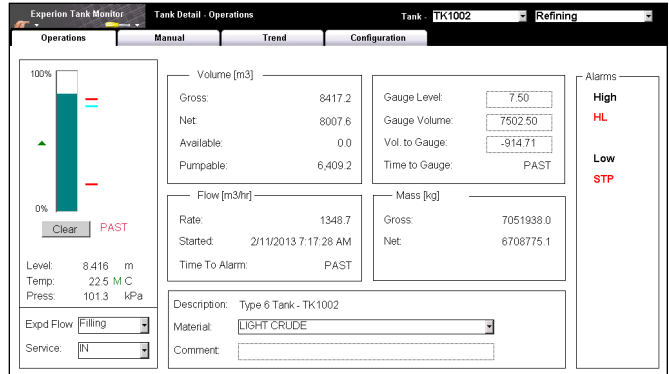
Individual tank information can be viewed in the Tank Detail Display

Tank Flow Detection

Experion Tank Monitor determines if there is a flow into or out of a tank based on changes in tank level. The level is sampled at configured intervals to determine if a significant level change has occurred, indicated when a specified flow tolerance is exceeded. This tank flow detection is used together with an optional user-entered value for expected flow direction, and if the expected flow direction is different than the flow detected by Experion Tank Monitor an unexpected movement alarm can be raised.

Extensive Tank Monitoring and Alarms

Each tank is monitored for many alarm conditions including level, flow, temperature, density, pressure, unexpected movement or movement in wrong direction, leak, flow start/stop and stop gauge. The stop gauge may be set for level, volume or change in volume. Messages can be configured to the time until a gauge condition is met or in advance of limits being reached. This information is shown to operators in the Tank List Display.
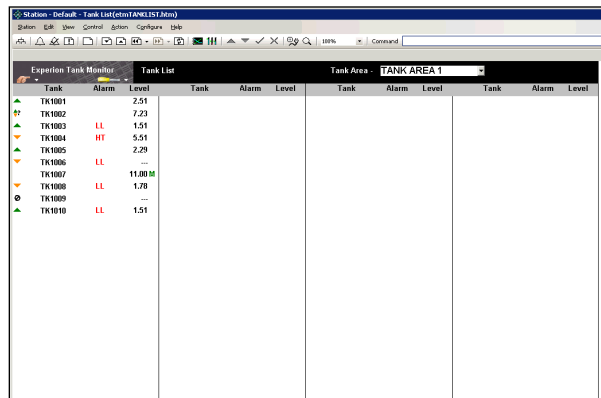
Experion Tank Monitor's Tank List Display enables operators to view critical tank information at a glance
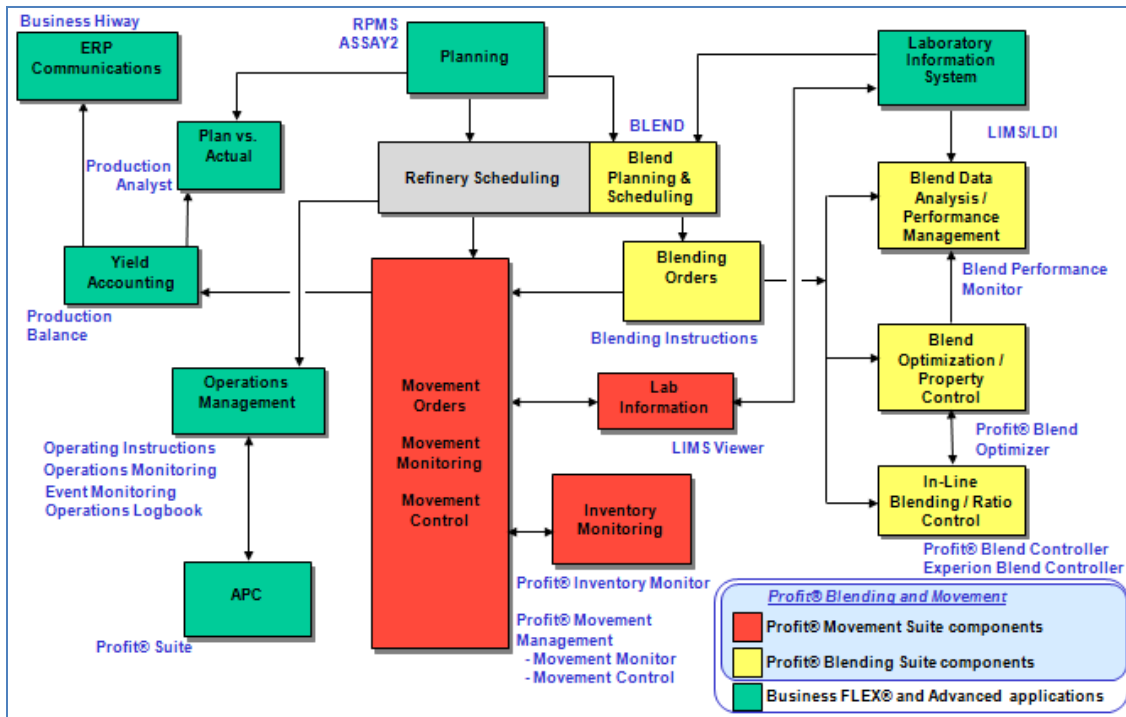
Experion Tank Monitor on the Experion Platform

Experion Tank Monitor is built on the Experion® PKS platform for distributed control of the field equipment used in blending and movement operations. Experion graphics are used as the basis for the Experion Tank Monitor user interface, and Experion Tank Monitor makes use of standard Honeywell Experion PKS functions such as messages, logging, as well as alarming and event journaling.

ETM runs in Experion PKS C300 controllers which support full hardware redundancy for added reliability and safety.

Integration with Honeywell Applications

Experion Tank Monitor application is a component of Honeywell's Profit Movement Suite, which is part of the Profit Blending and Movement Solution. Experion Tank Monitor is a stand-alone application that does not share information directly with the remainder of the Profit Blending and Movement solution or other Business FLEX® applications; however the relationships between the other Profit Blending and Movement Solution applications and Business FLEX applications are shown below:

Honeywell's Profit Blending and Movement Solution integrates with other Honeywell applications

System Requirements and Architecture

As described earlier, Experion Tank Monitor leverages the Experion® PKS platform. Contact Honeywell for the latest list of supported Experion PKS releases. The following illustration shows an example BMM system architecture where Experion Tank Monitor is installed in the context of a combined Experion PKS and business information system.

Experion Tank Monitor is installed on stand-alone or redundant C300 controllers.

Training Services

Training courses addressing Experion Tank Monitor implementation, use and maintenance are available through Honeywell's Automation College (www.autocollege.com). On-site courses are also offered upon request.

Support

Honeywell's Movement Management Suite comes with worldwide, premium support services through our Benefits Guardianship Program (BGP). BGP is designed to help our customers to improve and extend the usage of their software and the benefits they deliver, ultimately maintaining and safeguarding their advanced software.
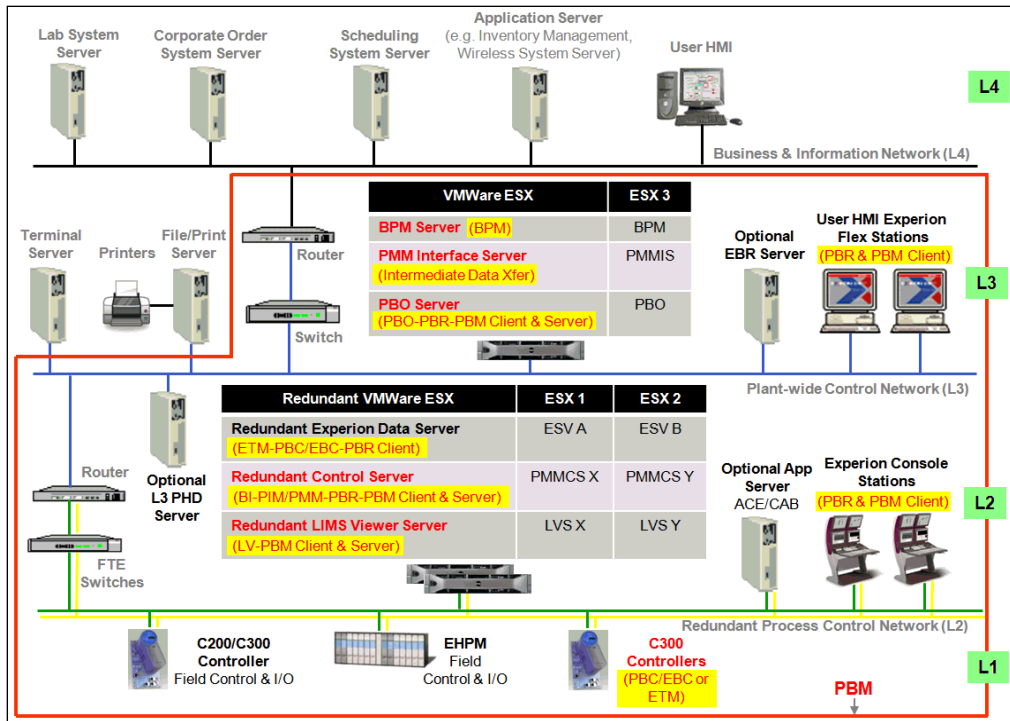
Example Profit Blending and Movement solution architecture

For More Information

To learn more about Honeywell's Experion Tank Monitor, visit our website www.honeywellprocess.com/software or contact your Honeywell account manager.

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