



AVIATION SOLUTIONS

From Tank Farm to Take Off

There are many levels of complexity when managing fuel at an airport, and it all starts with the tank farm. Operators must keep an accurate account of fuel inventories for all stockholders, manage fuel deliveries and dispensals, and monitor pumps and valves to maintain constant fuel distribution to the hydrant system, in addition to ensuring all quality and safety protocols are followed. Once the fuel is issued, accounting for into-plane transactions becomes critical. Service providers are often challenged in finding cost-effective solutions to accomplish this.

Over the past 20 years, some of the world's busiest airports have relied upon Varec products, solutions, and services for:

Level Measurement – we offer a wide variety of tank gauges, transmitters and communication devices to automatically monitor and record fuel inventory levels.

Inventory Management – our software enables remote monitoring of inventory levels, in real time, from the safety of the control room.

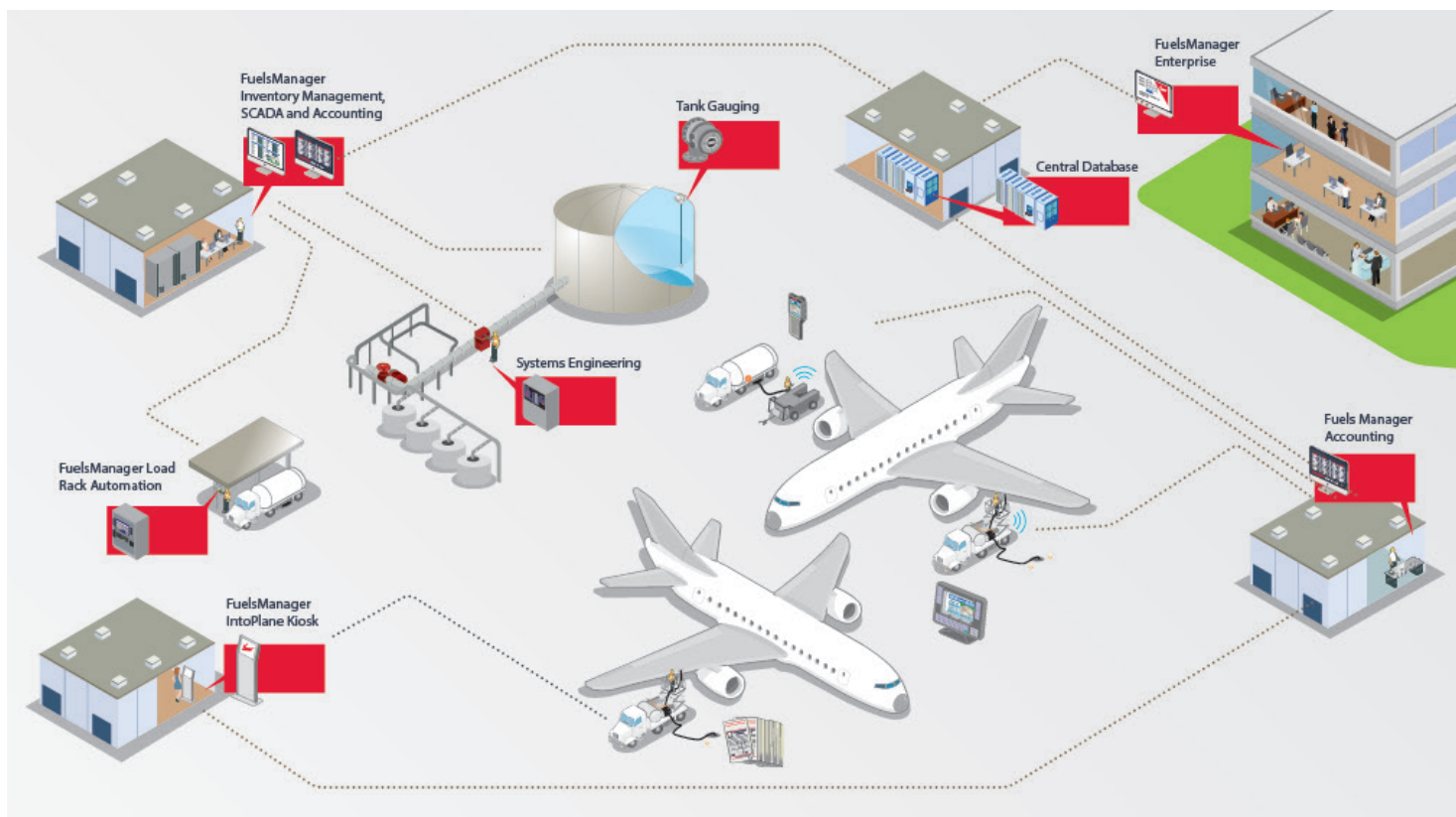
Safety Controls – when inventory levels are outside of the accepted tolerance levels, our software initiates alarms and notifications to allow operators to quickly identify and resolve any potential issues.

Control and Automation – our engineers develop automation systems for control rooms with everything from real-time movement tracking and pump and valve control, to flow monitoring and emergency fuel shut off.

Inventory Accounting – with our software, fuel accountants are able to quickly reconcile calculated book vs measured physical inventory to identify gains and losses and flag when the value is outside of the accepted tolerance.

Into-Plane Fuel Automation – we help fuel agents streamline the process for recording transactions through easy to use, validated data entry kiosks and computers located in the back office.

Enterprise Systems – leveraging a centralized data base, we provide a real time view into fuel inventories and related transactions across all managed sites in one system for airlines, into-plane service companies and fuel providers.



AIRPORT FUEL MANAGEMENT SYSTEM

TANK GAUGING

Airport tank farms typically utilize float and tape or servo gauges for bulk fuel level measurement. The following gauges and devices are best suited for airport tank farms:

2500 Automatic Tank Gauge (ATG)

The 2500 ATG is a mechanically operated float and tape instrument with a liquid level measurement accuracy rate of $\pm 0.2\text{in}$ or ($\pm 4\text{mm}$). It meets API Chapter 3.1B regulations for inventory control applications and is also ATEX approved for use in potentially explosive atmospheres.

NMS80 and NMS81 Proservo Tank Gauges

The Proservos are intelligent tank gauges for high accuracy liquid level measurement employing the latest microprocessor technology. They provide a measurement accuracy of up to $\pm 0.016\text{in}$ ($\pm 0.4\text{mm}$). They are also FM, ATEX, IEC Ex and NEPSI approved for use in hazardous areas, as well as SIL2 certified for overfill prevention.

2920 Float and Tape Transmitter (FTT)

The 2920 FTT provides data from the tank side to the control room for use in inventory management applications. It accurately converts mechanical level measurement from the connected tank gauge, integrates temperature and HART devices, and provides digital inputs and digital outputs for the indication of alarms or drive relays.

Temperature Sensors

The 4532 and 4539 Average Temperature Converters, as well as the 8500 Spot Temperature Sensor, integrate volumetric temperature measurement into tank gauging systems to help accurately calculate liquid inventories.

8810 Remote Terminal Unit (RTU)

The 8810 RTU collects and transmits data from field instruments to a central system, such as FuelsManager®, host DCS or PLC. All information obtained can be used for inventory management, alarms, control and automation.



OTHER DATA DEVICES

8620 Driver Entry Terminal (DET)

The 8620 Driver Entry Terminal (DET) is a field user interface device designed for data entry and process management at facility control points, such as entry and exit gates, load racks, BOL request stations, weight scale stations and preload stations.

IntoPlane Kiosk

The IntoPlane Kiosk is an easy to use touchscreen interface that enables fueling agents to quickly enter their completed fuel tickets throughout the day from a central location, such as a break room. The kiosk expedites the data entry of refueling transactions to streamline the fuel accounting process.

FUELSMANAGER® APPLICATIONS

As a suite of integrated software applications, FuelsManager is utilized to track, manage and control the receipt, storage, distribution and delivery of fuel and related products.

Accounting - Enables users to accurately track, manage, reconcile, and monitor book vs. physical inventories by tank farm manager, fuel stockholder, and product on a daily, weekly and monthly basis.

Inventory Management - Provides users with a view of all measured and calculated inventory variables, alarms, and status for a single tank or multiple tanks on concise graphical or tabular displays.

IntoPlane Kiosk - Facilitates users through data entry on a touchscreen interface that includes built-in validations to help improve the accuracy and expedite the processing of manually recorded fuel transactions.

IntoPlane Web - Guides users through data entry in a web browser with built-in validations to help improve the accuracy and expedite the processing of manually recorded fuel transactions.

Leak Detection - Enhances safety by monitoring for leaks and sending alerts when potential environmental hazards occur by interfacing to 3rd-party detection systems or using tank level data from high-accuracy tank gauges.

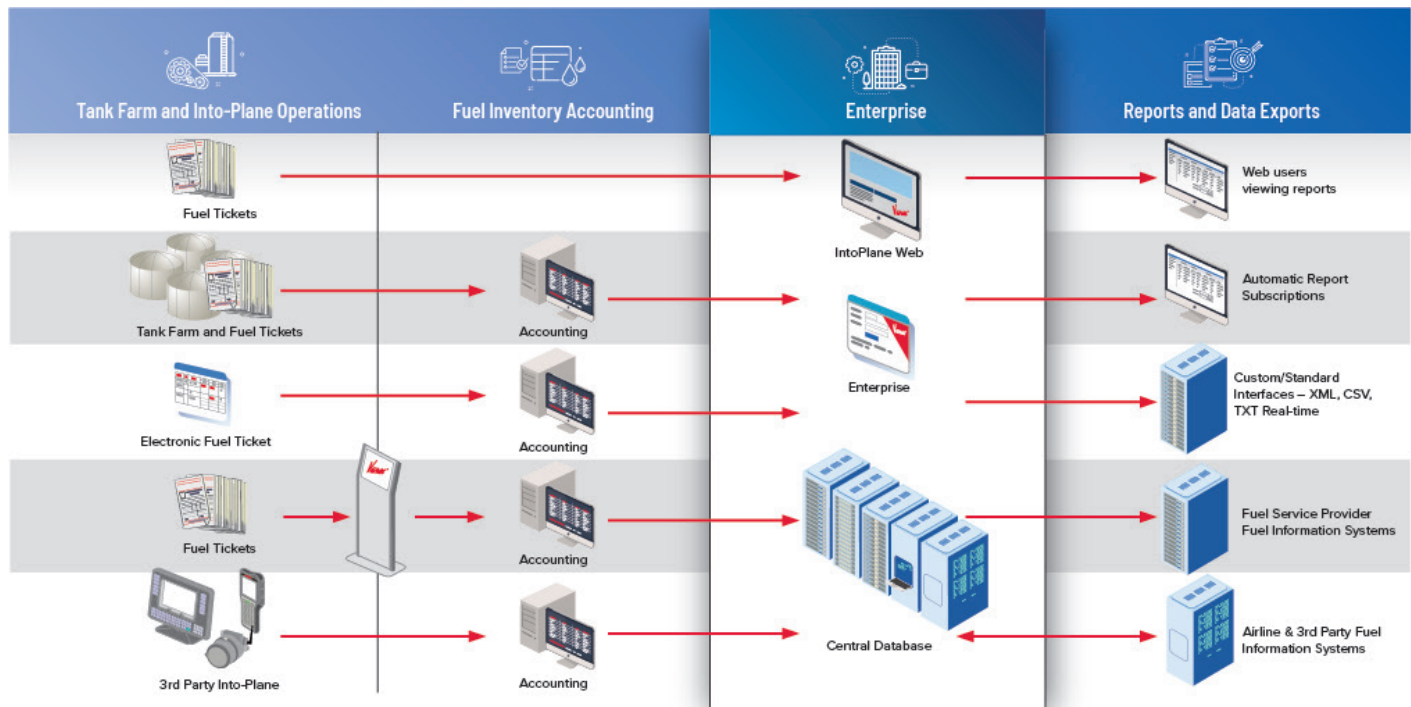
Load Rack Automation - Controls facility access, and facilitates efficient, safe, and secure loading operations by interfacing to the 8620 DET. Interfaces are also available for 3rd-party automation and safety equipment, such as electronic presets, ESD and grounding systems, or load rack control equipment. It is also compatible with TWIC identity verification standards.

Movement System - Monitors bulk product transfers in real time to and from the facility or from tank to tank within the facility.

SCADA - Provides automation and control throughout the tank farm by integrating systems and reducing the amount of time operators have to spend in the field. This is achieved by using industry standard open communication interfaces and proven data point architecture.

CENTRALIZED ENTERPRISE SYSTEMS

With FuelsManager Enterprise, airlines, fuel suppliers and service providers are able to access their fuel inventories and related transactions across all managed sites in one system. Users at the airport are provided real-time information and status updates, while remote users are able to access corporate-wide overviews and operational data across all managed sites. Automated reporting services, integration with Microsoft® Office and the ability to export data are all supported features. FuelsManager can also be integrated with corporate ERP systems and third-party business partners such as SAP. An enterprise system also helps reduce IT capital expenditures as no local software needs to be installed, nor are there databases or servers to manage and maintain.



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