MULTITECH INTERNATIONAL AUTOMATION SYSTEM LTD

P.O. BOX 41447–80100, MOMBASA,
KENYA, TEL: 254 – 712– 669
376

TECHNICAL PROPOSAL ON INSTALLATION OF FUEL MANAGEMENT SYSTEM

FUELING YOUR BUSINESS FOR SUCCESS

Contents

1 Introduction

In today's rapidly changing fuel market, with shrinking margins on fuel, increased competition, regulations, and alternative energy's, oil companies are seeking solutions that will enable them to increase revenues, reduce operational costs, create and increase long term customer loyalty, manage stocks and inventory in a more efficient manner, reduce losses and prevent fraud.

In light of this, Multitech has partnered with a number of manufacturers to offer a flexible, modular and reliable '*Site to Network'* Fuel Management solution for the Retail fuel industry, offering oil companies the capabilities to fully manage and control their Commercial and Operation activities.

For the successful implementation of this project, **Multitech** will undertake the full scope of the project and be responsible for the completion of the project.

ABOUT MULTITECH INTERNATIONAL AUTOMATION SYSTEMS LTD

MULTITECH INTERNATIONAL AUTOMATION SYSTEMS LTD is a company based in Nairobi, Kenya that offers comprehensive Fuel & Fleet Management Solution in the Oil Industry. We have a team of Engineer and Technicians with cumulative experience full in automation of petrol stations.

OUR VISION

To be a world-class products and service provider to organizations and individuals.

OUR MISSION

To provide timely and high-quality products/services to enable our clients to consistently achieve profitable outcomes in their business undertakings and deliver the best quality products/services at affordable price to the market.

Our solutions incorporate the business as well as operational aspects on both the individual station (Fueling site) and the network level, including fuel inventory and deliveries (Fuel stock), customer loyalty applications, forecourt automation, pricing management as well as shift/attended management, and much more...

Once deployed, the Fuel Management solution delivers significant operational efficiency, fuel loss reduction, and prevention of fuel fraud as well as theft. Furthermore, the solution enables initiating and monitoring marketing activities, strengthen company brand, develop loyalty programs, grow market share, and increase profit.

1.1 Industry Challenges

Most of Oil companies face the following challenges:

- ✓ Tight margins and a competitive market structure

- ✓ Exceptionally price-sensitive customers

- ✓ Increased manpower and operational costs

- ✓ Frequent changing government compliance regulations

- ✓ Financing constraints
- ✓ Volatile service station rental fees

- ✓ Dealers/Franchisees loyalty and network discipline to headquarters' strategy and target market

- ✓ Remote network service station management

- ✓ Losses in sales due to inventory shortages and fraudulent activities (e.g. dumping, theft, etc.)

1.2 Global Trends

The following details that present-day global trend in the petroleum industry:

- ✓ Fuel retailers moving towards unmanned sites by deploying Fuel Automation System.

- ✓ Expansion to other business ventures in order to increase profitability (e.g. C-stores, Car Washes)

- ✓ Consistent aggressive fuel pricing strategy by the Hypermarket industry and large supermarket chains projects on oil company sites Traffic (Volume), revenue and profit.
- ✓ Enhancing customer experience.

- ✓ Proactive marketing strategies to increase customer loyalty, traffic, and on-site purchases (C-Stores)

2 ForeSite & ForeNet Overview

ForeSite (Station/Fuel site level system) and ForeNet (Network level system) suite is a **Scalable and Modular solution** for the Retail petroleum industry. The suite will provide Petrol Station Owners/Dealers with full visibility and control over operations, including Fuel Sales Management, Fuel Inventory Management and Price Management, as well as enhancing customer loyalty by allowing credit/invoice customers full accountable and stringent control over their fleet fuel consumption.

The ForeSite and ForeNet Suite will enable any Oil Company to start out with a basic cost-effective entry-level solution and scale up to more modules as well as features over time according to the operational and marketing vision of the company.
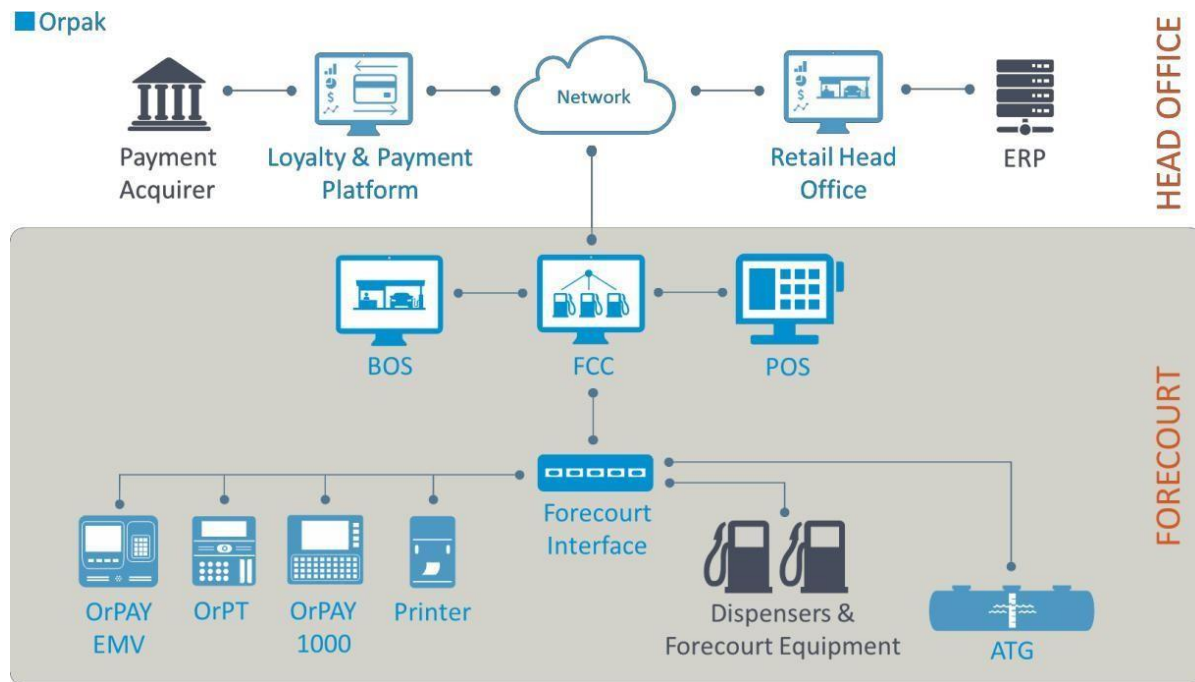
The system is not constrained to a specific pump, and interfaces with all forecourt elements, from dispensers to payment terminals, price poles, and fuel tanks, providing comprehensive management, control of operations, and maintenance activities of all network service stations from a central location (headquarters).

ForeSite BOS (Back Office System Software App') will offer our Clients remote online access and monitoring of the automated site activities via a web browser.

The ForeSite and ForeNet Suite have the ability to interface with 3rd party systems, such as authorization gateways, ERP systems, as well as with ForeFuel (Automatic Vehicle Identification fueling Payment system) or any other mode of Payment (MOP) including Mobile Payments, Cheques, etc.

Deployed throughout 35,000 stations in more than 40 countries, ForeSite is used by leading global and regional fuel retailers and is suited to tailor a wide range of customers and diverse fuel stations' needs.

SYSTEM ARCHITECTURE

RETAIL STATION SYSTEM ARCHITECTURE

RETAIL STATION CONTROL ROOM

PUMP CONTROLLER

TANK GAUGING CONSOLE

TANK 1

PUMP 1

PUMP 2

TANK 2

TANK 3

PUMP 3

PUMP 4

TANK 4

TAG READER MOUNTED ON THE PUMP

TAG READER MOUNTED ON THE PUMP

PUMP AUTOMATION

The pumps at the Retail Service Station will be connected to a Forecourt Communication Controller (FCC) mounted at the Back Office/Manager's Office using data cables. The pumps will be programmed from Stand Alone Mode to Automation/Console Mode.
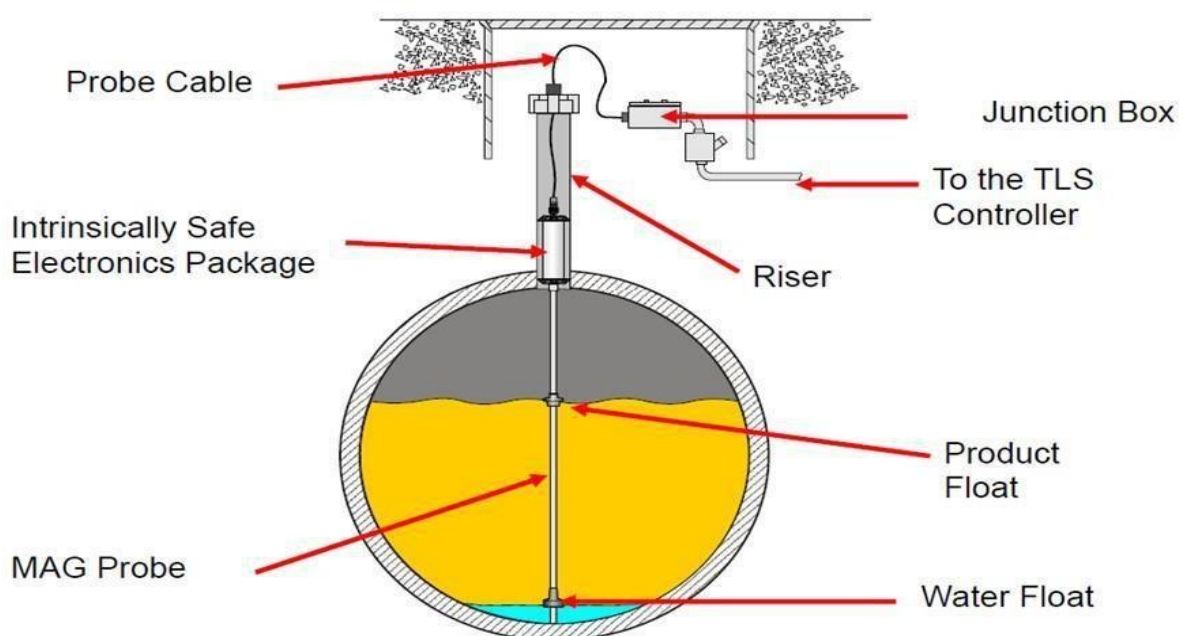
All the transactions from the pumps will be captured and stored in the FCC. The transaction details will include the Time/Date Stamp, Pump Attendant details, Volume of fuel dispensed, Transaction Sale Value & Mode Of Payment for each transaction.

A Mifare Tag Reader will be mounted on each side of each pump for Attendant tagging & Authorization. The Tag Reader will also be used to select the Mode Of Payment for each transaction before the Attendant proceeds to the next transaction.

AUTOMATIC TANK GAUGING SYSTEM

Automatic Tank Gauging System involves installation of High Accuracy Electronic Level Sensors/Probes inside the underground tanks at the service stations. The Tank Gauging System will be able to capture the tank inventory data in real time, Daily/Historical Delivery Reports. The Tank Gauging System will be integrated to the FCC for accurate Reconciliation between the Product Sales and the Tank Product Movement using the Tank-Dispenser Mapping Configuration.

Tank Probe Diagram

BENEFITS OF THE FUEL MANAGEMENT SYSTEM TO OIL COMPANIES

- ✓ Real time tank inventory data.
- ✓ Sales Management by Pump Allocations.
- ✓ Pump Attendant Management.
- ✓ Credit/Invoice Customer management.
- ✓ Setting up of "Cash Drop" Limits.
- ✓ Remote Product price management.
- ✓ Dry Stock Management.
- ✓ Historical & Daily tank delivery reports.
- ✓ Shift management, including pump sales totals, Attendant sales totals, Credit/Cash Sales.
- ✓ Billing of Credit Customers from the System.
- ✓ Remote Access from all the automated stations.
- ✓ Fully minimize paperwork where human error occurs.
- ✓ Monitoring of different Modes Of Payment including Mobile Payment, Cheques, Cash etc.
- ✓ Accurate Reconciliation between Tank Stock Data and Sales Data.
- ✓ User Friendly and easily customizable reports.
- ✓ Real Time Print Outs of each transaction using the Forecourt Printer.

3 ForeSite & ForeNet Module

ForeSite software includes everything required by an Oil Company to successfully manage the service station's operations & Sales management.

ForeSite will give the oil company top management remote online access and monitoring of the automated stations using any web browser.

3.1 Site Level Module Description (ForeSite)

ForeSite is a Site Level management tool with multiple management and control modules over Fuel station.

This controls modules includes:

a) Operation

Fuel (Wet stock) and Dry Items inventory management, Forecourt Management (Controlling dispensers and tracking deliveries/transactions), Shifts/Attendants management, pricing management and more…

b) Sales

Mode of Payment management, Acquiring Local customers (Loyalty module), track and manage Fuel and Dry item sales at the isle and so forth…
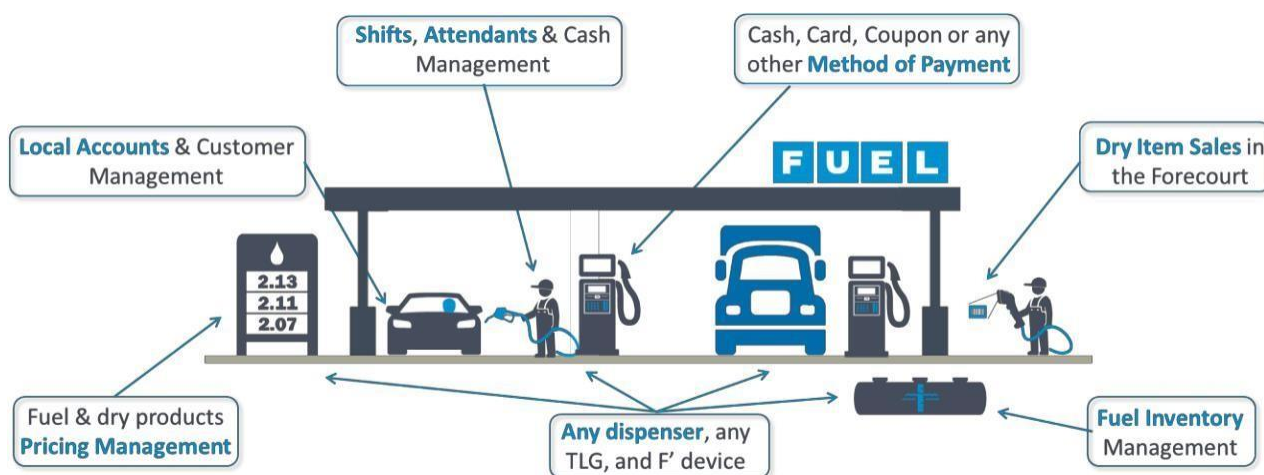
as described at Below Drawing

Figure 1: ForeSite® - Full Site Management & Control System

3.1.1 ForeSite BackOffice SWSystem('SiteOmat360'Station Management Application)

ForeSite BOS SW App' ('SiteOmat360') is the heart of the fuel station and will provide Gulf Energy with complete and secure site automation, management of fuel dispensers, payment terminals, forecourt devices and fuel tanks to fully control and record any transaction.

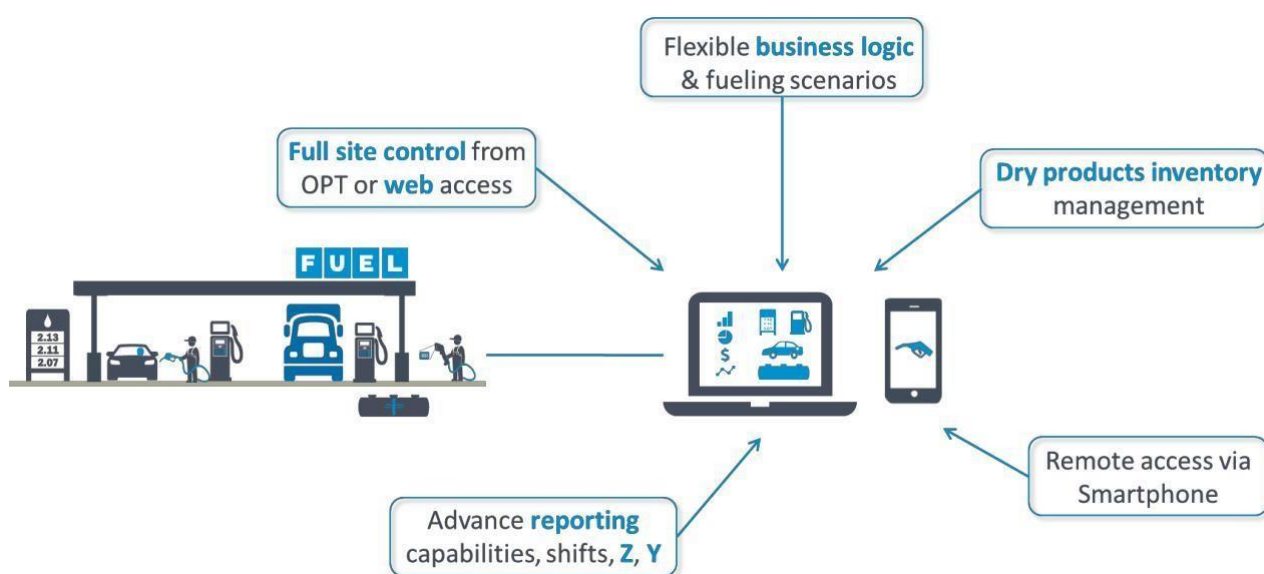ForeSite BOS App' can run on an embedded Linux machine or on a standard PC running on Windows.

Figure 2: ForeSite® BOS Application (Site Management System)

3.2 ForeNet - Retail Head Office Management (Network/HQ Level)

The ForeNet Retail Head Office provides full control and management capabilities for the entire service station's network, including Fuel/Dry Sales Management, Fuel/Dry Inventory Management, Price Management, Customer Management System and Loyalty, all in one dashboard with a report analysis engine.

3.2.1 Main Features

- Central Price Management
- Network Retail Reports (e.g. fuel inventory, dry stock, deliveries, visibility of sales)
- Quick and simple access to each service station for online status
- Data and Logs Storage (e.g. Data backup)
- Alarms and Notifications at the network level
- Dry Stock Management
- Customer Management System (CMS)
- Loyalty Platform on the network level

    Interfaces with 3rd party software, such as billing systems, ERP, etc.
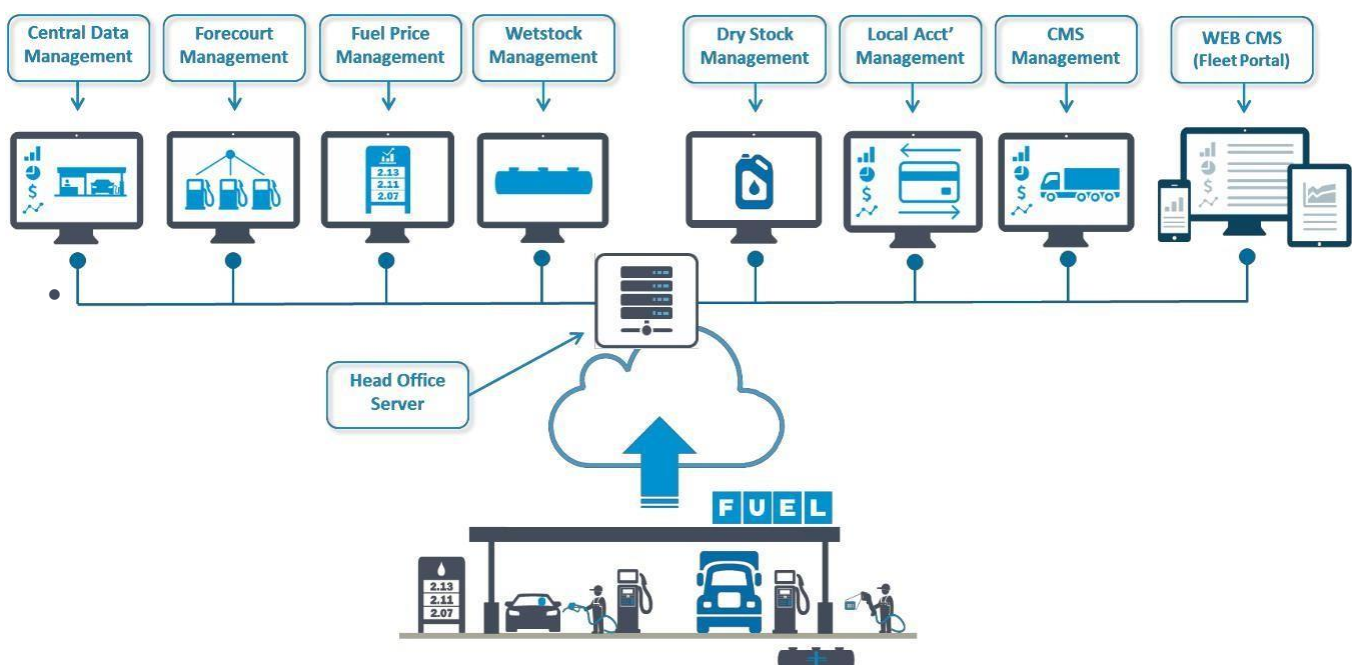
as described at Below Drawing

Figure 3: ForeNet® - Head Office Management and Control SW (Network level)

4 Modules Description

ForeSite and ForeNet are comprised of a combination of hardware and software components deployed at the station's forecourt via back office, and up to the network's head office(headquarters), and include the following components:

- **Outdoor Point of Sale (POS)**
  Payment or tag reader terminal for station management and control
- **Automatic Tank Gauge (ATG)**
  Automatic tank level gauging system
- **ForeCourt Interface Unit**
  Single point of interface for all types of forecourt devices from any vendor
- **ForeCourt Controller (FCC)**
  Controls forecourt devices as Dispensers, Payment Terminals & Automatic Tank Gauge (ATG) systems
- **Back Office System (BOS)**
  Manages station activities, including shifts, wet and dry inventory, sales, and transactions
- **ForeNet Retail Head Office (RHO)**
  Consolidates data from multiple sites for centralized management and control of the station's network
- **Customer Management System (CMS)**
  Manages customer relationships, encourages customer loyalty, and retains existing customers
- **Customer Portal (Remote Access to CMS)**
  Offers fleet operators (customers) to manage and control their operations in real time
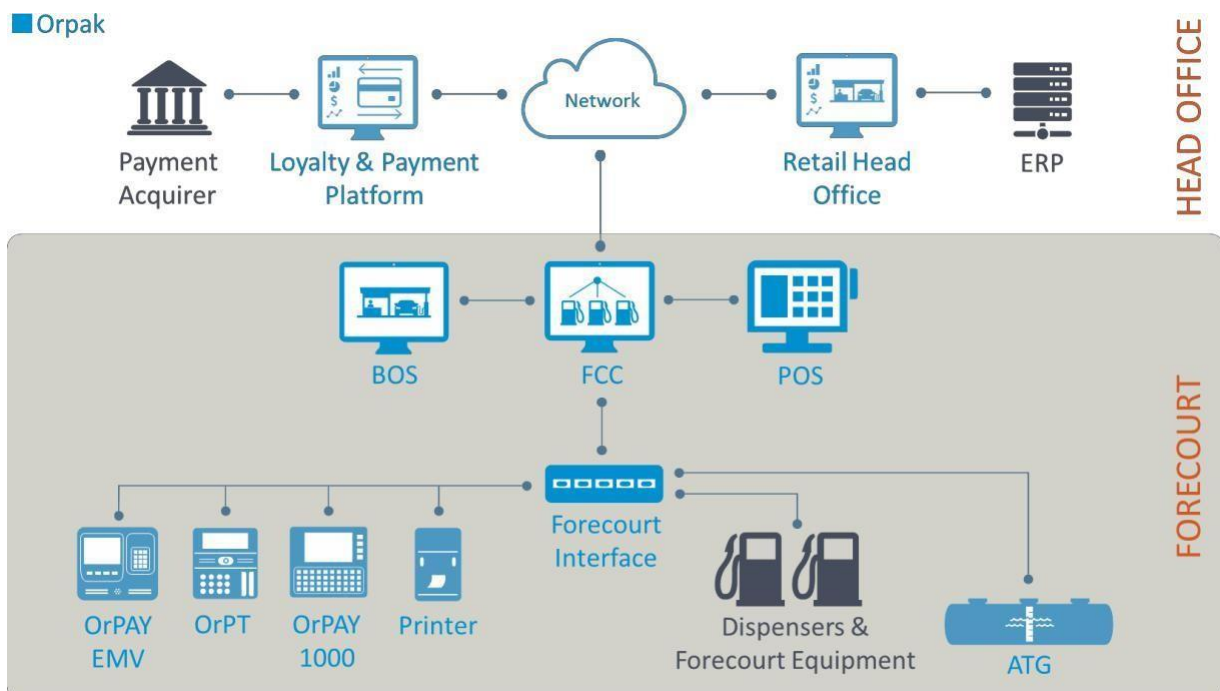

Figure 4: ForeSite® & ForeNet® System Architecture

4.1 Outdoor Point of Sale

Payment terminals and tag readers are the ultimate outdoor Point of Sale (POS) devices for managing and operating fuel stations and forecourts. The outdoor POS allows attendants and station managers to fully control and manage the station, sell wet and dry products, accept various types of payments, redeem loyalty coupons and cards, and more.

4.1.1 Main Features

The main features of outdoor POS systems are:

- Comprehensive forecourt management – fueling authorization
- On the isle/outdoorsales including Dry Stocks- Gas, Lubes
- Shift management, including end of shift and cash reconciliation
- Printing of Transaction Receipts.
- Customized payment methods

4.2 Forecourt Interface Unit

Forecourt Interface Unit is a powerful device that provides a single point of control for multiple forecourt devices, such as dispensers, Automatic Tank Gauge(ATG) systems, price poles, and payment terminals from an impressive range of vendors.

The unit provides cutting-edge flexibility, reducing deployment, implementation, as well as maintenance costs, while providing enhanced visibility of all on-site equipment.

The Forecourt Interface Unit supports typical forecourt data communication interfaces, including LAN, RS-485, RS-232, proprietary dispenser interfaces, and non-electronic device interfaces, such as mechanical pumps.

All interfaced devices are programmed via SiteOmat - Station Automation software. Similar to other forecourt devices, the unit is designed to withstand the extreme temperatures and harsh environments of retail fuel stations. Furthermore, the unit eliminates ground loops, power surges, and RFI/EMI to maximize station performance and reliability.

4.3 SiteOmat FCC - Station Controller

SiteOmat ForeCourt Controller is the heart of the fuel station, providing comprehensive secure site automation, and management of all forecourt devices, including dispensers, payment terminals and fuel tanks, recording all transactions to an SQL database. The software can run on an embedded Linux machine or on a standard PC and supports any station configuration / business logic, as well as various payment methods and authorization options.

Figure 5: SiteOmat360® SW Application

The SiteOmat Station Controller includes two modules:

- Forecourt Controller (FCC)
- Back Office System (BOS SW App')

4.3.1 Forecourt Controller

The Forecourt Controller (FCC) module is responsible for the interface with all forecourt devices and provides complete forecourt management. The software provides real time online connectivity, a console operator screen, remote maintenance, and flexible reporting tools. Typically, all pumps and dispensers are electronically locked by the FCC and fueling is allowed followed by the authorization process.

4.3.1.1 Main Features

Forecourt Controller provides the following capabilities:

- Integration with all types of electronic and mechanical dispensers
- Integration with any type of ATGand performs auto-calibration
- Real-time monitoring of fueling transactions and tank levels
- Integration with Payment systems, such as OrPAY EMV, OrPAY 1000, OrPT, and OrTR Quick and simple installation and setup including remote access capabilities

4.3.2 Back Office System

The Back Office System (BOS) is a comprehensive management module designed for retail fuel service station sites. The system covers all aspects of site management and operations, easily integrated within all dealership models, whether COCO, CODO, DODO, or franchised.

The BOS is a software that is integrated within the FCC and can be easily interfaced with ForeNet Retail Head Office which provides real time Head Office visibility into site activities regardless of the dealership model. The system's flexible back office features include, Local Account Management (LAM), real time refueling and tank level monitoring, delivery and inventory reconciliation, and an innovative reporting mechanism designed for maximum convenience and flawless operation by fuel retailers.
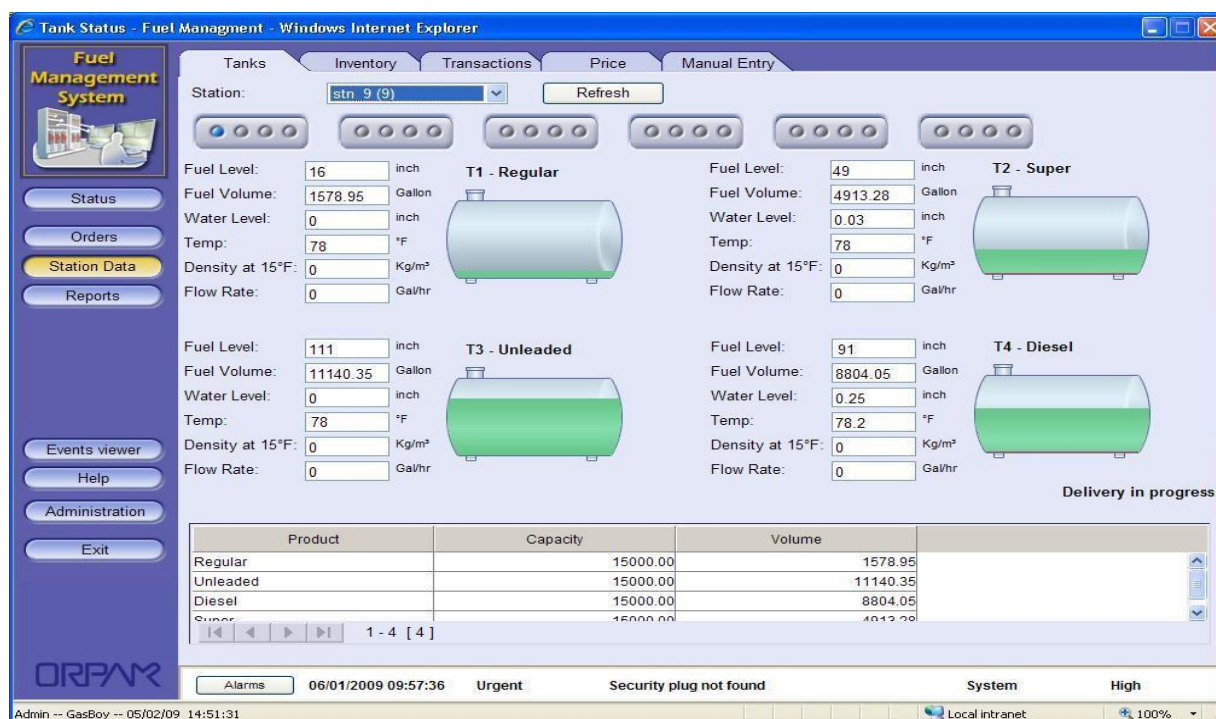
4.3.2.1 Main Features

Back Office System provides the following capabilities:
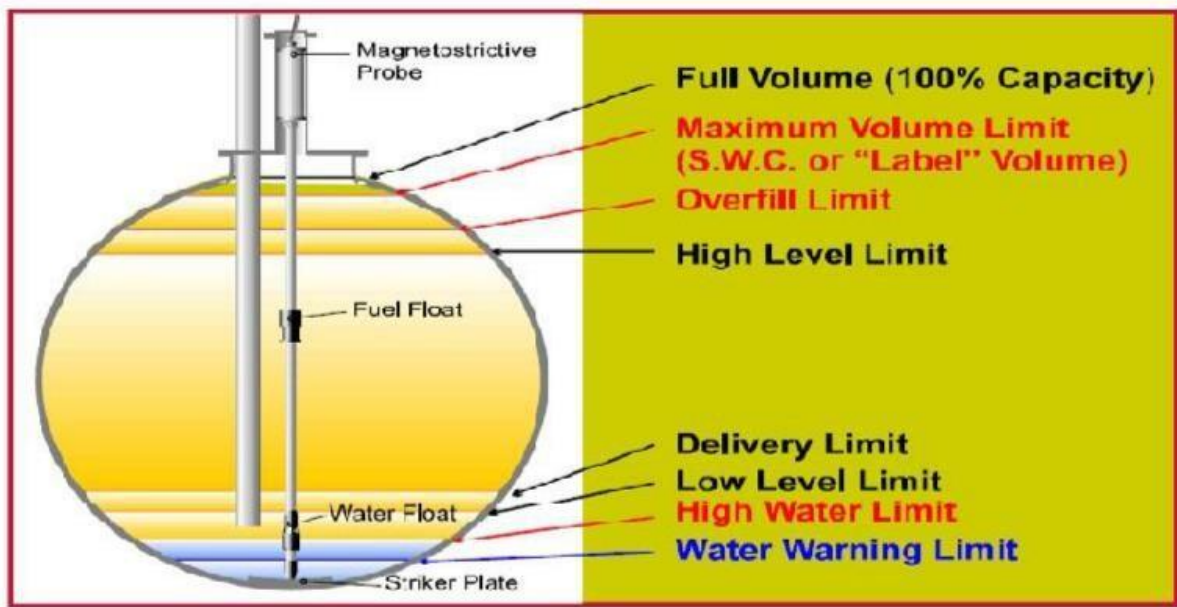
Web access via a web browser
- Local dry and wet stock management, pricing, and promotions, including all required accounting and reporting abilities
- Site / employee / shift management with flexible performance and status reports
- Wet-stock management, including inventory, reconciliation, deliveries, and real-time monitoring
- Customer management with local accounts, discount options, and account management
- Head office data back-up
- Seamless integration with to ForeNet Retail Head Office

4.4 Automatic Tank Gauge (ATG) System

The ATG is a customizable automatic tank gauge solution exceeding petroleum site owner's fuel and compliance management needs. ATG System provides a cutting-edge technology with the most advanced fuel monitoring technology. The System is able to Report Tank Inventory Data and different types of Alarms in Real time.

TLS Warning & Alarm Levels

4.5 ForeNet Head Office Remote Access Service

The ForeNet service is comprised of a Head Office application tailored to suit the unique business and operational requirements of fuel retailers. Additionally, it integrates with any site's software, including 3rd party enterprise software, to provide valuable on-site insight on a cluster of sites or at the full network level.

ForeNet is a modular solution for retail fuel networks and oil companies covering everything from the head office to the forecourt, facilitating profitable and efficient retail operation management:

- **Retail Head Office (RHO) –** provides smart management to optimize network performance, pricing, inventories, and customer contracts

- **LoyaltyPlatform–**acomprehensiveloyaltymanagementsolutionforfuelretailerstocreatetheir own fuel / fleet card and loyalty programs, and supports all aspects of card and merchant management, discount policies, payment authorization and settlements management

- **Customer Management System –** a management tool and portal that allows fleet managers to control and authorize fueling for any vehicle, set limits and restrictions, receive alerts, and generate insightful reports

4.5.1.1 Main Features

The main features of ForeNet Head Office service are:

- Manages inventory, prices, customers and sites in one system
- Consolidates data from all stations into one centralized application
- Covers all fuel network management requirements in one modular and scalable solution
- Provides reports as well as alerts on desired parameters in real time
- Offers real time status on wet and dry stock levels with helpful alerts
- Includes Fleet Head Office software for added value offers to commercial fleet customers
- Contains simple price management at the network level, clusters of stations and on-site level
- Interfaces with leading ERP and accounting applications, as well as payment processors/gateways and banks
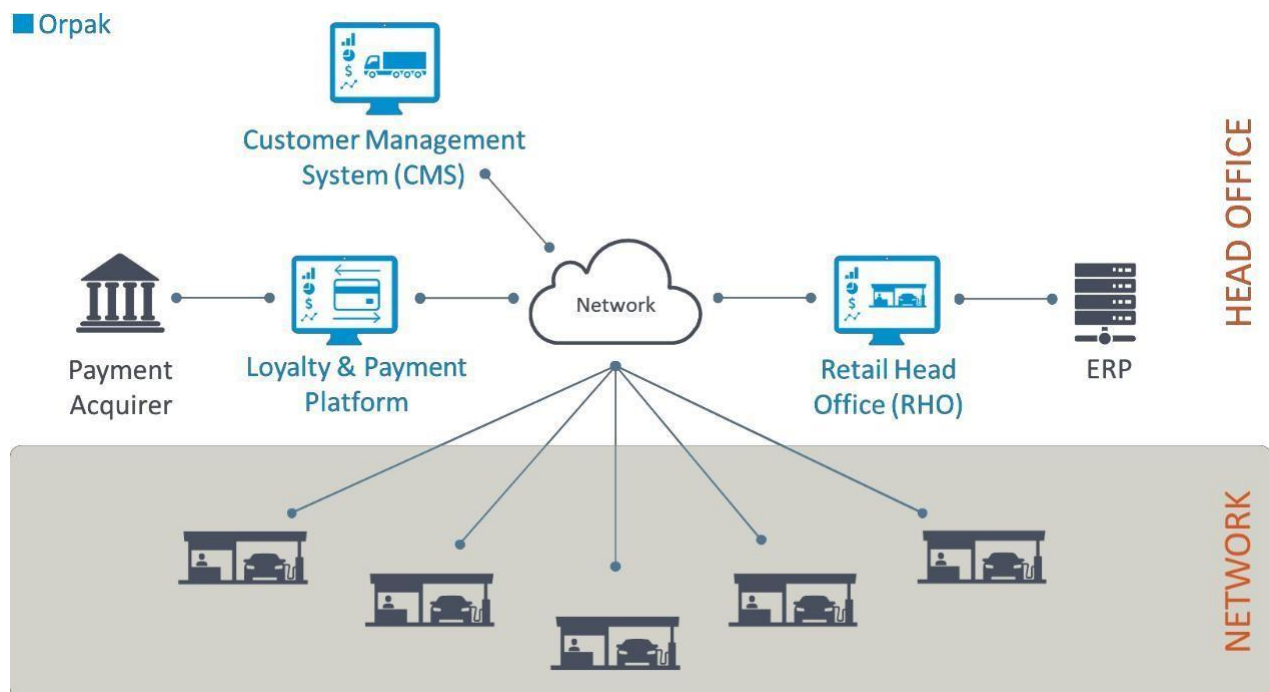- Integrates with ForeVision - Business Intelligence (BI) and Optimization suite

Figure 6: ForeNet Applications

5 System Features Summary

Features	ForeSite®/ForeNet® System Offering

Fuel stock Inventory Management:
  - Online Tank Status
     (e.g. inventory, temperature, level, delivery data)
- Association between fuel invoices and deliveries
  - Reconciliation between tanks and fuel dispensing on the forecourt vs. cash collection
  - Site Reports
     (e.g. fuel inventory management, sales, reconciliation, fueling transactions, etc.)
	√

Price Management- Online Price Change On the Pumps	√
Online Pump Status	√
Alarms and Notifications	√
Pump Control (e.g. fueling authorization) management for Wet stock	√
Report generating engine (custom + default)	√
Shift Management	√
Attendant Authorization (e.g. attendant identification device card/tag for fueling authorization)	√
Safe Drop (e.g. cash carry limitation for attendants)	√
Sales Transaction Management for Dry/Wet stock	√
Local Account Management and Loyalty (discount) – Network & Site Level	√
Cash Management	√
Central Price Management	√
Network Retail Reports	√
Quick and simple access to each service station for online status view – web based	√
Local Data Storage – for off-line mode	√
Alarms and Notifications at the network level	√
Dry Stock Management at the network level	√
Customer Management System (CMS) at the network level	√

In Addition (On Site):	
Site/Station Forecourt Controller (FCC) with BOS (SiteOmat 360 SW App')	√
Automatic Tank Gauging (ATG) System	√
Outdoor Point of Sale (full scale of Outdoor Terminals and Attendant interface Devices)	√
Receipt Printer (Optional)	√
Advanced MOP – Automatic Vehicle ID Fuel Payment System (VIS)	√
Monitoring Of Different Modes Of Payment- Mobile Money Payment, Cheques, Loyalty Cards, etc	√

FUELING YOUR BUSINESS FOR SUCCESS