The First of a New Generation in Fuel Management

Banlaw Systems (Europe) Ltd, a long established manufacturer, supplier and installer of Specialised Fast Fill Refuelling Equipment to the Mining industry, are now working in conjunction with software specialists Jigsaw M2M to provide "Fuel Sense", a cost effective web based Fuel Management System for the UK Market, combining the best of the companies technology, knowledge and expertise. Jigsaw developers have spent many years developing fuel management systems from the simple stand alone terminals, where everything was controlled on the fuel island, to the PC linked systems where data was sent to, and recovered from the fuel island controller by a PC which made contact once a day.

Mobile phone technology and the Internet have now been around for many years and Jigsaw have designed a new generation of fuel management system which take advantage of these technologies to the full.

The Jigsaw fuel island controllers use mobile phone technology to make an "always on" connection to the Internet so that all databases that used to be held at the fuel island, can now be held and managed centrally. This does away with the need for daily ring rounds. All authorisations are now based on the freshest data, stock figures are updated in real time rather than just once per day giving the user control of the fuel system that just wasn't possible before.

So What's New About it ? ...

To the user, the fuel island controller is the same as its ever been. Users wave a tag to identify the vehicle, type in any data required, then fuel as normal. The computer operator sees screens that are clear and simple to understand with data selected by site, vehicle or user. Comprehensive reports are available covering all aspects of the fuel system. The big difference is that the information displayed is current. As fuelling transactions are completed on site, they are immediately passed to the web server and are available to view. The stock figures are adjusted so that what you see on the screen is the stock situation now - not what it was at midnight last night.

Is it more complicated to use ? ...

It is important to note that the Jigsaw systems have been designed from the beginning to be real time fuel management terminals. Some of the older manufacturers have seen the way the FM market is moving and are trying to claim they have real time systems by presenting their daily polled data on a web server. **Don't let them fool you** - this makes the system more, rather than less complicated and the data is no fresher than before.

Jigsaw Eclipse Fuel Island Controller

What is it?

A Fuel Island Controller is the interface between the driver and fuel management system. Once a valid user has been identified and any required information entered, the system manages the fuelling by controlling and monitoring the fuel pumps.

What's so special about this one?

The Eclipse is the first of a new generation of fuel island terminals. The system has done away with the "once a day" polling regime by integrating secure, real time communications back to a central web server.

Web Services Access ...

- Up to Four Pumps per Terminal
- Large, 4 Line Backlit LCD Display
- Secure Multitumbler Locking System
- Choice of RFID Tag, Dallas Key or Fuel Card User ID
- Reliable, Alpha Numeric, <u>Non Membrane</u> Keypad
- Stainless Steel Enclosure for long life
- Internal Override Switches
- Secure Quad Band and 3G Data Communications
- Dual Backup, Non Volatile Internal Data Store
- Full Suite of Management functions accessed through PIN passworded tag
- Terminal can generate direct alarms, independent of web site using SMS Texts (eg pump disable, stock theft, unauthorised door opening etc.)
- Complete systems, plinth wall, tank, pump or bowser mounting, or retrofit to your existing system.
- Integrated pump options available to Gilbarco Commercial and Hytek Alpha. Integration to most other pumps is possible.

Jigsaw **Nova** - Low Cost, web based Fuel Management System

The Nova is a web based fuel management system aimed at users with smaller fleets.

System Features :

As well as the Nova fuel island hardware, the system comes complete with tags and web services all bundled together to give a lower cost system, whilst retaining all the advantages of real time, web based fuel management.

- Robust Numeric Keypad
- 4 Line 5mm Backlit LCD Display
- Real Time, Direct to web Communications
- Highly Reliable RFID Tag reader
- Integral GPRS Aerial
- Single Pump, 30A Mains Control Relay
- High Security Pump Override Switch
- Pump or wall Mounting
- Tank Gauge Interface option.
- Optional SMS (Text) alarms to warn of low tank stocks or fuel theft.

At Last ! Fuel Management goes Real Time

The Advantages of web based fuel management have to be seen to be believed! No more modem dial up, your data is accessible from just about anywhere, your data is always live, not 24 hours old, real time warnings mean problems can be addressed before they grow ...

Full Featured Fuel Island Controllers ...

Eclipse   Nova

- True, Full Featured, **Web Based Fuel Management** System
- **Real time** data view – information always current
- Additions/Amendments managed in real time over the web on the **central database** and take immediate effect.
- **Scalable** solution - 1 site to 1000's
- Local and/or Centralised data management and reporting
- Only a **web browser** required – no costs or problems with management software moving to a new PC.
- Low cost migration with **retrofit** to existing Fuel Island Terminals
- Plinth, Pump, Tank, Wall and Bowser Mounting options.
- **Automated Alarm** generation using SMS and E-Mail
- No polling of Fuel Island Terminals – **minimum daily support**
- Access to data from any web enabled PC, tablet or phone
- Software update & enhancements managed centrally
- Integrated **Tank Gauge** Options
- Integrated **Pump** Options available
- Gate or **Barrier Access** Option

Unique Web Server Based System Management and Reporting

The Fuel controllers have all the features expected from a top of the range fuel management system, but with many unique features which real time communications make possible

Sites Screen..
The Sites Screen allows the user to select a site and see the status of all tanks and pumps, as well as the latest fuelling data. Fuelling transactions, stock figures, pump totalisers and other information are all current values, as data is communicated as it happens, not when a daily "Ring Round" occurs.

Vehicle and Driver Screens ...
The Vehicle and Driver Screens allow the details of Vehicles and Drivers to be input and changed. These screens also show the latest fuellings which involved the Vehicle or Driver. The big advantage of being web based is that vehicles and driver details or access can be changed from any web enabled PC or phone at any time.

The Fuelling Web Site is best demonstrated Live, but the details below should give a flavour of the advantages of a Real Time, Web Enabled Fuel Management System :
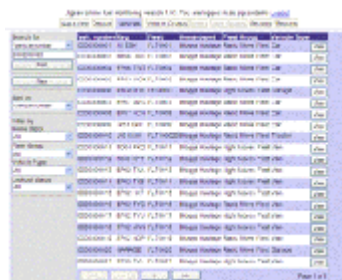
Reports ...
As well as data displayed on screen accessible to all with a relevant password, the system also has many standard reports defined available to print and distribute in .pdf format, or to export as a spread sheet.

Midas Vehicle Unit MIDAS

Automatic Vehicle Recognition System

The Midas vehicle unit holds a unique number which identifies the vehicle to the system so there is no need to enter registration numbers or set K Factors (pulses per mile) as these are all handled through the web software. This makes management of the system very simple as calibrations, vehicle unit transfers, mileage corrections etc are all handled centrally rather than having to track down the vehicle and amend information in the field. So long as a note is made of which unit is fixed to which vehicle, then the rest of the set up can be managed at a computer.

The unit is "deep potted" which means it's sealed against water ingress and is very robust. A short lead emerges out of the back of the unit with a watertight, SureSeal connector. A mating lead extends the wiring to a place where it can be me terminated in a cleaner, dryer environment such as the vehicles cab or passenger compartment.

Vehicle Unit Data

Data Key

The vehicle units can be configured to measure distance travelled, or hours run. To measure distance travelled, the unit requires a source of distance pulses from the vehicle. Typically these would come from the output on the back of a tachograph, or a pulser fitted in the vehicles speedo cable. There are also CANBus interfaces available.

If measuring engine hours is more appropriate than distance travelled, with plant equipment for example, then the unit can be configured to count the minutes that the engine has been running. Detecting this is simple and inexpensive as the unit only requires a positive Voltage input from the vehicles ignition circuit to start the count.

Vehicle Unit Variants

The Midas key is a robust, weatherproof electronic device which is used to transfer the details from the vehicle to the fuel island controller. The keys used for Midas fuelling permanently hold the driver or fuellers ID number.

Midas Fuelling couldn't be easier. Touch the Midas key on the vehicles Midas Unit, then touch it on the fuel island. Touching the key on the vehicle unit transfers the vehicles ID number and mileage/hours to the key. Touching the key on the Fuel Controller, transfers that data, along with the driver/fueller ID ready to be tied to the fuelling transaction. Accurate data capture is *that* simple !

MIDAS - How does it work ?

Driver Key – This has the Driver ID on it and is used to pass details from the vehicles Midas Reader to the Fuel Island Terminal. If the key is not touched on a Midas unit, then no fuel can be delivered.
Fueller Key - If this key is touched on a Midas unit then it functions like a driver key identifying the fueller to the system. If the key is not first touched on a Midas unit, then the fueller is prompted for details of the vehicle being fuelled according to its configured access protocol. This type of key gives the fueller more flexibility, and is a useful tool when a driver key based system is only partially fitted.
Vehicle Key – A vehicle key is used for vehicles that don't have a Midas unit fitted to them. These operate just like Tags in that they are simply touched on the fuel island controller and the user follows the access protocol set up on the web site against that vehicle.
Manager Key – This is used by the system manager to access the managers functions in the Fuel Island controller.

Mobile Bowser Based Fuel Management

The Nova is ideally suited to mobile refuelling. It has been designed to operate from a DC supply (12 or 24 Volts) and to survive the hostile environment, both electrical and physical, which comes with vehicle based refuelling.

As the system doesn't rely on a wired connection to the Internet, authorisation to fuel and real time upload of the fuelling transactions can take place wherever the vehicle is required to fuel. Transactions are listed and the bowser tank stock figure is reduced on the web site in real time as the bowser makes its deliveries.

Transferring fuel from a static tank to the bowser is managed using the unique fuel transfer key, which forms a special transaction, reducing the stock in the static tank and adding it to the stock in the bowser. This simple sounding feature is in fact quite sophisticated as the stock transfers have to be carried through to the stock reports and the stock costings.

Mobile Refuelling.

Mobile refuelling security can be further enhanced using one of Automatic Vehicle Recognition (AVR) Systems.

The Midas system uses a fueller touch key to identify the vehicle to the bowser. The system identifies the vehicle being fuelled and the person doing the fuelling whilst also transferring mileage or operating hours, all with a touch of the Midas key.

The Banlaw Auto ID Nozzle system uses a special nozzle to ensure that fuel only goes in to the intended vehicle by detecting the vehicles fuel tank and only allowing fuel to flow when the nozzle is inserted.

Tank Guard

Web Based Tank Monitoring System

- Direct Interface to many common gauge types. (Up to Eight Probes)
- Data displayed on clear and simple to understand web site.
- Real Time update of Web site level after any significant change on site.
- Direct Connection to the Internet using GPRS communications – no costly wiring – simple installation.
- System data viewable from anywhere using a standard web browser – no proprietary software required.
- Industry standard TCP/IP data transfer
- Remote alarm level configuration.
- Optional Low Power Radio receiver allows other sensors to be monitored.
- Web site managed text and e-mail generation to notify of low stocks and other alarms.
- Stand alone Tank Guarding, or integrated with Jigsaw Fuel Management System.
- Real time clock time stamps each event
- Battery Powered Option.

Tank Guard Features :

- Re-order Level Alarm Trigger Point (First Level warning)
- Low Stock Level Alarm Trigger Point (Second Level Trigger Point)
- Out of Hours level Fall – Detects leaks or Theft when site inactive
- Local Overfill Alarm Option with logged event on web site
- Local Bund Alarm Option with event log on web site.
- Door/Shutter Open or IR Sensor Triggered.

Tank Guard Control Features

- Small, IP68 Sealed Unit
- Simple to install, minimum on site set up.
- All communications by radio, only 230V connection required.
- RS232 or RS485 Interface to Tank Gauge
- Bund Sensor Input
- Door/Shutter, Infra Red Sensor Input
- Local Alarm Relay Drive Output
- One Tank Guard unit can manage up to Eight Probes.

Tank Guard Web management features

- Clear display of tank level information showing both current level and historic status graphed over last 60 days.
- Ability to set alarm levels through the web site.
- Data Received can be viewed independently, or together with fuelling and other tank stock information on the Jigsaw fuel management web site.

- Only Standard Web Browser Required – No System Specific software to install or maintain.
- System can generate SMS and E-Mails alarms as required. - target phone and e-mail recipient set through web site.
- Alarms on out of hours fuelling and low stock alarms.
- Time Zones may be set to alarm on stock fall out of site operational hours - different time zone regimes for Weekdays, Saturdays and Sundays
- No Polling of system to manage - data transfer automatic – minimum daily system support required.
- Unique Quick View gives simple summary of entire network.