

JIGSAW

Real Time Fuel Management



MOBILE REFUELLING SYSTEM

JIGSAW

Real Time Fuel Management

Our Mission ...

Jigsaw Fuel Management was established in 2007 specifically to develop a new generation of fuel management system. The developers had many years of experience designing what were at the time the best fuel management systems on the market.

The aim was to exploit the convergence of reliable Internet access and low cost, reliable mobile data communications to develop a fuel management system which had not been possible until this time.

The resulting system has changed the face of fuel management. Jigsaw now manage more than a Billion litres of fuel a year with sites not just in the UK, but across the globe.

Jigsaw strive to make the most reliable systems anywhere. The systems use switch mode power supplies to combat mains fluctuations, they are not based around PC's and they do not use membrane keypads to ensure long term reliability. The enclosure is fabricated stainless steel so that it will stand up to the rigours of any environment.



Our Partners ...

Jigsaw have developed a network of distributors who not only understand how fuel management works, but can also support your pumps and gauging equipment so that you can be confident that all work is carried out to the latest standards by professionals.

Jigsaw work with a range of suppliers to the Fuel Management Industry so that we are able to not only supply Fuel Terminals, but also to supply and advise on Tank Gauge Equipment, Flow Meters, Pumps, Solenoid Valves, Nozzles, Hoses and the rest of the equipment necessary to install and support a complete fuel management solution.

Our Customers :

Jigsaw supply fuelling control equipment to a range of customers across a wide spread of industries. Whether the vehicles are trucks, vans, trains, boats or planes jigsaw have a system to suit your needs

Jigsaw systems can manage just a few vehicles refuelling at static pumps all the way to mixed static and mobile refuelling solutions across several sites with hundreds of vehicles.

The Jigsaw Real Time Fuel Servers manage hundreds of millions of fuelling transactions and more than a Billion Litres of fuel per year on sites all over the world.

Our Products ...

- **Eclipse** - 2 or 4 Pump, AlphaNumeric Keypad, Large Character display, Pump Integrated Versions and Retrofits available.
- **Nova** - Single pump, Numeric Keypad, Mains or DC powered, Ideal for mobile refuelling.
- **TankGuard** - Tank Stock Management System - wide range of gauges supported.

Our Range of ID Options :

- RFID Tags - Including non-Jigsaw Tags
- Magnetic Cards (eg Fuel Cards)
- Jigsaw EasyFuel - Nozzle ID System
- Jigsaw Midas - Auto Hours Run Capture
- Jigsaw FuelGuard - Auto ID/ Hours Run
- Jigsaw FuelWand - Remote Tag Reader
- Jigsaw TeleTag - Auto ID

MOBILE REFUELLING SYSTEM - OVERVIEW



Before worrying about where the fuel will end up, it is imperative that the system can monitor how much fuel is put in to the fuel bowser so that it can be properly reconciled.

The Jigsaw system monitors the fixed bowser filling point and makes the necessary stock adjustments automatically as stock is moved from the fixed tank to the bowser.

The fixed filling point may also be used to fill assets that don't need bowser refuelling.

The driver uses the hand held FuelWand to scan the bowser and their own ID tag at the start of the fuelling shift.

The system is now ready to start fuelling. The bowser can drive to the equipment to be fuelled, pull out the hose, scan the tag fitted to the hose and fuel.

The driver is in full control of the hose nozzle when the pump starts and during fuelling, minimising the risk of fuel spillage.

As the system properly monitors stock in to and out of the bowser, there is little opportunity for stock to go missing without being seen.



Vehicles fuelling at the static fuel tank are issued with standard RFID fuel fobs, usually attached to the vehicles key ring.

A similar (tank transfer) tag is used to transfer fuel from the fixed fuelling point to the bowser, ensuring every drop of fuel is monitored at every stage.



For mobile refuelling, tags are permanently fixed to the asset to be fuelled. Each bowser driver is issued with a hand held tag reader at the start of a fuelling shift which identifies both the fueller and the bowser used. The hand held reader is linked to the fuel control terminal by radio.

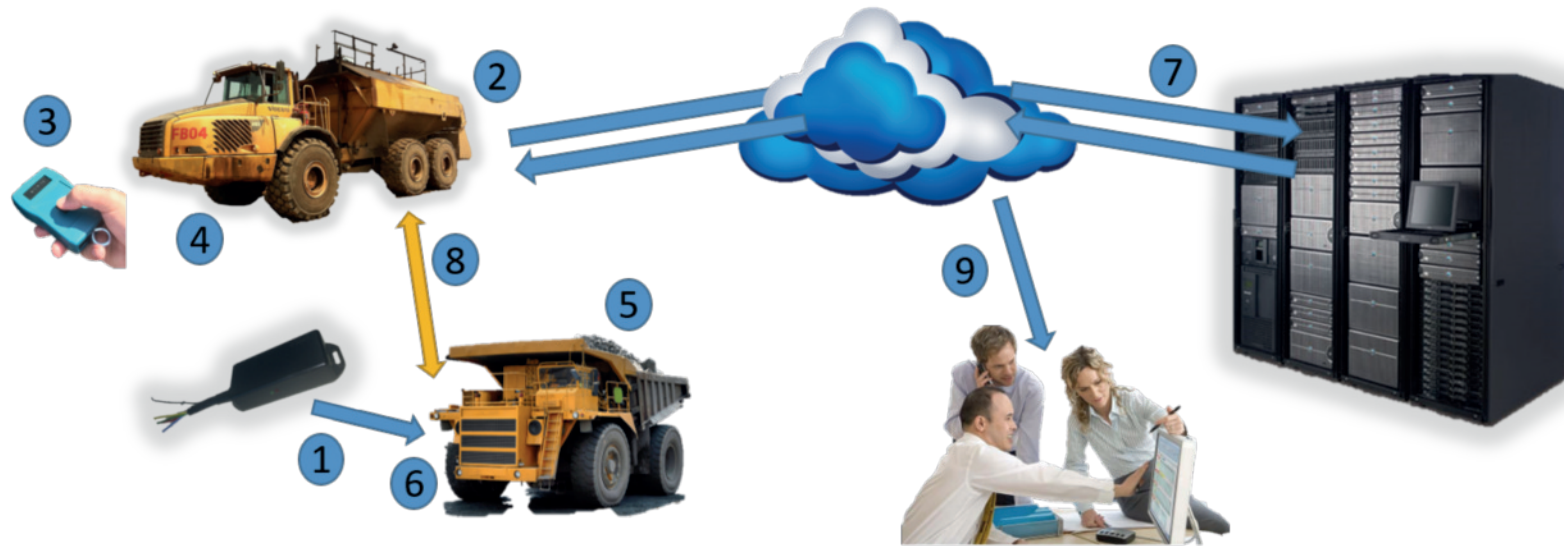


If required, a FuelGuard unit may be fitted to any vehicle or asset so that the mileage or hours run is automatically captured at the time of fuelling. The FuelGuard also verifies the presence of the asset so that stolen tags can't be used without the asset being present.



JIGSAW

MOBILE REFUELLING WITH FUELGUARD ...



FuelGuard Operation in Mobile Refuelling :

1. Each piece of equipment to be fuelled is fitted with a FuelGuard OBD and a "Mount-On-Metal" RFID Tag.
2. The Fuel Bowser is fitted with a Fuel Terminal which has a radio transceiver to communicate with the FuelGuard.
3. The Fueller is issued with a hand held tag reader.
4. To start a fuelling shift, the Fueller scans a personal ID tag, and the Bowser he is driving once.
5. The Fueller drives to the piece of equipment to be fuelled and deploys the fuel hose.
6. The driver scans the equipment's tag with the hand held reader. The ID is sent to the Fuel Terminal using a radio link.
7. The Terminal connects to the server and verifies the vehicle is allowed to fuel and what products may be issued.
8. The Terminal requests the vehicles mileage from the OBD, also verifying it's presence. Fuelling commences
9. At the end of the delivery, the fuelling details are stored locally and also forwarded to the Fuel Server in real time

JIGSAW

FUEL

Fuel Management Software

- Simple to Understand - Minimum Training
- True Real Time system - No polling required
- Unique Vision Tiles allow at-a-glance management
- Web Based (View Anywhere)
- Real Time View across all sites and assets
- No Dedicated On-Site Software
- Only a Browser Required for access
- Desktop, Laptop, Tablet and Phone Sensitive site
- Real Time Stock Management
- E-Mail and Text Prompts
- Fully Automated Reports Generation



FUELLING YOUR FUTURE

JIGSAW FUEL

Fuel Management Software

Ground Breaking Software ...

The Jigsaw Fuel Software has been designed specifically to reflect the benefits of Real Time Fuel Management. The colour coded user interface highlights any issues as they occur, and allows the causes to be investigated easily. The unique user interface is very simple and intuitive to use requiring only minimal training and little in the way of IT experience.

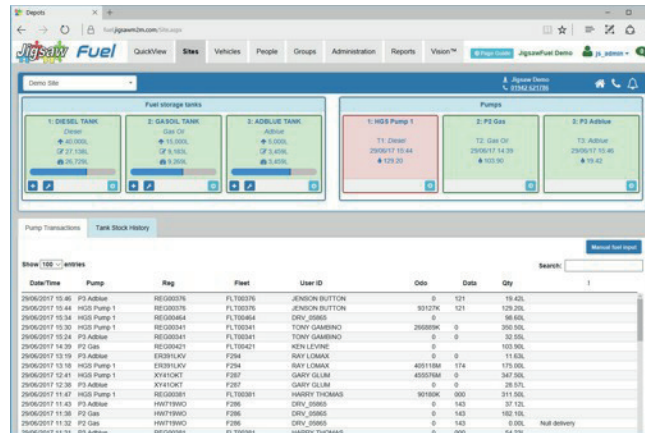
The software has been designed so that most functions can be accessed by no more than two mouse clicks.

Unique Features :

- Fully Centralised System - No on site server to manage.
- Software Updates Managed Centrally
- No Limit on Sites, Pumps, Tanks, Users or transactions - Large or small networks accommodated
- Configurable Report Templates that can be periodically auto e-mailed
- Graphical Gauge and Book Stock Comparison
- Unique Vision Tiles - Configure the site with information relevant to your business.
- Server to Sever Data Links - Where compatible, Auto Mileage Update from your vehicle tracking system.

Clear User Interface...

Above all other factors, Jigsaw have designed the user interface to be as clear and simple as possible. The site is consistent so that if you see something in red, you know there is an issue - click that warning and you see the details. The site screen is the heart of the user interface. This shows the status of all pumps and tanks on the site along with a list of all the latest fuelling events.



Whether you have one fuelling site or fifty, the data is shown in the same clear format. On larger networks, the QuickView page comes in to its own. This highlights any issues across an entire network of sites all on one page.

Real Time Stock Management :

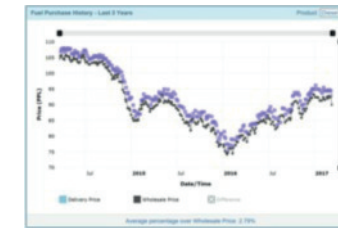
As stock deliveries are entered, and transactions are received from your site, the fuel stock situation is updated on the web service. With a connected tank gauge, you get a real time comparison between book and gauge stock highlighting any issues in real time.

Jigsaw Vision™ Tiles :

The Jigsaw Fuel system has the Unique Vision Tiles which show real time information answering specific questions the user may pose about vehicles, people, fuel stocks, efficiency and even CO2 emissions.

Here are a few of an ever growing suite of jigsaw Tiles :

- Annual Fuel Usage Plot - 3 Year Overlay
- Unique Fleet “Swarm” Plot easily highlights mis-performing vehicles
- Fleet Highest Fuel Usage
- Driver Highest Fuel Drawings
- Fuel Price Plot - Direct Comparison of your purchase price to UK Average Price.
- CO2 Emissions equivalence Tile
- Unfuelled Vehicle Tile - Updated every Minute - ideal for bus refuelling operations



Average UK Fuel
Stock Price



Fleet Efficiency
“Swarm” Graph

Real Time Support :

As your Support Agent can view the same data as you, at the same time, any issues raised can usually be resolved during a telephone conversation so that support is fast and efficient.

JIGSAW TANKGUARD

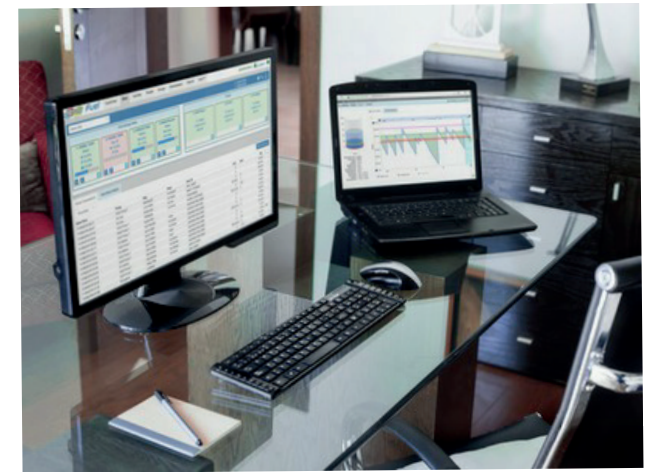
Fuel Stock Management

- Clear Web Site - Minimum Training
- True, Real Time system - No polling required
- Systems update on Significant Stock Change
- Web Based (View Anywhere)
- Real Time View across all sites
- Interfaces to most common gauge types
- Only a Browser Required for access
- Desktop, Laptop, Phone and Tablet Sensitive
- Optional E-Mail and Text Prompts

Remote Stock Management

The Jigsaw TankGuard adds a near real time interface to any compatible electronic tank gauge system. The system reads the gauge constantly and updates the web site periodically, or on any significant stock movement (up or down).

The system doesn't just cater for the high end tank gauges but can accommodate even the most modest. Also, gauging isn't just limited to fuel or fuel oils but can be used on just about any liquid or even bulk powder and pelleted products.



TankGuard Web Service

The Jigsaw TankGuard Web service logs the data from the on site tank guard units and presents it in a clear format, clearly showing low and critical stock levels, and graphing historic stock data. The system will also estimate the volume of deliveries in to the tanks, and predict when the tank will next need to be refilled.

The system can generate stock reports for any given date and time, and can even raise alarms if there is stock movements out of normal operating hours.

JIGSAW

FUELGUARD PRIMARY ID OPTIONS :

Each of the following ID Methods can be used to identify the vehicle being fuelled and is compatible with the FuelGuard System for automatic Mileage Capture.



RFID Tags

Most common form of ID, easily fitted to vehicles key ring, very robust.

- Simple to use
- Low Cost
- Use for Vehicle, Fueller or Driver ID
- Existing Third Party Tags may be used



Fuel Wand

Mainly used in mobile refuelling - tag fitted to vehicle/plant read by hand held FuelWand scanner.

- Ideal for Mobile refuelling Operations
- Simple to operate
- Identifies Fueller and vehicle.



Fuel Cards

Although not as reliable as RFID tags, If vehicle already issued with fuel card then may be used.

- No additional per vehicle cost
- All major card types accepted (mag only)



Laser Plate

Radio Linked rechargeable bar code scanner reads ID and data bar codes

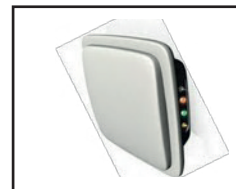
- Bar code can be used to limit fuelling quantity
- Low cost ID



EasyFuel

Nozzle Based ID system - simply insert nozzle and fuel. ID Tag fitted to vehicles filler neck.

- No wires down fuel hose
- Ultra Secure Fuelling



TeleTag

Developed to optimise Bus Refuelling operations. Auto ID's fueller and vehicle.

- Speeds up refuelling operations
- Use with FuelGuard for a complete Auto ID/Auto Miles capture system.

JIGSAW SYSTEM OPTIONS

Data Import

If you use Fuel Cards offsite, then the Jigsaw Web Service can read a file from your card provider so that these are listed along with your on site fuellings. A full picture of all vehicle fuellings is essential in order to calculate MPG figures, and to spot poor vehicle performance or fuel theft.

Data Export

It is sometimes necessary for fuelling data to be exported to other software systems such as fleet management packages, SAP, accounting packages and the like. The Jigsaw system can export data in many formats from simple text files such as CSV through Scheduled FTP transfer to Direct, real time Web Service data transfers.

Telematics Interfaces

The Jigsaw system has been linked, server to server with several Telematics (Vehicle Tracking) servers. When a fuelling transaction is received on the Jigsaw server, it connects to the telematics server to recover the mileage at the time of fuelling.

Automatic Reports

Jigsaw provide a range of basic report styles which can be configured to each users requirements. The resulting template may then be saved and scheduled to automatically run periodically and be e-mailed to the relevant user.

Automatic Low Stock Warnings

The jigsaw system may be configured to automatically send e-mails to the relevant users when fuel stocks fall below the tank reorder value.

Pump Types

Normal - Pump started by authorisation, fuel drawn decrements from associated tank.

Debowser - Pump started by Auth, but fuel drawn adds to tank stock.

Integrated - FM Display switches to Large Character Fuel delivery Display during transaction.

Delivery - Forms stock delivery transaction - used to automatically monitor tank inlet.

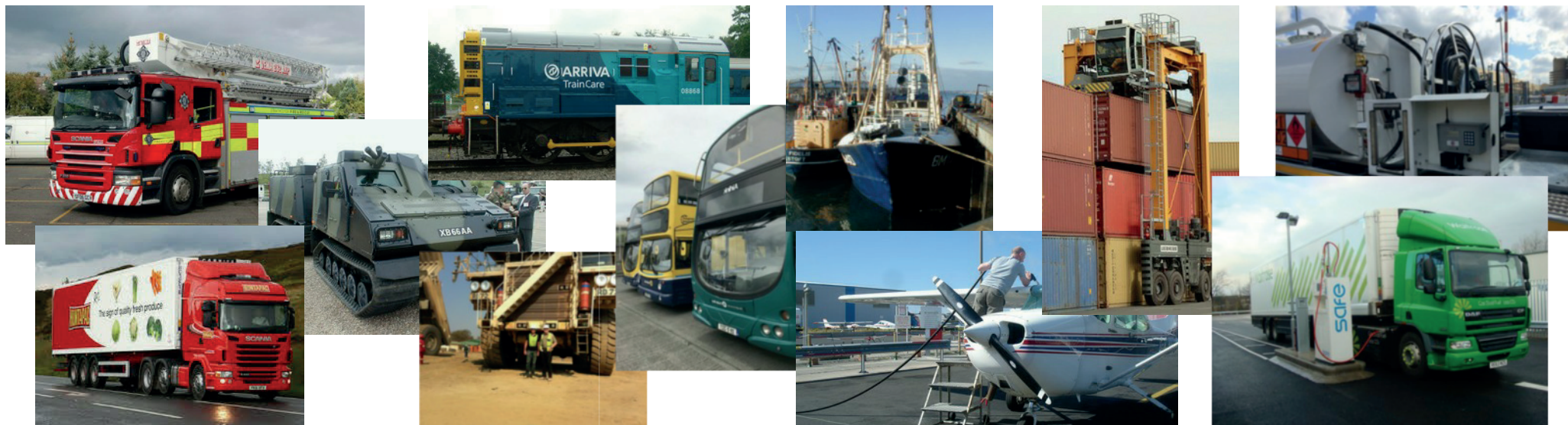
ID Options :

- RFID Tags - Including non-Jigsaw Tags
- Magnetic Cards (eg Fuel Cards)
- Jigsaw EasyFuel - Nozzle based ID System
- Jigsaw Midas - Auto Mileage Capture
- Jigsaw FuelGuard - Auto ID/ Auto Mileage
- Jigsaw LaserPlate - Bar Code Reader
- Jigsaw Fuel Wand - Remote Tag Reader
- Jigsaw TeleTag - Auto ID/Mileage Capture

Access Options :

- Logged Fueller Mode - Fueller logs on once at start of fuelling shift - types in vehicle ID before each fuelling
- UnLogged Fueller Mode - As Logged fueller, but Fueller ID presented at each fuelling.
- Data Entry - Two unchecked data prompts - eg "Enter Fleet", "Enter Collar Number", "Enter Job Number" etc.
- Odometer entry - Miles, Km or Hours - No check, Under Check or Range Checking (Milage must be larger than last but not too large)
- Fuel Limits - By Transaction, by Day, by Week or by Month.
- Driver ID using second tag or typed ID entry.

JIGSAW - FUELLING YOUR FUTURE



Web : jigsawfuel.com
E-Mail : info@jigsawfuel.com
Phone : +44 (0)1942 616 278