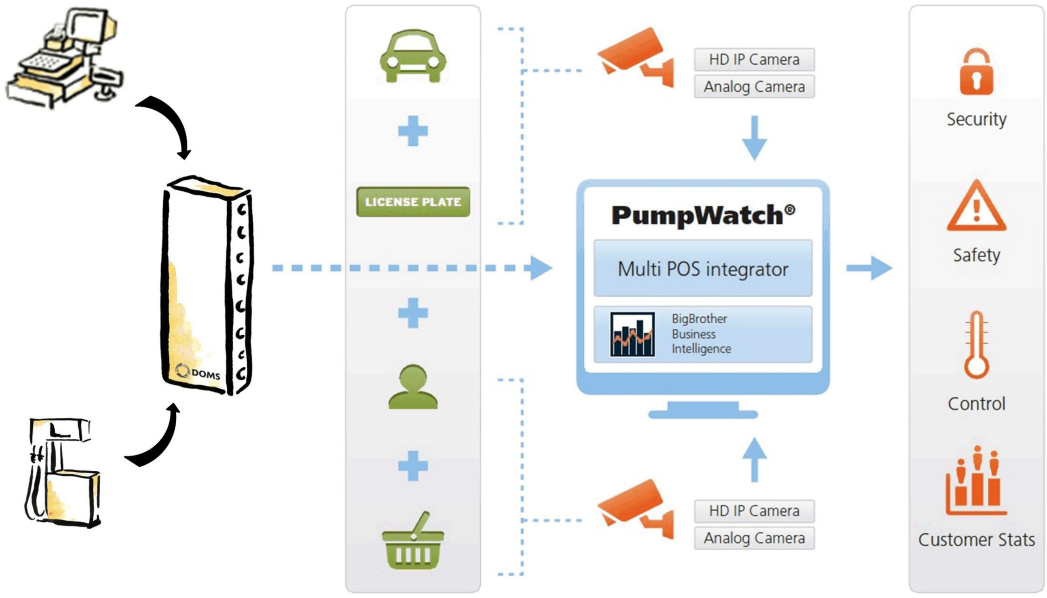
Preventing Drive-off Thefts

Using PSS 500 & PumpWatch: BigBrother, a Dutch company that specializes in solutions for CCTV surveillance, has developed PumpWatch, which is a bespoke solution for petrol station forecourts. When a customer drives on to a forecourt and starts fuelling, the CCTV camera takes preset photographs of the vehicle, the license plate and the customer.

By being connected to the PSS 5000 forecourt controller, PumpWatch is able to receive "start/stop fill" and "cash register" signals. These signals are used to categorize the photographs as filling or cash register actions. This is a huge advantage for the user, who can easily trace the photographs with transaction numbers and dispenser numbers



Once a drive-off event is identified in the system, the license plate is placed on a blacklist. The next time this license plate appears on the forecourt an alarm is activated at the cash desk – preventing repeated drive-off events. When PumpWatch is connected to a Police or vehicle database, the application is able to establish whether the vehicle or license plate has been reported stolen.

PumpWatch also provides business intelligence opportunities. The same hardware & software can use the individual license plates as a reference point to identify regular or otherwise notable customers; making it possible to assess customer behavior and loyalty on the forecourt.

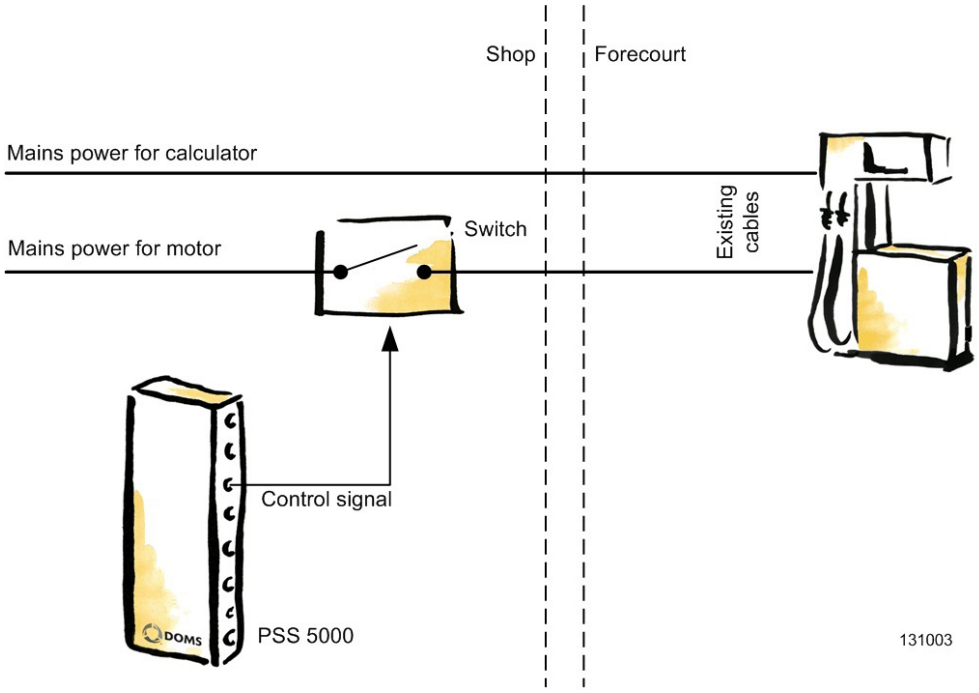
This BigBrother/PSS 5000 solution is running successfully on a number of petrol stations across the UK.

Theft Protection

Controlling the power: Reduce the risk of fuel theft by controlling the power to the dispensers

After experiencing thieves opening dispensers, which were not authorized, and starting the pumps, Doms's customers wanted an easy-to-implement, cost-effective solution.

Although dispenser manufacturers offer solutions to this problem, they normally involve special, often costly, rebuilds of the dispensers. Experience shows that work subsequently carried out by Service Technicians can, and often does, result in the technicians forgetting to re-activate the built-in protection – leaving the dispenser unprotected once again.



Doms offers its customers a centralized solution. By installing 2 small hardware components in the Mains power distribution panel (a secure location), the **PSS 5000** is able to control the power supply to the dispensers. While not in use, the dispensers appear normal, illuminated displays etc, but 2 phases of the power supply to the suction pumps are isolated. Only after a transaction has been authorized by a POS, or OPT, is the power supply restored to the suction pump – preventing thieves from activating the pumps and stealing the fuel. This is a solution that:

- Works independently of the installed POS system
- Works independently of the installed OPTs
- Works independently of the brand of the installed dispensers
- Cannot be bypassed in the dispenser
- Can be used on both manned and unmanned sites
- Can be easily installed by the oil companies´ existing service partners

Monitoring Improves Efficiency

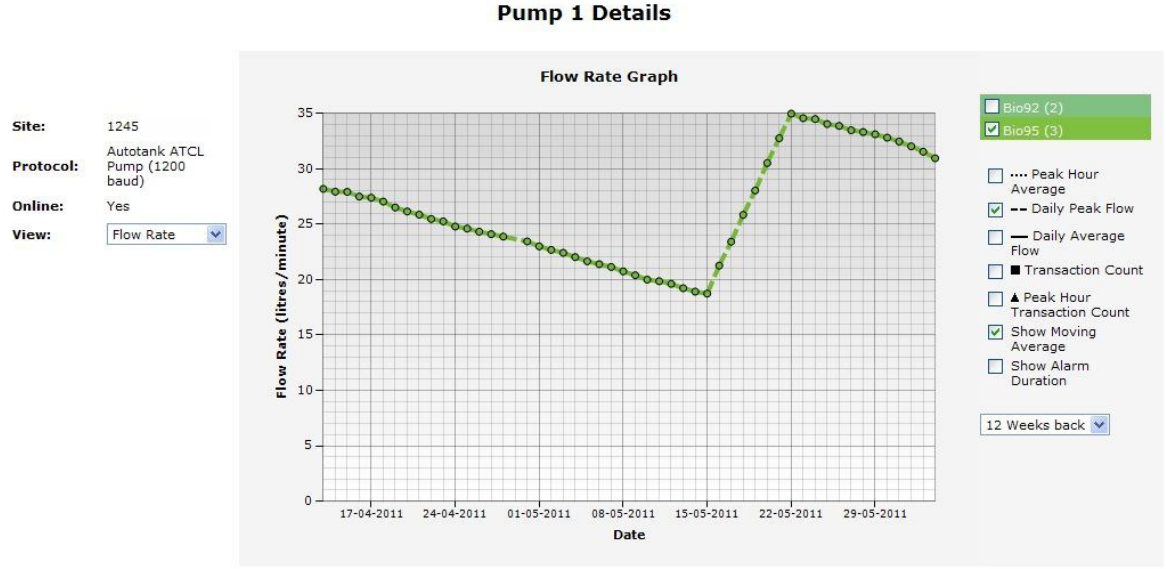
Dispenser performance monitoring embedded in PSS 5000 and a Host application

With no additional forecourt investment, oil companies can reduce maintenance costs and increase throughput on the forecourt by implementing performance monitoring in the PSS 5000.

Many sites have experienced customers avoiding certain dispensers, which can result in reduced sales. The reasons for this reduction can be:

- decreased flow rates
- prolonged delays between nozzle activation and the flow starting
- bad illumination at night
- sabotage – an "out of order" sign placed on a payment terminal at an unattended
- site dispenser system performance not satisfying customers' expectations at peak periods

The PSS 5000 can provide different types of measurements for each site. By using the measurement data from the PSS instead of the pumps, a generic solution for all the pump types is available and the PSS is able to pre-process the data – making it possible to limit the quantity of data being transmitted and stored centrally. A head office system application is able to capture this data, process it and create reports.



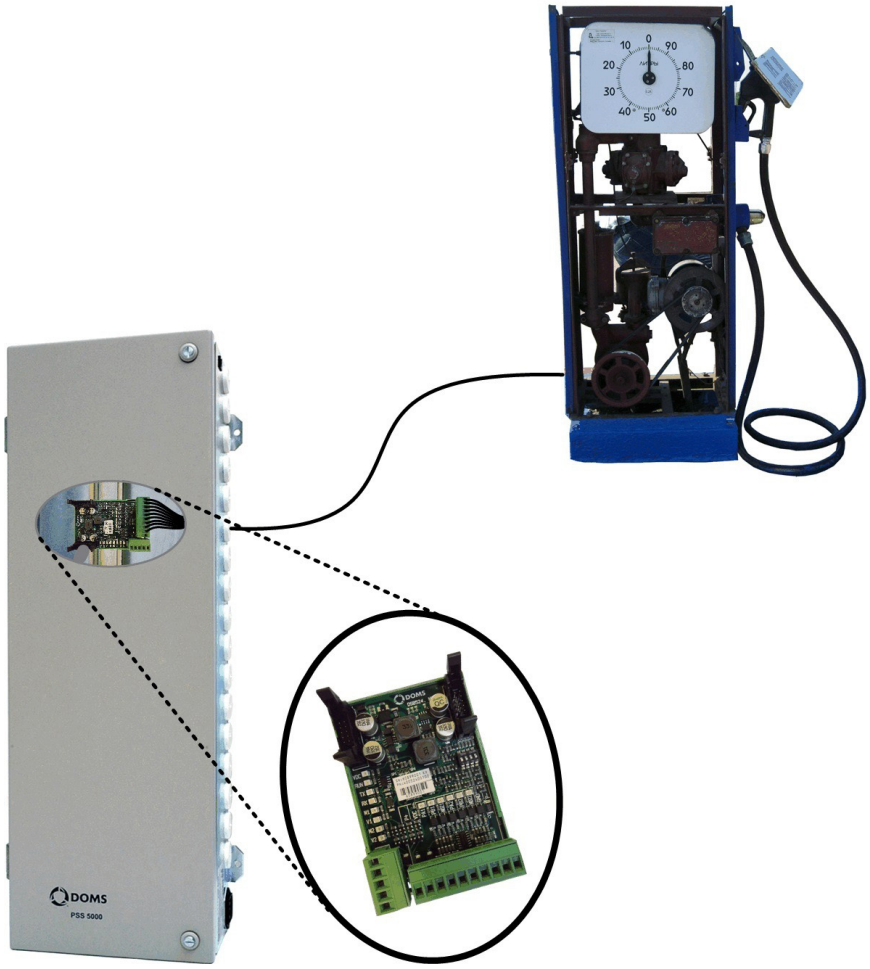
By monitoring sales and comparing them with normal sales data, a simple trend analysis can highlight the situation, which can then be investigated, rectified and customer satisfaction restored.

For more information about performance monitoring, contact our sales team.

Modernizing the Forecourt

Semi-mechanical dispenser supported

Although almost all the dispensers in the world are electronic, there still exists a large number of mechanical or semi-mechanical dispensers.



Some of our PSS 5000 customers in Russia use dispensers with only electronic pulsers but without calculators or nozzle switches. So, we have developed both a pulser interface and a new Hardware Interface Module. When attached to the pulser, the new module interface makes the dispenser appear like any other dispenser.

Alternative Fuels for Vehicles

From an automation point of view, it's business as usual

Just as the increase in natural gas production is changing the way nations look at energy, the vehicle fueling market is expected to undergo big changes too.

Gas has become a competitive fuel and is more environmental friendly. As a result of this, dispenser and gauge manufacturers are increasing their efforts in supporting the oil companies in retailing this alternative. One example of this is Russia, where according to The Moscow Times:

President Putin has mandated the building of 1000 CNG sites in the coming years, and Russia's top oil producer, Rosneft, plans to allocate 60 billion rubles to building 1,000 stations.

Although some alternative fuels are new to some retailers, the good news for Doms' customers is that the PSS 5000 already supports most CNG and LPG dispensers.

With several years experience from the world's largest LPG site in Singapore and Gazenergoseth's network in Russia, we can see that many of the new LPG/CNG dispensers are compatible with existing fuel dispenser protocols that are supported already. This means that in many situations the current IT (POS) systems on sites connecting to the dispenser via PSS 5000 do not need to be changed – the introduction of these new fuel types is just a matter of a simple configuration change.

In order to expand our support of LPG/ CNG, we are currently developing support for LPG tank gauge devices, such as the one illustrated. This development involves creating an interface to the analog output and handling the strap table in the controller. This support will be released shortly and announced here.

An example of a radar sensor for measuring LPG in tanks

More Cloud Protocols

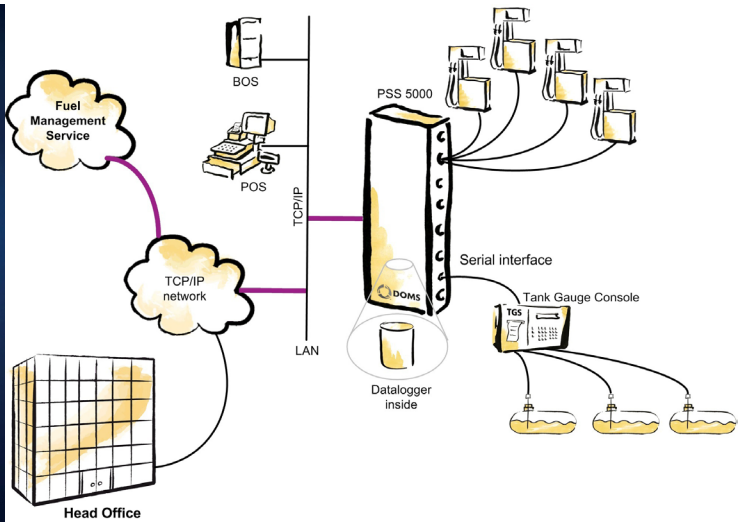
The Doms PSS 5000 Forecourt Controller's core functionality is to provide systems and services with the best possible and free access to the forecourt. We have been doing this successfully for many years, enabling POS and Back Office systems from more than 100 suppliers to access all the necessary forecourt equipment (including dispensers from a multitude of manufacturers).

In the January 2013 issue of the PSS 5000 News Bulletin, we explained how some large retailers are benefitting from connecting their distribution systems to their tank gauges via a PSS 5000. Now we have released support for Veeder-Root's hosted Fuel Management Service (FMS) protocol, which allows all PSS 5000 systems to connect directly to Veeder Root's FMS service.

By recording sales transactions and tank gauge inventory, this data is stored and can be collected by the FMS. This data is then available for variance analysis that is much better than has been possible in the past. Clear benefits of this include:

- Better tank calibration leading to a reduction in monthly variances, stock write-off and associated costs.
- Delivery invoices that can be compared accurately with what was actually dropped.
- Reports from the FMS system on individual meter performance (gaining or losing during dispensing); providing both cost saving and legal compliance benefits.
- Theft detection in near real-time.

Altogether, the system gives a clearer picture and a better understanding of what is happening on the individual forecourts.



Fuel Delivery Control

What do traffic congestion and traffic lights have in common with tank trucks and tank gauges?

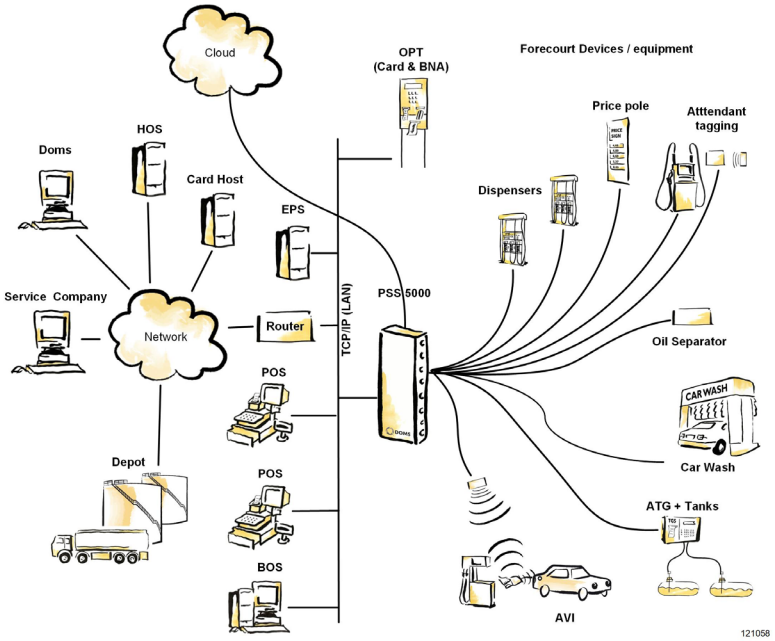
The Economist wrote in their August 11th issue;

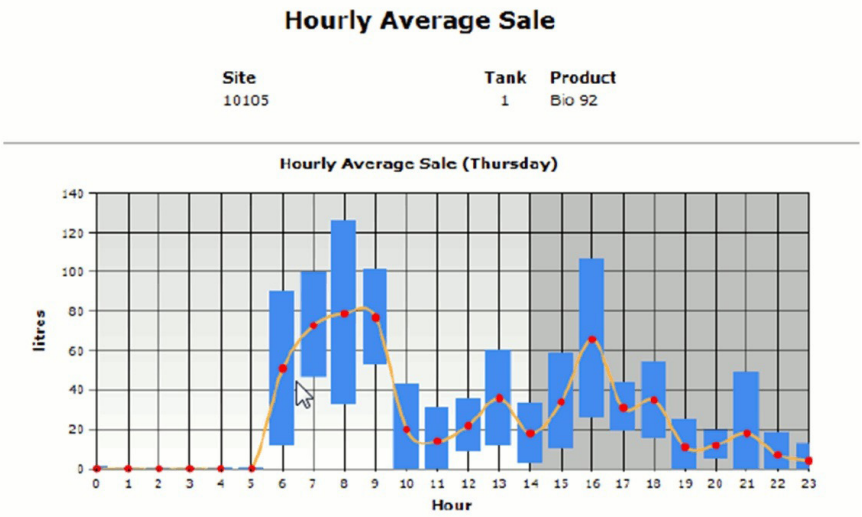
"Over the network is a wireless mesh that allows government, so often wary of innovation, to try new approaches. Police in Chattanooga have vastly expanded their communications and mobile data analysis. Traffic lights will soon be able to respond in real time to changing traffic patterns."

A user of the Doms PSS 5000 forecourt controller in Northern Europe is also using a network, not to control traffic lights but to control their fuel truck deliveries from depots.

PSS 5000 in a network where fuel trucks receive real-time data while loading at depots.

By providing the fuel trucks with real-time tank gauge readings from the filling stations while loading at the depot, it is possible to optimize the payloads for the individual filling stations on the distribution routes. And with up to a $1 billion inventory, even small improvements can improve cash flow by significant amounts.





A HOS application allowing the logistics planning team to make their prognosis based on timely data and filter out variances on each tank.

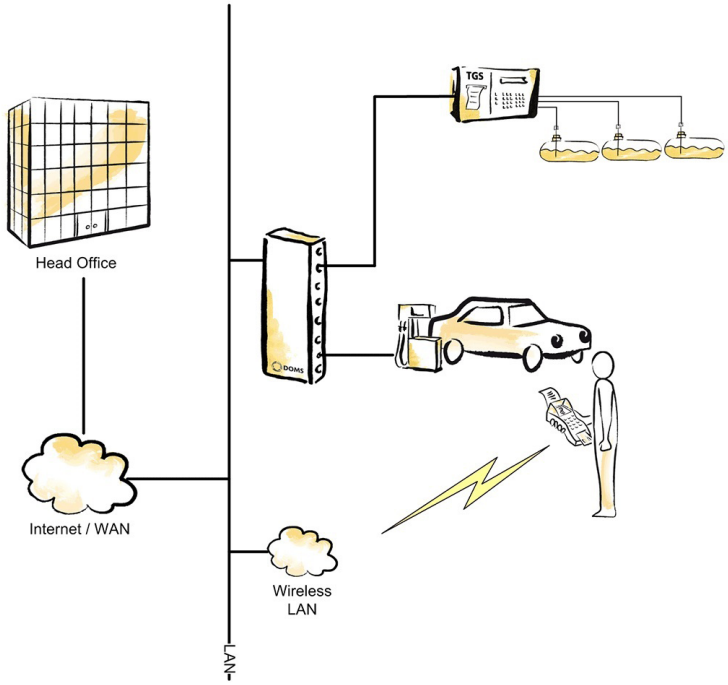
Sites without POS

PSS 5000 allows loyalty, wetstock and remote price control without needing a POS or OPT on site

On sites without a POS or OPTs, payments are handled manually by an attendant, often in cash.

For such scenarios, Doms provides a special PSS 5000 software version with functionality, such as that listed below, which is normally handled by a POS system:

- Price setting: locally via the PSS 5000 web or remotely via the Doms Host Protocol (from HOS application)
- Manual or automatic creation of daily reports (sales vs stock changes)
- Transaction handling for loyalty terminals
- Managing tank deliveries



Inventory Report for 1124 Grantham

11-07-2005 00:00 - 18-07-2005 00:00

		Tank 1 BF92	Tank 2 BF95	Tank 3 Diesel	Tank 4 BF98	Tank 5 ULT 95
Pump 1	Start		321.065	221.101		
	End		326.563	225.001		
	Corr.					
	Sale		5.498	3.900		
Pump 2	Start		298.898	207.741		
	End		304.404	211.555		
	Corr.					
	Sale		5.506	3.814		
Pump 3	Start			1.131.319		
	End			1.147.009		
	Corr.					
	Sale			15.690		
Pump 5	Start	91.910	318.825		49.265	
	End	93.162	324.354		50.279	
	Corr.					
	Sale	1.252	5.530		1.014	
Pump 6	Start	71.484	193.636		26.980	
	End	73.018	196.261		27.366	
	Corr.					
	Sale	1.534	2.625		386	
Pump 7	Start	85.000	212.438			23.727
	End	86.436	215.966			23.901
	Corr.					
	Sale	1.435	3.528			174
Pump 8	Start	62.476	164.407			19.723
	End	63.412	167.124			20.158
	Corr.					
	Sale	935	2.717			435
Total Sale		5.157	25.404	23.404	1.400	609
Gauged Vol.	Start	6.844	14.739	10.612	8.685	8.865
Delivered		2.863	17.691	18.954		
Gauged Vol.	End	4.643	7.383	6.435	7.300	8.219
Tank Gauge Dif.		5.064	25.047	23.131	1.385	646
Dif. (litres)		93	357	273	15	-37
Dif. (%)		1.80%	1.40%	1.17%	1.09%	-5.99%
Deviation Check		PASSED	PASSED	PASSED	PASSED	PASSED

Deviation check fails when dif. in percent exceeds 2,00% and dif. in liters exceeds 100 litres

082086

Inventory Report from HOS

View Status List

25-03-2014 08:38 (Activation Date : 26-03-2014 14:00)

Grade	Price	PSS Price Group	PriceSetID
Bio 92	9,15	1	1
Bio 95	9,99	1	1
Diesel	9,75	1	1
Bio 92	10,15	2	1
Bio 95	10,99	2	1
Diesel	10,75	2	1

Site No.	Site Name	Sent to PSS	Response from PSS	Error from PSS
1103	Oldham			

Price Change Status from HOS

Reconciliation Reports

By using the transaction data provided by the PSS 5000 and combining it with the wet stock inventory and delivery data available from the Tank Gauge System, the PSS 5000 can create Reconciliation Reports. These show the actual wet stock movements and highlight irregularities between the transaction data and the tank gauge data, which can indicate fraudulent behavior or possible leaks. Moreover, the PSS 5000 also sends data to external reconciliation applications, such as a tank gauge system or a central HOS application.

Changing Prices

The Service Menus available via the web server inside the PSS 5000 enable you to change the prices for a site manually either locally or from a remote location. Prices can also be uploaded to a network of sites via the Doms Host Protocol from a HOS application. The PSS 5000 allows price changes to take place at any time without them affecting any transactions that are in progress.

Setting Date and Time

The PSS 5000 date and time is normally set by the POS in order to keep the PSS synchronized with the POS system. In stand-alone scenarios, date and time can be set via the PSS Web or the Doms Host Protocol using a HOS application.

Transactions for Loyalty Terminals

By storing the data for the latest transactions, it is possible for an attendant to read the transaction data electronically (via a loyalty terminal) and add the sale to the customer's loyalty account and/or print a receipt.

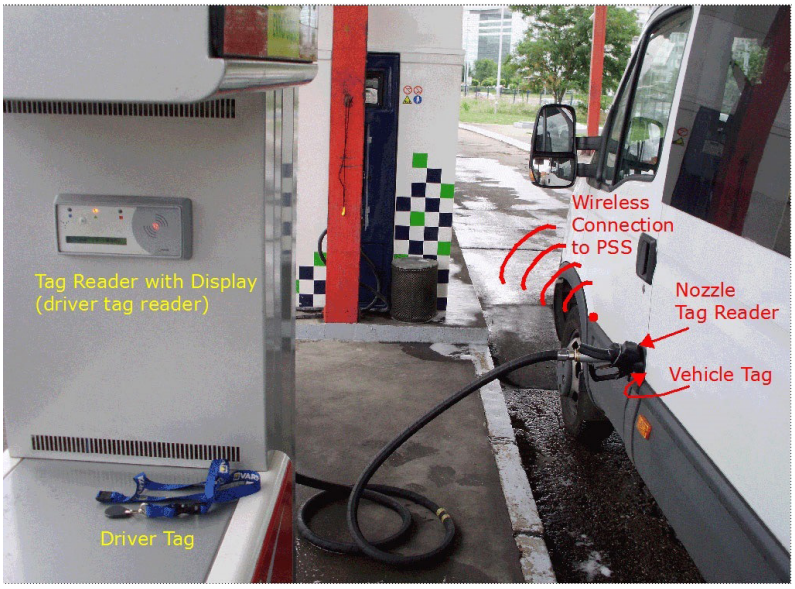
Major Savings with AVI

Automated Vehicle Identification (AVI) Achieves Major Savings

How to retain existing business logic and implement AVI in only 2 months

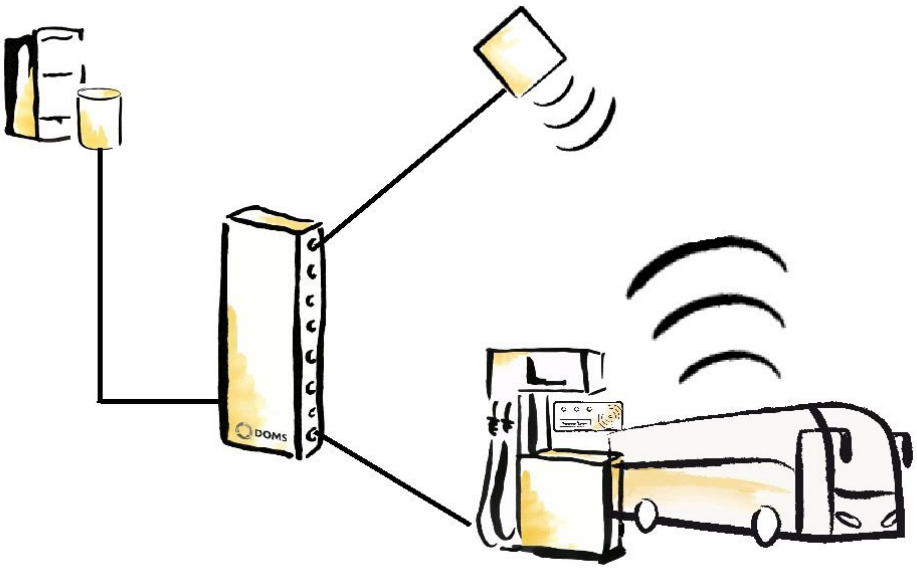
In simple terms, AVI automates payment sequences that normally require manual operations, such as entering cards and keying-in vehicle details.

A large Serbian bus operator, in cooperation with a regional oil company, achieved major savings by ensuring that the fuel they purchased was actually dispensed into their own vehicles. Using their existing payment system, which involved using loyalty cards, an innovative plug-in was installed in the PSS 5000 forecourt controller. This plug-in enables the PSS 5000 to use the existing payment database and control the dispensing of fuel. By combining this with vehicle tags fitted to all the buses and nozzle readers installed on the dispenser nozzles, the PSS 5000 is able to control which vehicles receive fuel.



One of the smaller buses in the fleet refuelling using AVI and driver tag authentication

One improvement in this latest project is that the nozzle reader and the vehicle tag must establish a connection and remain connected to allow fuel to be dispensed. Removing the nozzle from the vehicle stops the flow of fuel until it is replaced back in the authorized vehicle.



A simple illustration of a system that authorizes (secure) fuelling using vehicle inlet tags. It shows how vehicle data, in addition to that received via the vehicle tag and nozzle tag reader, is transferred from the vehicle on the forecourt via the wireless connection. Data can then be made readily available to a BOS.

Boost Car Wash Sales

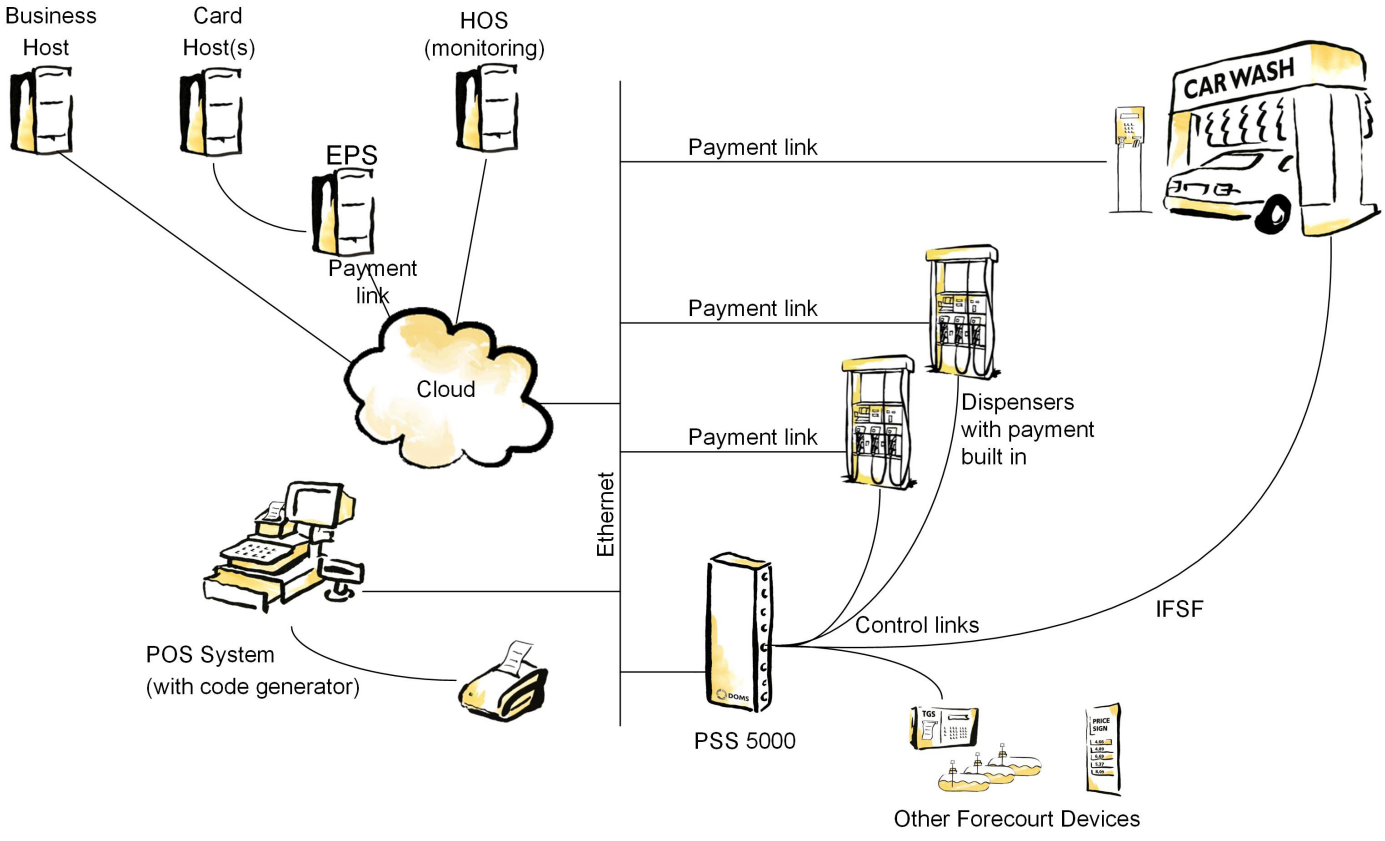
Integrated Car Wash Control – so successful that Statoil (Circle K) is implementing it across most of their network

By using the PSS 5000 as the integration point, Statoil avoids standalone systems. In this way, Statoil is able to offer promotions on systems that are already set up for fuel and convenience sales. It allows features such as offering customers to purchase a wash at the dispenser and tell them the status (vacant or busy) of the wash machine, which is not visible from the dispenser.

In addition to the main driver of gaining more sales, the integration also hosts several other advantages:

- Full business (control) reconciliation on existing systems.
- As a car wash appears like any other forecourt device via the controller, it is easy to connect to the rest of the Head Office System; for example, for service monitoring.
- No need for a stand-alone RAN coder; able to use POS/OPT/dispensers to issue codes.

Recently, we have added the IFSF car wash, which provides additional benefits; mainly reducing the installation costs significantly. But it also allows advanced services and replenishment features for consumables, such as when the soap runs low.



PSS + Sensors + TGS

Get savings and safety via your existing equipment

With the implementation of support for sensors in the PSS 5000, it is now possible to remotely monitor a multitude of sensors installed on filling stations without any additional equipment. This allows preventive maintenance by monitoring components that need attention at regular intervals or minimizing your service visits (e.g. only empty well when needed)

For example, this also reduces safety risks. By monitoring oil separators, it is possible to reduce the number of visits and, hereby, reduce the time spent by service staff on the forecourt.