XL Fuel

Protronic

Cut and control fuel costs

Designed in South Africa for South Africa

SANS Approved

Introduction

The XL Fuel system is a cost effective, reliable standalone solution for providing secure access to a fuel dispenser. The system assists to control theft, manage fuel costs and eliminate loss and wasted fuel.

The XL Fuel system has been designed to avoid the problems that have been observed over a fifteen year period with fuel systems that operate using a central controller. These centrally controlled systems use wired cables between the pumps and the controller to provide communications. By having a cable system the devices are exposed to the environment and more importantly are vulnerable to lightning strike problems.

The XL Fuel stores each transaction at the fuel pump recording the time, date, vehicle data, user data and liters dispensed. These fuel transactions can then be downloaded as a batch, at a convenient time, to a USB flash drive or for a more instantaneous approach a GSM Modem can be added which stores the transactions on an ftp server for remote access via our software. The file on the flash drive may then be opened in Excel or imported into the XL Fuel manager software which allows the user to store the transactions in a database and create reports.

A company, which has its own fuel dispenser, has an advantage of saving money. It therefore makes sense to further have complete control and accountability over their dispenser. This is where the XL Fuel system may be utilized to fully manage the company's fuel usage.

Figure 1 XL Fuel control unit mounted on a fuel dispenser

Features

- Reliable and simple effective solution
- Removes the need for cabling which reduces the initial installation costs substantially.
- The installation time is minimal
- The system makes use of programmable Dallas iButton Tags, DS1992 to control safe access to the fuel
- The XL Fuel unit can be fitted to any mechanical dispenser or a modern digital dispenser with a pulsar unit.
- The Fuel pump motor switches off if no fuel is pumped within 60 seconds.
- The transactions are easily viewed using Microsoft excel.
- A backup of the last 1500 transaction are always available at the pump, for auditing purposes, or for the case of a lost flash drive.
- XL Fuel manager software is an optional database program that creates reports for vehicles, users, tank levels and notifications .
- Allows for vehicle tags and driver tags
- Tags can easily be enabled and disabled via control from a supervisor tag
- Maximum fuel limit control (Limits the fuel for a vehicle)
- Fuel time window control (Forces fixed fueling times)
- Odometer check at fuel time. (Shows the previous odometer entry before the new entry is keyed in)
- Robust intrinsic design
- User friendly
- Local backup and after sale service

XL Fuel control unit

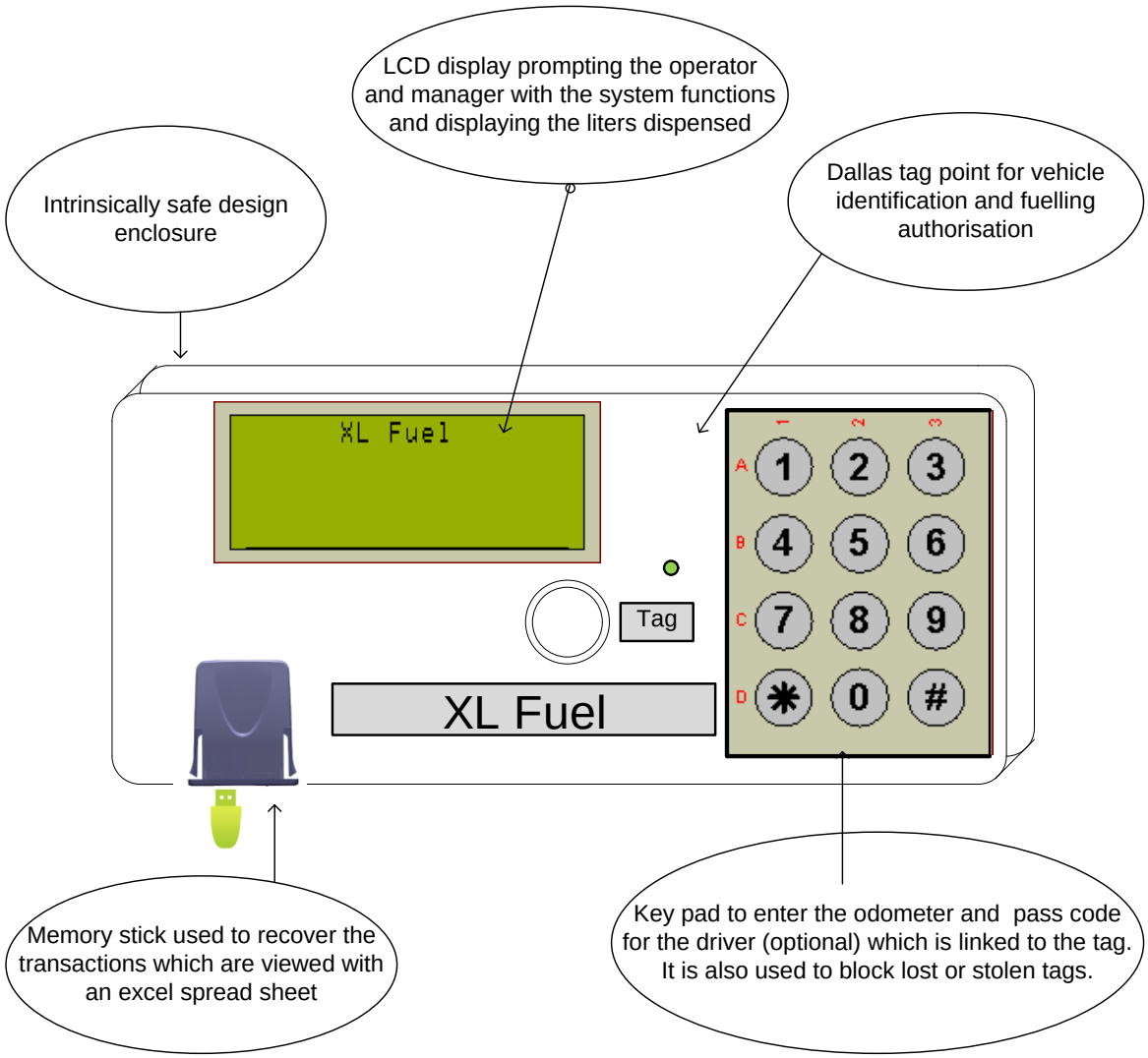

Figure 2 Graphical Representation of the XL Fuel unit

Access control Tags

Figure 3 DS 1992 Dallas Tag

The fuel access can be controlled by four methods:

1. The system may be setup to only require a vehicle tag to start fuelling (with an optional odometer).
2. The system may be setup to require a vehicle tag and a user tag to start fuelling “for accountability” (with an optional odometer).
3. The system may be setup to require a vehicle tag and a pin code to start fuelling (with an optional odometer).
4. The system may be setup to require a vehicle tag and a user tag to start fuelling where either one of the tags can require a pin code or both tags can require a pin code (with an optional odometer).

These options are setup while the tag is being programmed. This is done using the XL Fuel manager software with the USB tag programmer. A retailer may request for their tags to be programmed or, alternatively, they may purchase a programmer in order to have full control over the tags. It is our recommendation that the user purchases a tag programmer.

Non programmable user tag

Many companies may already have a satellite tracking system which uses a DS1990 non programmable tag. This tag is linked to the company's driver database which identifies the users' particular details.

This DS1990 tag may be used in place of the programmable driver tag to provide additional accountability, as to who is fuelling the vehicle at a particular time, thereby linking the driver to the vehicle transaction.

The transaction will record the unique number of the DS1990, for e.g.: 000015748AC0, into the user tag name column on the excel spread sheet.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
1717													
SiteID	Date	Time	Vehicle Ta	VehicleID	User Tag N	User Tag ID	Pump Num	Odometer	Liters	Fuel Type	V	U	m
1717	14-05-201	12:07:21	1234	test tf_____	52576	00015748AC	1	123	20.2	Diesel	0 0 1 31 47	0 0 21 116	o
1717	14-05-201	12:08:46	1234	test tf_____	52252	000157383E	1	124	26	Diesel	0 0 1 31 47	0 0 21 115	o
1717	14-05-201	12:09:32	1234	test tf_____	52576	00015748AC	1	125	30	Diesel	0 0 1 31 47	0 0 21 116	o

Programming a vehicle tag

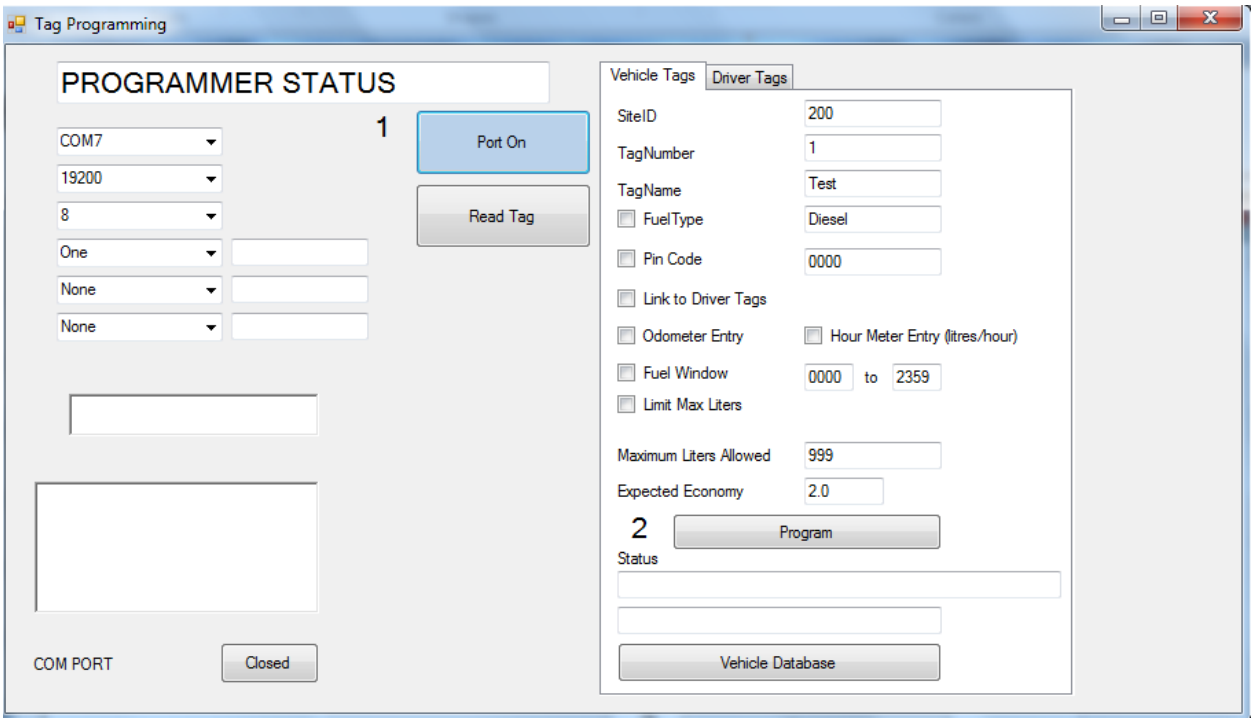

Figure 4 Sample of the Dallas tag XL Fuel manager vehicle programmer page

The XL Fuel manager will keep track of the tags that have been programmed, thus if a tag is lost then the data for the tag is retained and a new one can easily be programmed. A tag can easily be removed from the system by disabling the tags ID at the pump on the XL Fuel unit.

XL Fuel Manager Dashboard

Figure 5 XL Fuel manager's dashboard

Figure 5 shows an example of how the dash-board allows a quick insight into the activity of the site, provided that at least one tank dip level has been entered at the pump since the tank was

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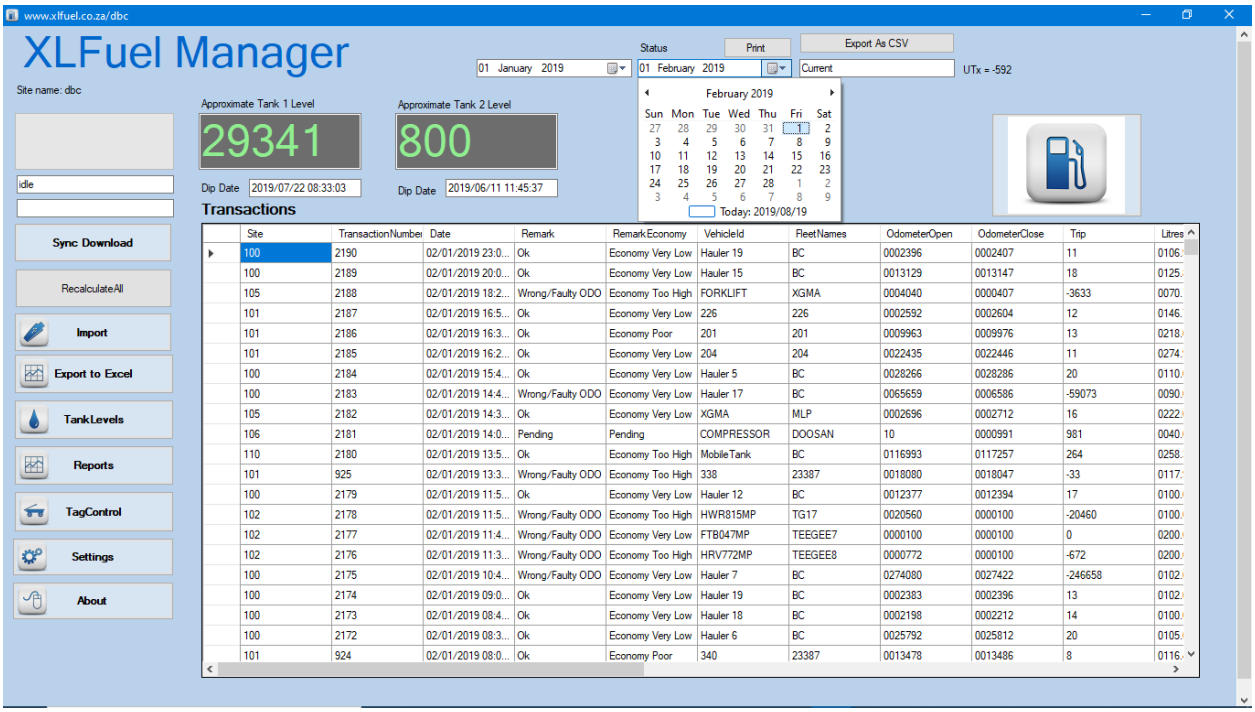

Site	TransactionNumber	Date	Remark	RemarkEconomy	VehicleId	FleetNames	OdometerOpen	OdometerClose	Trip	Litres
100	2190	02/01/2019 23:0...	Ok	Economy Very Low	Hauler 19	BC	0002396	0002407	11	0106.
100	2189	02/01/2019 20:0...	Ok	Economy Very Low	Hauler 15	BC	0013129	0013147	18	0125.
105	2188	02/01/2019 18:2...	Wrong/Faulty ODO	Economy Too High	FORKLIFT	XGMA	0004040	0000407	-3633	0070.
101	2187	02/01/2019 16:5...	Ok	Economy Very Low	226	226	0002592	0002604	12	0146.
101	2186	02/01/2019 16:3...	Ok	Economy Poor	201	201	0009963	0009976	13	0218.
101	2185	02/01/2019 16:2...	Ok	Economy Very Low	204	204	0022435	0022446	11	0274.
100	2184	02/01/2019 15:4...	Ok	Economy Very Low	Hauler 5	BC	0028266	0028286	20	0110.
100	2183	02/01/2019 14:4...	Wrong/Faulty ODO	Economy Very Low	Hauler 17	BC	0065659	0006586	-59073	0090.
105	2182	02/01/2019 14:3...	Ok	Economy Very Low	XGMA	MLP	0002696	0002712	16	0222.
106	2181	02/01/2019 14:0...	Pending	Pending	COMPRESSOR	DOOSAN	10	0000991	981	0040.
110	2180	02/01/2019 13:5...	Ok	Economy Too High	MobileTank	BC	0116993	0117257	264	0258.
101	925	02/01/2019 13:3...	Wrong/Faulty ODO	Economy Too High	338	23387	0018080	0018047	-33	0117.
100	2179	02/01/2019 11:5...	Ok	Economy Very Low	Hauler 12	BC	0012377	0012394	17	0100.
102	2178	02/01/2019 11:5...	Wrong/Faulty ODO	Economy Too High	HWR815MP	TG17	0020560	0000100	-20460	0100.
102	2177	02/01/2019 11:4...	Wrong/Faulty ODO	Economy Very Low	FTB047MP	TEEGEE7	0000100	0000100	0	0200.
102	2176	02/01/2019 11:3...	Wrong/Faulty ODO	Economy Too High	HRV772MP	TEEGEE8	0000772	0000100	-672	0200.
100	2175	02/01/2019 10:4...	Wrong/Faulty ODO	Economy Very Low	Hauler 7	BC	0274080	0027422	-246658	0102.
100	2174	02/01/2019 09:0...	Ok	Economy Very Low	Hauler 19	BC	0002383	0002396	13	0102.
100	2173	02/01/2019 08:4...	Ok	Economy Very Low	Hauler 18	BC	0002198	0002212	14	0100.
100	2172	02/01/2019 08:3...	Ok	Economy Very Low	Hauler 6	BC	0025792	0025812	20	0105.
101	924	02/01/2019 08:0...	Ok	Economy Poor	340	23387	0013478	0013486	8	0116.

d. The transactions are updated every 3 minutes from the pump showing a live feed of the day's transactions. The large green values are an estimate of the current tank level. The notifications area will bring to attention any problems with data from transactions, such as incorrect keypad entries and incorrect economy calculations that vary by the set tolerance.

Figure 7 Transaction history

Reporting

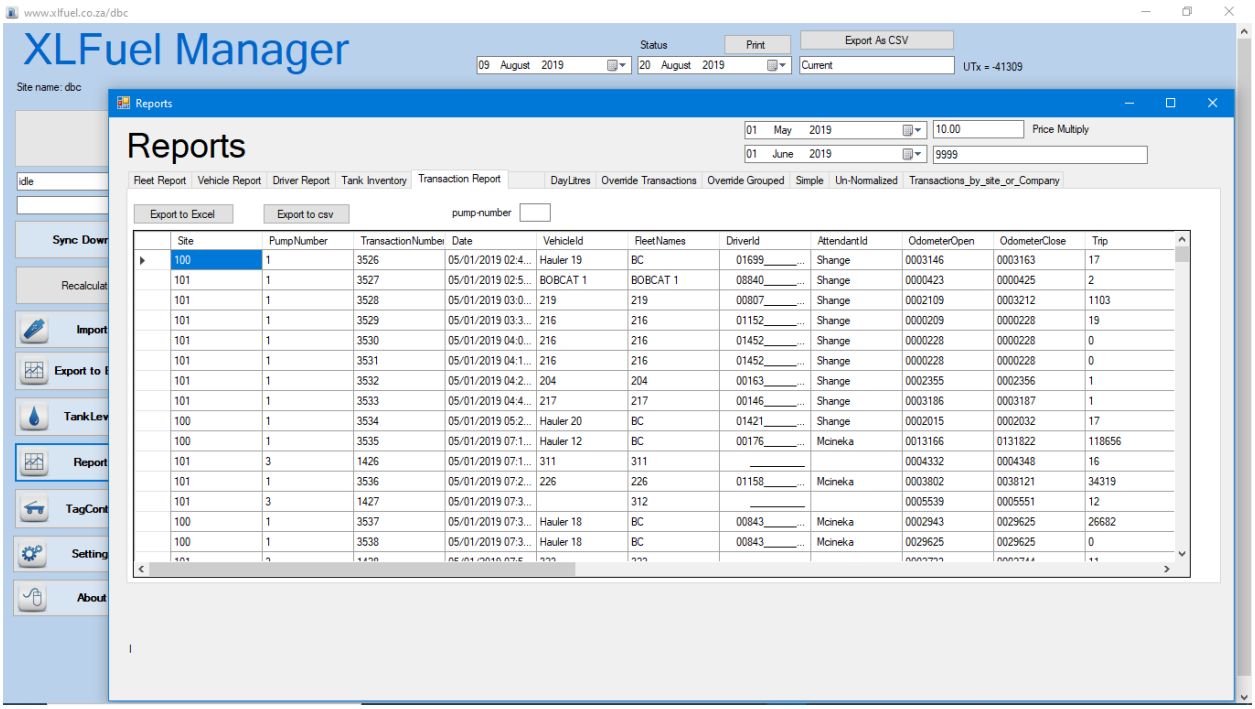

Figure 8 Reporting

Figure 8 shows an example where reports can be generated for: tank levels, vehicles, users, fuel reconciliation, notifications and transaction over any period of time. The data can be filtered by site, user, vehicle or tank and then previewed before exporting to excel. The most simple report is a fleet report showing all the transactions on a site where the vehicles are grouped.

Figure 9 Image of the XL FUEL controller mounted on a mechanical pump

Figure 10 XLFuel unit mounted on a digital SM 500

Figure 11 Image of the XL FUEL controller mounted on a mechanical pump

Figure 12 Image of the XL FUEL controller mounted on a very old mechanical pump

Figure 13 Image of the XL FUEL tag programmer

Vehicle Tag Transfer Probe (VTT)

For Site with a large number of vehicles (more than 50)

The VTT probe assists to ensure that vehicle tag swapping cannot take place. The VTT tag is pop rivet mounted to the vehicle. It is pre pre-programmed before the tag is installed. It can be reprogrammed however a mobile computer will be required to be used at the vehicle, as the tag is not intended to be removed.

Figure 15

figure 16

Figure 15 and 16 show the vehicle mounted tag and the VTT respectively.

The fuelling procedure will be to first present the VTT to the tag on the vehicle, a green LED will shine bright for 4 seconds to indicate the read was successful, if the led flashed continuously then the tag needs to be re-probed. The user has 50 seconds to probe the fuel system before the data is erased.

Figure 17 shows the tag being probed where the led indicates a successful read.

XLFuel unit Specifications

Electrical characteristics

- **UM 16V, Uo 13.3V, Io 1020mA, Po 1.526W**
- **Co 730uF, Lo 60uH, Ui 12V, Ii 1020mA**
- **Pi 1.526W, Ci 723uF, Li Neg**
- **IA S-XPL/T0 1258X**
- **Classification EXiC IIA T5**
- **Temperature – 20^0C to + 55^0C**

The XLFuel unit has been SABS approved and has a unique IA number

XLFuel installations

SAB	44
Shell refinery	2
ASL	1
NPC	6
Farms	1
Time Freight	5
City Couriers	5
SK Trucking	2
Transnet	1
TANSNAT	12
SUNSHINE BAKERY	2

DAIRY DAY	3
HULLETTS SUGAR	1
SAPPI	6
PRONTO SERVICES	1

XL Fuel

Proudly South African

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