



**Forecourt Equipment Federation**

...The leading association for equipment manufacturers and their servicing divisions, serving the UK retail petroleum market...

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**Guidance to Site Operators, Manufacturers  
and Installation Companies on Payment at  
the Pump Systems which incorporate the  
use of Portable Electronic Devices**

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The Forecourt Equipment Federation (FEF) is the representative body for equipment manufacturers, and their service divisions, serving the UK retail fuel delivery market. It provides a forum for the industry to share and exchange information on developments in the fuel delivery process and aims to be an authoritative voice on industry issues.

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In creating this document the FEF acknowledge documents referenced in the Bibliography.

Further copies in pdf format can be obtained from the FEF and its members.

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## **2 FOREWORD**

This document provides recommendations for the design, installation, and operation of systems which allow payment to be made at the fuel dispenser using arrangements which incorporate the use of portable electronic devices, including mobile smart phones.

Whilst aimed at Filling Stations open to the general public for the fuelling of motor vehicles, this guidance may also be of use on private installations or other fuel dispensing operations.

### 3 BIBLIOGRAPHY

<i>Petrol Filling Stations Guidance on Managing The Risks Of Fire &amp; Explosion (The Red Guide)</i> , Published by the Petroleum Enforcement Liaison Group (PELG) and available from the Energy Institute. Commonly known as the Red Guide.
<i>The Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres (Amendment) Regulations 2005</i> , SI 2005/830, amending SI 1996/192.
<i>The Measuring Instruments (Liquid Fuel and Lubricants) Regulations 2006</i> , SI 2006 as amended by <i>The Measuring Instruments (Amendment) Regulations 2010</i> , SI 2010/2881. <i>The Measuring Equipment (Liquid Fuel and Lubricants) Regulations 1995</i> SI 1995/1014 amended
<i>The Electromagnetic Compatibility Regulations 2006</i> , SI 2006/3418
<i>The Radio Equipment and Telecommunications Terminal Equipment Regulations 2003</i> , SI 2003/3144, amending SI 2000/730
BS EN 60079-0:2012+A11:2013 <i>Explosive atmospheres. Equipment. General requirements</i> , BSI, London
Weight and Measures Bulletin No. 1001 (2011) <i>Control of Modular Equipment during the MID Transition Period and Beyond</i> , NMRO, London
Design, Construction, Modification, Modification and Decommissioning of Filling Stations, 3rd Edition, Published jointly by the APEA and Energy Institute. Commonly known as the Blue Book.

### DEFINITIONS

MID	Measuring Instruments Directive
NFC	Near Field Communications
OEM	Original Equipment Manufacturer.
POS	Point of Sale
RFID	Radio Frequency Identification

AdBlue is a registered trademark of the VDA

## 4 INTRODUCTION

At the time of writing this Code of Practice, there are moves to introduce options to pay for fuel, or AdBlue, at the dispenser using mobile phones and other portable devices.

Whilst it is difficult to predict the type of systems which will be introduced, this Code of Practice relates to payment by mobile devices based upon :

- Barcode/ QR code scanning
- Bluetooth, near field communications, RFID, or similar radio signal based systems
- Communications with a remote host by phone call, text message, email, or applications (Apps).

Systems may be as simple as adding a barcode or QR code on the dispenser or in the near vicinity (and updating the POS software) – or may be complex systems which introduce additional electronic equipment, and possibly radio communication devices, onto the forecourt.

For many years, fuel dispensers on petrol filling stations having been fitted with warning signs indicating that the use of mobile phones is prohibited, with the main concern being distraction of motorists whilst refuelling vehicles. The Red Guide provides more information. At first sight the introduction of new payment systems, in particular those which involve the use of a mobile phone, may appear to be in direct conflict with this guidance.

Whilst many discussions on payment with portable electronic devices have tended to lead to discussing explosion risk, other regulatory areas have received less attention.

Hence, this Code of Practice aims to provide guidance to promote

- safe system designs which continue to acknowledge the safety considerations that the current mobile phone warnings on fuel dispensers address today,
- that the use of any additional equipment is compliant with all relevant regulatory requirements,
- that any modifications to existing dispensers ensures their continued compliance with all relevant regulatory requirements,
- to highlight some areas for consideration in the design of systems, beyond those related to public safety

Other risks and considerations may need to be taken into account when designing, installing and operating payment systems.

## 5 TRANSACTION PROCESS

Existing industry guidance on attended site operation, and unmanned site operation, remains valid and must be consulted.

### **Minimising motorist distraction**

Distraction can lead to a number of incidents, from fuel spillage, to vehicle associated injuries.

Where good quality radio signals are essential to the operation of payment systems, the site should be assessed prior to selecting a particular system. Consideration should be made to likely signal levels within vehicles. User instructions or marked zones may need to be considered for very low power signals such as Near Field Communications or Bluetooth. The aim is to prevent members of the general public moving around the forecourt in search of a suitable signal level.

There must be no requirement for user interaction during the delivery of fuel. This includes any messages being sent to the user device, including advertising messages, and/or communication error messages. In the event of a battery failure during fuel delivery, there shall be no distracting messages from any applications running on user devices.

Warning and user instructions should inform motorists that any applications required for devices to operate must not be downloaded whilst on the petrol filling station forecourt.

Given that some payment systems will make use of portable appliances capable of making phone calls, emphasis is placed upon continuing to discourage phone calls. Warning signs may require some adjustment. Existing guidance, and that within the Red Guide on the use of mobile phones remains appropriate.

Applications for mobile devices should never require the motorist to make a phone call from the petrol filling station forecourt in order to complete a transaction or to resolve a problem.

Systems should make the action of initiating a transaction as easy as possible from the vehicles driver seat, and consider potential parking positions, offside fuelling, and that the drivers seat may not be at the vehicle door/window closest to the dispenser.

System providers should make available guidance on safe use of mobile devices on petrol filling stations. For example, guidance could be incorporated into the process for downloading applications.

### **Increased static ignition risk**

Any applications running on a user device shall only require action by the motorist prior to lifting a nozzle.

This Code of Practice strongly recommends that user devices shall be placed in the vehicle following initiation of the transaction and before lifting the nozzle. However, this in turn makes it important that the motorist does not have to make use of the device and re-enter the vehicle whilst the nozzle is in the vehicle filler neck, as this can bring the risk

of becoming charged with static from the vehicle and then discharging to the nozzle body whilst it is in close proximity to fuel vapour being expelled from the vehicle filler.

There should be no risk of distraction by messages or error messages by any applications etc once the nozzle has been lifted.

### **Increased explosion risk**

The largest perceived risk related to explosion safety comes from dropping portable devices, and in particular, if batteries are ejected. With this in mind, the FEF promotes that systems should enable transactions to be initiated from within the vehicle, prior to lifting a nozzle and dispensing fuel.

### **Design for fraud prevention**

System and equipment designers should take into account that payment at the pump using portable devices and contactless technology may bring alternative fraud scenarios. The FEF also note that new technology may bring opportunities to reduce fraud.

### **Avoiding payment disputes**

Early systems in other parts of the world have exhibited problems.

It is important that systems' designers consider carefully:

- How to clearly define which dispenser will be involved in the transaction.
- How to deal with motorists moving to a different dispenser.
- How to deal with any zero transactions.
- How to deal with any "nozzle fumbling" during grade selection.
- Consider timeouts at the end of a transaction to prevent the next motorist's transaction being charged.
- Systems should provide facilities or data that assists in resolving disputes. Consideration should be made as to what logs may need to be kept, and where, as disputes are more likely to occur at some significant time after a transaction took place.

Site operators should also select equipment carefully as ultimately they will be the responsible party for ensuring that motorists are charged the correct amount for the fuel that they receive.

## **6 POSSIBLE DAMAGE TO PORTABLE EQUIPMENT**

Instructions, including those provided by applications, should consider providing warnings on the potential for damage to portable devices, including smart phones, by small traces of fuel being transferred from nozzle handles, filler caps and from other areas of a petrol filling station.



## **7 WARNINGS AND SIGNAGE**

Lighting levels should be suitable for safe operation of portable devices and to allow easy reading of essential warning signs.

Whilst having more warnings often results in less impact of those warnings, the following should be considered:

- Download applications at home – not on the petrol filling station forecourt.
- Devices may be used to initiate a transaction, but not for any other use whilst on the forecourt.
- Portable devices should not be charged on the forecourt, nor powered via trailing leads extending out of the vehicle.
- In the event of a flat battery, the device must not be powered by continuing to run the car engine during a transaction.
- Recommend to place any portable device in the vehicle during fuel delivery, and, for example, not in a pocket.

## **8 REGULATORY COMPLIANCE SUMMARY**

### **Mobile devices**

By writing this Code of Practice, it should be noted that the FEF are not promoting the use of uncertified, non-ATEX compliant, devices within potentially explosive atmospheres.

### **Additional Fixed Payment Electronics**

Where additional equipment is added on the forecourt, it should be CE marked.

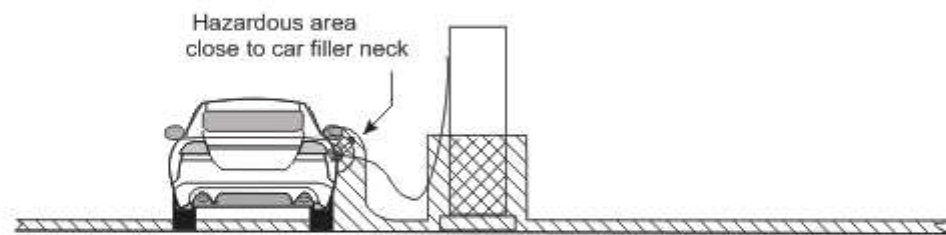
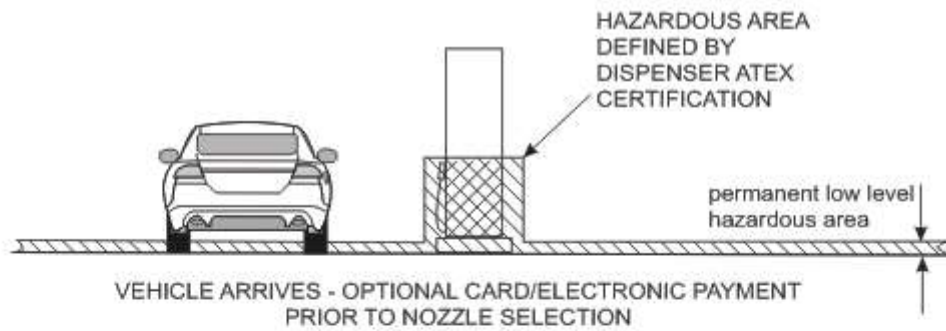
Subject to the exact function of any additional equipment, and whether it handles any metrological data, Weights and Measures certification may be required. The complete system shall comply with WM1001, Control of Modular Equipment during the MID Transition Period and Beyond, published by NMRO.

Radio signal levels associated with any transmitting equipment on the dispenser or elsewhere on the forecourt shall take into account the maximum radio power levels in potentially explosive atmospheres set out in the appropriate British Standard.

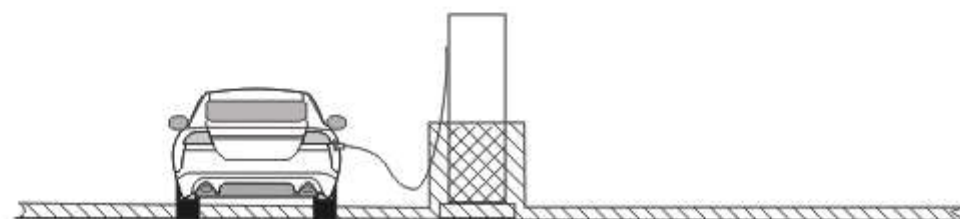
Any additional equipment added to dispensers or elsewhere on the forecourt shall be installed taking into account the extent of hazardous areas on the petrol filling station, including those associated with dispensers, the action of refuelling cars, tanker delivery points, vent stacks etc. A possible approach to the assessment of permanent and temporary hazardous areas associated with dispensers and refuelling is included in Annex 1. Detailed hazardous area information related to the dispenser should be sought from the OEM prior to performing any dispenser modification. An ATEX assessment and/or certification is likely to be required for any equipment falling entirely or partially into the hazardous areas.

Note that the responsibility for the on-going safety of modified equipment is held by the equipment owner.

## 9 ANNEX 1 : HAZARDOUS AREAS DURING THE REFUELLING PROCESS



REFUELLING: EXTENT OF HAZARDOUS AREA DEPENDENT UPON VEHICLE POSITION, WHETHER FUEL IS PETROL OR DIESEL, AND WHETHER VAPOUR RECOVERY IS INSTALLED



ONCE VAPOUR HAS DISPERSED FOLLOWING RELEASE OF NOZZLE TRIGGER