

The Green Pages

NEW FUELS GUIDE



SUMMER 2021 • ISSUE 6

Welcome to the latest edition of our new fuels supplement

At the PEIMF, we support our members with education and help on traditional petroleum products and services and INSITE is always packed with information. Virtually all editorial contributions are provided by PEIMF members (which is a great member benefit).

'The Green Pages' is a series of regular special supplements, in which we endeavour to cover many aspects of new and alternative fuels, during the huge changes and developments in the industry.

Electric vehicle charging is in everyone's consciousness, but there is a lot more going on, for both fuelling and the infrastructure involved.

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From the pump to the plug

The Electric Vehicle (EV) industry has developed at a faster and greater extent in recent times than many people anticipated. Michelle Machesney, EV Solutions Director for TSG UK, discusses the market and its potential.

Two years ago I moved from the petrol side of TSG's business to EV. At the time, many people believed it was a sector that was a slow-burner. Fast-forward to 2021 and it's clear that the electric arm of the car market is progressing at pace. Last year saw more than 175,000 electric vehicles registered; a 66% increase compared with 2019*.

ROAD TO ZERO

A big driver behind this increase in EV sales is the government's commitment to 'Road to Zero', an initiative launched to see the end of the sale of new petrol or diesel cars and vans by 2030. There is also far greater demand from the public. We all understand the impact of climate change and most consumers are concerned about this pressing issue. Choosing electric vehicles gives people some control over their own personal impact on the environment.

This landscape of government commitments and consumer demand

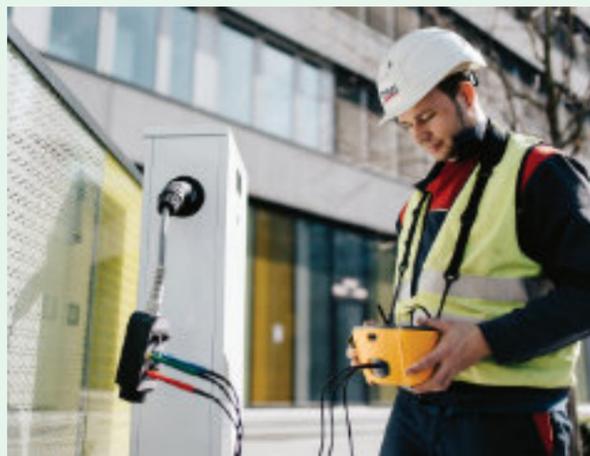


is putting pressure on car manufacturers to move away from traditional fuels, particularly diesel. But, while we have undoubtedly made significant progress in a relatively short time frame, there's still a long way to go to meet the 2030 target.

MYTH BUSTING

In my opinion, one of the major stumbling blocks to EV take-up is misinformation. There is a lot of work that still needs to be done in changing people's preconceived ideas about what it means to buy and run an electric car.

Continued overleaf



Price is a big stumbling block; EVs are generally more expensive than the equivalent petrol or diesel cars; however, initial outlay is not the way to look at an electric vehicle, and whole life costing must be better presented to the consumer. The tax implications of driving traditionally fuelled cars, particularly if they are diesel and/or older, luxury vehicles, cost drivers year on year.

Businesses which have a pool of company cars are starting to realise that the ongoing price of fossil fuelled vehicles is just not attractive. Employees are also looking to companies that care about staff and the environment, so creating facilities that make choosing EVs easier will definitely help with Corporate Social Responsibility (CSR) goals. Where this cost needs to be passed on, there are options to easily track individual usage and bill accordingly. For people generating their own electricity through solar photovoltaics, for example, the cost of 'refuelling' could become negligible.

RANGE ANXIETY

'Range anxiety' is the other major issue. How far you can travel on a single charge and how long a charge takes worries the end user, and is perceived as being far less convenient than popping into a service station when the tank nears empty. However, year on year this situation is improving.

High power, rapid chargers (50kW+) can add up to 100 miles of range in just 35 minutes. The obstacle here is not necessarily the supply of faster chargers (150kW and even 350kW options), it's the power availability for installing them, and some older EVs cannot accept this high level of charge. Upgrading systems is, of course, possible and when starting from scratch, it's best to choose an EV charging supplier that can create a future proof system with access to all of the hardware options available.

Apart from technology, owning an EV requires a different mind-set. Making sure vehicles are plugged in overnight, charging them when stationary for a period of time and encouraging workplaces and other destinations to include charging points will help change driving culture.

A FLEXIBLE FUTURE

Overall, electric vehicles allow drivers more flexibility than today's standard fuelling process. There is a place for EV charging points in the home, workplace and other destinations, such as service stations and retail outlets, with demand for all of these options so drivers can fit charging vehicles around their own lifestyle. Becoming an EV charging destination can potentially attract more customers, with visitors likely to stay for longer.

For businesses with fleet vehicles, such a logistics and taxi companies, the ideal approach to this 'flexible future' is choosing a EV charging supplier that provides a full, bespoke service focusing on individual requirements (understanding shift patterns, for example) to ensure the transition is smooth.

2030 is not that far away and we need to be creating the infrastructure now to ensure a seamless transition from the pump to the plug.

<https://www.tsg-solutions.com/uk/0333 015 3001>

Enquiries.uk@tsg-solutions.com

TSG'S ROLE IN THE FUTURE OF EVS

TSG is a leading provider of EV charging solutions across the UK.

An end-to-end EV charging solutions provider, TSG supplies, surveys, designs and installs EV charging points, as well as delivering on-going service and maintenance. The company is also hardware-agnostic, meaning it works with the majority of major EV hardware suppliers to fit the best solution to the customers' requirements.

This kind of turnkey approach is essential to the development of the industry and allows bigger, blue-chip companies to be supported as well as smaller businesses. EV technology is constantly changing and TSG will continue to evolve alongside it.

TSG Group is active in more than 30 countries, a significant proportion of which are involved with electric vehicles. The UK, Norway, Germany and France have been leading the way, but other nations' legislation is beginning to catch up.

*<https://www.nextgreencar.com/electric-cars/statistics/>



Petroleum sales declining: New fuels growth

Introducing **VEHESTA** : the **VEHICLE Energy STATION** of the future

Ledbury Welding & Engineering Ltd (LWE) are a leading manufacturer of above ground petrol storage tanks in the UK. The SuperVault is their flagship product, with this vessel providing the storage element of their modular filling stations.

The format of a standard petrol filling station (PFS) has developed significantly over the years; however, the reliance of below ground tanks to hold fuel has largely remained the same.

LWE have pioneered the alternative concept of Modular Filling Stations. However, with the road to 2030, LWE felt that this needed rebranding and developing.

As a result, they are pleased to introduce the **VEHESTA : VEHICLE Energy STATION** (pronounced 'Vesta')

UNCERTAINTY

The need for action to halt the progress of climate change is going to have a dramatic effect on the petroleum industry. The development of vehicles powered with alternative fuels is a direct result of the UK Government's policy to ban the sale of new petrol and diesel-powered vehicles by 2030.

We believe the VEHESTA provides the flexibility to help create energy stations, which cover the needs of the alternative fuels sector; as well as the development of new methods of vehicle propulsion. It is essential for the long-term future of our industry firstly, that we survive these changes, and then continue on to prosper, as the motor industry follows government policy by delivering new models for the mass market.

VEHESTA FOR THE FUTURE

Looking at the future of the industry, are we able to confidently predict that the current blueprint for PFS design will meet the needs of customers in the medium to long term? Continuing to follow the existing model may result in fixed, inflexible installations; where cost



of change or decommissioning may not be in 30+ years, but in the region of 15, or even less. Should this be the case, then the solution is a design that not only meets the needs of today's marketplace, but also has the flexibility to change and adapt for the future.

Having considered this, the **VEHICLE Energy STATION** of the future may well change significantly, and there will be a need to provide flexible, adaptable and cost-effective solutions.

The VEHESTA is an above ground solution. Its location can be moved, it remains an asset to the owner and has the flexibility to incorporate whatever changes are needed for the energy station to remain viable. LWE are developing new designs and configurations; which will initially cater for large bulk fuel storage. But as volumes gradually decline, this capacity may be adapted to encapsulate alternatives.

The principle is a POD design, which can be adapted to cover the need to keep specific separation distances between hazardous zones. These designs also allow the inclusion of a kiosk/shop within the structure, always, maintaining the principle of covered multiple fuelling lanes.

LWE believe that the VEHESTA can bridge that gap between the present and the future, in a way which maintains your customers' needs to obtain fuel/energy to. As human beings, we are creatures of habit, so a solution that delivers on both the technical and operational requirements, but also has the flexibility to be that "Go To" place to for your vehicle energy may well be the station of the future.

VEHESTA delivers on the following:

- Flexible for future vehicle energy needs, as driven by environmental change.
- Proven design that delivers the requirements for a modern fuelling station.
- The ability to integrate future alternative fuels and technology; cost effectively.
- The alternative solution that maintains asset value through whole life cycle.
- Allows the incorporation of a shop/ kiosk, within one of the pods.

For further information on the VEHESTA or for above ground fuel storage tanks, contact Ledbury Welding Ltd
Tel: 01531 632222
www.lwelt.co.uk

Impact of future fuels on the forecourt: an enforcer's perspective

Forecourts as we know them are changing, and through this period of transition from fossil fuels to new greener alternatives, we will see a myriad approach taking shape as we face new challenges on managing this transition in the safest way possible.

From an enforcer's perspective, it has been (and still is) a learning curve for the Petroleum and Alternative Fuels Group at London Fire Brigade (LFB), as it has been for other regulators. Alternative fuel sources bring a new array of considerations into the decision-making process when designing, installing and operating these technologies, and the impact this places on petroleum storage certificates and site inspections. This article will provide an overview of the main considerations from a fire service perspective.

As a petroleum enforcement authority (PEA), the brigade focuses on the risk of fire and explosion at petrol filling stations, and the impact alternative fuel sources will have in terms of the Petroleum (Consolidation) Regulations 2014 (PCR) and the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR). For site operators, there will be other regulatory factors to consider, such as weights and measures and trading standards components, which fall under other regulatory regimes; some of which may be covered by PEAs where that authority has a multitude of enforcement remits.

This article will focus on the considerations taken by PEAs and therefore it is strongly recommended for all parties with a vested interest in this area to work with the regulatory bodies responsible for other regulatory areas, where applicable.

To date, the main 'alternative fuels' the brigade has looked at in terms of changes to forecourt operations are:

- Biofuels
- Hydrogen
- Electric battery charging technology

The biggest focus has been on hydrogen and charging infrastructures.



E10 PETROL

With the mandated roll out of E10, requiring site operators to have E10 in place as their standard petroleum fuel, the biggest change to date will see new labelling requirements to be met. Consultations on this subject have sought to ensure that the move to E10 is compatible with the existing fuel infrastructure, and so it is anticipated that there will be little change in the day to day running of sites, with E5 still available as the 'super' grade petrol. The main legal framework is The Alternative Fuel Labelling and Greenhouse Gas Emissions (Miscellaneous Amendments) Regulations 2019 with information and guidance available on the gov.uk website to assist site operators and consumers on how this may affect them.

From a PEA perspective, DSEAR will also apply in terms of the safe operation of the site and ensuring the correct equipment is in place. Therefore, site operators will still need to be mindful of the change and make sure any new equipment installed, which comes into contact with fuel, is tested and compatible for use with E10.

HYDROGEN

Hydrogen is still being looked into as an alternative vehicle fuel, introduced either as a standalone re-fuelling system or co-located on forecourts. Systems currently in place, when co-located on

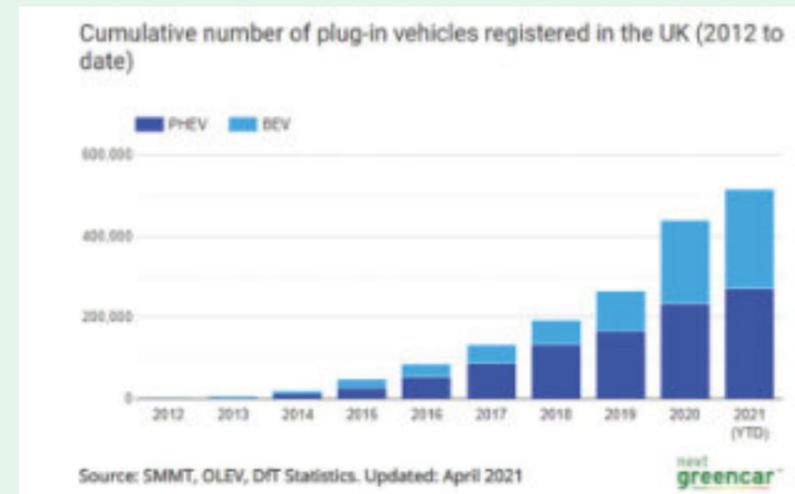
forecourts, typically have provisions to produce and store the hydrogen in facilities in a designated location adjacent to the main forecourt. Developments in this field have also seen dispensing equipment extended onto the forecourt itself, such as at Beaconsfield Services, where the first hydrogen dispenser under the canopy was unveiled. Usually, these facilities store hydrogen under pressure, dispensing typically at either 350 bar for HGV type vehicles and 700 bar, for standard cars.

In terms of legalities, DSEAR comes into play here, and PEA officers would still need to ensure DSEAR is being complied with at premises subject to a petroleum storage certificate, especially application of hazardous zones and the difference between those for hydrogen and those for standard fossil fuels. The Pressure Systems Safety Regulations 2000 also apply in regard to hydrogen storage and dispensing facilities, which is enforced by the HSE.

Due to the complex nature in integrating hydrogen onto forecourts, guidance has been created by the Energy Institute, British Compressed Gases Association and Association for Petroleum and APEA, to supplement the Blue Book and assist in the design and installation of such



Source: <https://www.nextgreencar.com/electric-cars/statistics/>



systems. One aspect enforcers will pay particular attention to is hazardous zoning, and the different properties of hydrogen compared to petrol. As hydrogen is lighter than air, any releases will automatically rise (as opposed to petrol vapour which is heavier and will fall to ground level). For this reason, hazardous zones are slightly horizontal but predominantly vertical in nature, thus attention needs to be paid to items above the dispenser.

For installations below a conventional canopy (or any canopy with electrical lighting) zones are to be applied and any lighting which falls in the path of the hydrogen hazardous zone should be intrinsically safe. Gas group and temperature class requirements for equipment also differ between hydrogen and petrol and careful consideration needs to be given when choosing and locating equipment.

PEAs would also expect the risk and impact of fire, and prevention thereof, to form part of any design for hydrogen equipment when being co-located on a forecourt. By the very nature of how hydrogen is stored, should any leaks occur from an element which is pressurised, there is the possibility for this to self-ignite and form a jet stream. The size and length of that stream is understood to be based upon the size of the source and pressure, with the time span for how long this lasts dependent upon the amount of hydrogen stored combined with the previous two factors. In addition to this, hydrogen will burn with an invisible flame, although subject to conditions it is possible that hazing from the collection of dust and surrounding particles may provide visibility. It is also odourless so it not

possible to smell any releases. It is however highly likely that the release of hydrogen under pressure should give off a loud noise, it just may not be immediately identifiable through visibility. Liaison with the local fire service is recommended to ensure they are aware of the system and can implement the correct procedures should they attend an incident.

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

Currently in the UK we are seeing far more installations of electric vehicle charging equipment on forecourts than hydrogen. Looking at current statistics at Next Greencar (graphic above), there were more than 515,000 plug-in vehicles with approx. 245,000 BEVs and 270,000 PHEVs registered in the UK as of the end of April 2021. Even with the impact of the pandemic, 2020 continued to see considerable growth for plug-in vehicles. All of which continues to increase the demand for charging facilities, driven and supported by national and local initiatives.

On forecourts we are typically seeing rapid chargers being installed, however as technology is evolving, we can see a shift to installing equipment capable of charging vehicles in much shorter time periods through ultra-rapid charging.

The introduction of this equipment has seen the Electricity at Work Regulations become more prominent on forecourts and there has been confusion around where these regulations and DSEAR apply and by who. So if there are issues identified relating to electrical charging equipment on forecourts, what options do regulatory officers have? The truth is it depends on what the issue is and where it is.

- Non-compliance with DSEAR: issues within areas DSEAR applies e.g. equipment encroaches into hazardous zones. PEA can issue notices, prohibit activities etc.
- Non-compliance with Electricity at Work Regulations: Issues with the charging equipment – matters will be dealt with by either the local Environmental Health Officer or the HSE. In some instances, where the PEA officer is also an Environmental Health Officer they may be in a position to enforce both legal frameworks.

When designing or installing charging equipment, The Institution of Engineering and Technology/ APEA guidance document should be followed. Elements to consider include:

- Installations to be sited outside of hazardous zones. This includes the charging equipment and the entirety of the vehicle being charged. The gradient of the land and drainage locations should also be looked at to determine if any spills of petrol could navigate towards electric vehicle charging equipment.
- Most forecourts will be unable to provide rapid or ultra-rapid charging on their current electrical feed and so will need to apply for increased or an additional separate supply. The impact on emergency procedures and emergency stops should also be considered as part of any new or extended supplies put in place.
- Where sub stations are to be installed, regulators will be looking at locations and for earthing surveys to have been carried out to ensure the fuel infrastructure will not be impacted.
- Cables need to be outside of the hazardous zones; below ground and above. It is important sites ensure the equipment is fit for purpose, particularly where any parts are replaced through wear and tear etc.
- In site operational terms, training is really important. Staff need to understand this new technology, their responsibilities and what is required of them in an emergency. Procedures for dealing with emergencies need to be determined and effectively communicated.

Continued overleaf



Continued from p5

Just to recap; all of the alternative fuel sources will need attention to ensure their implementation is done in the safest way possible, whether it will be incorporated into the existing fuel infrastructure, such as bio fuels, or run separately but be located adjacent the forecourt. PEAs will be looking at the points raised above, but it is also important to remember:

- 1) Risk assessment: all changes need to be reflected in the site DSEAR risk assessment. This applies whether the equipment is installed on the forecourt, on an area leased to a third party or in the vicinity of the site.
- 2) Co-operation and co-ordination: a co-ordinated approach to safety during the installation process and when operational, especially for emergency protocols, is paramount.
- 3) Be aware of the hazardous zones, not just those which are constant but those which are transient: such as tanker deliveries and any changes to these if part of the fuelling infrastructure is relocated to facilitate charging equipment.
- 4) Staff training and awareness: staff members with responsibilities for the safe running of the forecourt, including dealing with accidents, incidents and emergencies are to be

provided with the necessary knowledge and understanding to carry out their role. Their actions could make the difference in how big an incident becomes or how well it is contained.

REGULATION OF STORAGE AND IMPACT OF NEW FUELS

Implementation of biofuels, hydrogen systems and electric vehicle charging equipment are not considered to be prescribed material changes under the PCR and therefore there isn't a requirement to provide notification to your local PEA. However, particularly for hydrogen and charging equipment, it is always in the interests of industry and enforcers to liaise at the earliest opportunity to discuss the proposals and address any issues at the design stage. If issues are found during an inspection once equipment is in place, and enforcement action is taken under DSEAR (or other applicable frameworks for Trading Standards officers etc.) it will likely cost the site operator more money and time as they will need to correct the arrangements.

Consideration does need to be taken if changes are made to the fuel infrastructure to accommodate new equipment. For example, if a vent stack needs to be relocated to a new location

to make way for charging equipment, this part of the works would constitute a prescribed material change and would be notifiable to the PEA within the timescales. Where new drawings are issued (or amended) these details will need to be recorded on the storage certificate and so a new certificate is likely to be issued following completion of the works.

To round up, there are two messages to stress. Firstly, to navigate this transitional process, especially where technology is advancing so quickly, industry and regulators need to continue to work together, share information and make sure the safety of customers, staff members, contractors and anyone else involved in the forecourt operation is maintained.

Secondly, it is important to maintain the existing infrastructure. Things are changing and it is becoming commonplace to hear debates on how the forecourt will look in five to ten years and where to prioritise investment. But please bear in mind that legal duties are still there to be complied with and it is more important than ever that investment in new technologies does not stop investment in the current infrastructure, to ensure it is safe to use.

Hellonext

Hellonext is the EV charging brand of Petrotec Group. With a wide range of models available, Hellonext can provide both AC and DC charging solutions that can adapt to a multitude of environments.

Hellonext EV solutions cover every sector of the EV market including: fuel stations, residential, corporate workplace, local authority, car, van & bus fleet, retail park and car park charging. There are numerous models to fit any customer requirement from AC to DC charging and charging power of 7kw to 180kw.

AC Charging models range from 7kw to 44 kw and can be wall-mounted or based on a pedestal for a more practical and compact installation.

DC Charging models range from 30kw to 180kw and provide wall, movable and free-standing options. The unique 30kw movable option can be easily used in a car cleaning business or used for mobile top up charging.

FUEL STATION INTEGRATION

Hellonext free-standing fast chargers can be perfectly integrated into a fuel station environment or dedicated EV charging hub site. The company provides full turnkey solutions from electrical design, planning, grid connection, installation supporting all projects phases required to build an EV Charging facility.

All models are built with superior quality and safety standards and backed by our industry leading national maintenance team for fast turnaround of on-site servicing.



EV CHARGING FOR SERVICE STATIONS

With the growth of forecourt EV installation, Hellonext offer Ultra-Fast DC charging for shorter customer charging times. The Hellonext H2 180 Model is the highest-powered solution, with simultaneous charging outputs able to ensure the maximum power for each customer. All models are easy to install and maintain and are fully customisable to the retailer's brand.

Meet Hellonext EV Expert Marie Ward

Marie is Business Development Manager for EV & Smart Mobility within the UK & Ireland, with over 10 years' experience in the EV & Power Grid sectors.

Please contact us today on **0131 4405810** or UK.sales@petroassist.uk for more information on how we can assist with your EV requirements.



Gilbarco Veeder-Root expands E-mobility platform with launch of EVerse

New software offering provides end-to-end solution for managing EV charging networks

Gilbarco Veeder-Root (GVR) recently announced it is expanding its E-mobility platform with the European launch of EVerse, a new software offering that provides retailers and other businesses an end-to-end solution for hosting and managing electric vehicle charging networks.

EVerse is designed to provide a customisable solution for customers wanting to offer electric vehicle charging services to consumers and private fleets. The platform provides GVR's customers with the ability to create their own branded electric vehicle charging network, tailored to their specific business and market needs.



EVerse provides the functionality needed to run an EV charging network, including the ability to set pricing structures with multiple payment methods, and establish contracts with electric vehicle owners. EVerse also provides a custom-branded app, giving consumers the ability to locate and pay for charging.

ACCELERATING EVS

As the number of EVs on the road continues to accelerate, EVerse provides a scalable and flexible solution that grows with demand and is compatible with GVR's full portfolio of software and hardware products. Additionally, EVerse is supported by GVR's service network

with usage analytics, remote diagnostics, and in-field support.

Aaron Saak, President of Gilbarco Veeder-Root;

"As GVR continues to expand its E-mobility platform, we are excited to announce this industry-first technology that provides an end-to-end solution enabling our customers to offer their own privately-branded EV charging network."

EVerse is the latest development in GVR's expanding E-mobility portfolio of solutions that include AC and DC chargers, network management software, project installation, and aftermarket services.

ABOUT GILBARCO VEEDER-ROOT

For over 150 years, GVR has been keeping the world moving, earning the trust of its customers by providing long-term partnership, uncompromising support, and proven reliability. It specialises in creating integrated, end-to-end, vehicle fuelling and charging infrastructure solutions to improve the consumer experience and increase productivity for operators.

For more information and sale enquiries please visit www.gilbarco.com/eu

