

The Green Pages

NEW FUELS GUIDE



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The UK's first multi-fuel, open access, low/zero-carbon refuelling station

Boris Johnson's ten-point plan for a green industrial revolution helped inspire Birmingham's oldest manufacturing business, Webster and Horsfall, to transform an industrial site in the east of the city. Over the past decade, the family-owned business has been making a transition from metal bashing into a modern, low-carbon energy park.



Offering hydrogen, compressed natural gas, biodiesel and EV charging options, this unmanned facility is available 24/7 for refuelling; with integrated pay at pump options that accept credit, debit and fuel card payments.

The station has benefited from £10 million investment so far from a combination of public and private funding. The facility will support Birmingham in its commitment to reduce the levels of air pollution across the city and currently refuels 20 hydrogen buses

for Birmingham City Council. The TEP refuelling station is part of the Birmingham Transport Plan, supporting the introduction and supply of cleaner fuels to improve air quality across the city.

INDUSTRIAL HERITAGE

Webster and Horsfall was founded in 1720, making armoured wire for the first successful transatlantic telegraph cable in 1866 and laterly, spring wire for aeroplanes and cars. But from the

1960s, the business spiralled into a decline, like much industry across Birmingham. The once-thriving, industrial area of Tyseley faced social and economic challenges.

In 2010 they began consolidating the business into a smaller footprint, focusing on producing high-quality, low-volume wire. This enabled its old assets to be released for redevelopment on a rebranded Tyseley Energy Park (TEP).



Continued overleaf



Continued from p1

PHASE 1 10MW WASTE WOOD BIOMASS POWER PLANT

In 2013, TEP secured £50m investment and built a biomass power station that produces 10.4MW of green power from waste wood. The plant has diverted 72,000 tonnes of waste wood from landfill, generating power equivalent to the demand of 17,000 local homes. This electricity is supplied to all energy park tenants, enabling the company to reduce the unit prices of its manufacturing operation and make it more competitive while meeting its sustainability goals.

TEP director of property David Horsfall joined Birmingham City Council's green commission in 2013.

With a sustainability officer, he visited the Swedish city of Vaxjo, which had cut its fossil fuel emissions by 41% between 1993 and 2011.

David then helped the council create the Energy Capital project, funded by the EU climate knowledge innovation and community programme, which enabled serious research planning for the site.

TEP also formed a group bringing together influential stakeholders from the public sector, industry, business and academia, which meets quarterly to share ideas and develop projects and systems thinking that can be applied at the city scale.

The company was ahead of the curve in seeing its unused industrial land as a possible game-changer. It realised the future lies in becoming a renewable energy provider and developer of clean energy technologies and companies.

PHASE 2 THE UK'S FIRST LOW AND ZERO CARBON REFUELLING STATION

Taking advantage of its strategic location between the city centre and the airport, TEP developed a refuelling station offering a range of low and zero-carbon fuels (hydrogen, biodiesel, electric charging, bio-compressed natural gas) to enable trucks, vans and cars to comply with clean air zone requirements. An electric vehicle leasing company is based here, plus it refuels a fleet of 20 hydrogen buses.

PHASE 3 ENERGY FROM WASTE

As part of a relentless drive to make industry in the city greener, the next generation of waste reprocessing technologies will be developed on phase three, using clean energy linked to city-wide grid infrastructure. Power generated within the site will be from renewable sources including the biomass plant on phase one and the energy from waste plant planned for phase three. This clean energy will be used to support the growth of the Webster and Horsfall Group's manufacturing operation, helping to achieve its' sustainability goals and reduce the unit price of products manufactured.

PHASE 4 BIRMINGHAM ENERGY INNOVATION CENTRE

TEP provides the university a 1ha plot on the site at a peppercorn rent for the Birmingham Energy Innovation Centre (BEIC). The university has invested £9m

in new equipment and laboratories as well as construction. Next door will be an energy incubation hub. Horsfall says:

'We have been fortunate to secure £850,000 from the local enterprise partnership, which we are using to refurbish around 1,115m2 of office, laboratory and industrial space. This will provide facilities for green tech start-ups that want to co-locate with like-minded businesses.'

The energy institute will use the hub to run two SME engagement programmes, with 14 energy knowledge exchange fellows from its research centres providing expert technology support. There has already been lots of interest



from a range of small companies, as well as university spin-outs keen on the potential to combine good-quality facilities with on-hand expert advice.

Horsfall continues:

'We'll have people with knowledge across the whole field – energy, waste, transport, recycling, labs and industrial space. Our goal is to support businesses from the initial concept through to full commercialisation across TEP and the wider area, to innovate, incubate and accommodate.'

R&D

TEP has now moved onto supporting research and development in clean energy innovation, working with companies to commercialise them. Energy Institute staff will focus on six different energy components within the Innovation Centre. The majority of SMEs attracted to the Innovation Hub will link to one of these components and form working relations with relevant staff and researchers. The park as a whole will look to develop activities related to low carbon energy, transport and heat, waste and recycling, including any further capital

FUTURE ROAD MAP

There is still plenty of space on the existing site for further developments.

The university has submitted a substantial bid to build a national centre for decarbonised heat generation. The district heating potential of the site and surrounding industrial and housing estates and retail centres is also being assessed, as is scope for a decentralised energy system and smart grid with a 1.5MW battery storage facility. Horsfall and his colleagues envisage a wide range of possibilities, on which they have engaged with the local community.

TEP is a collaboration of passionate technology innovators, academics, scientists, project developers and proactive public sector bodies. Our intent is simple; challenge the norm and innovate to find solutions that will underpin the transition to a low or zero carbon future. In 2018 a TEP co-creation group was identified and assembled, bringing together key stakeholders from the public sector, industry, business and academia. The group meets on a quarterly basis to share ideas and develop projects and systems thinking that can be applied at the city scale



HYDROGEN



Hydrogen is produced on site using a 3MW ITM Power Proton Exchange Membrane (PEM) electrolyser, which splits water into hydrogen and oxygen. The hydrogen generated is very high purity, meeting all requirements for Fuel Cell Electric Vehicles (FCEVs). The hydrogen is dispensed at 700bar and 350bar ensuring a very quick and efficient refuel that can provide a 300-350 mile range.

When hydrogen is used in a fuel cell, it returns back to water vapour, meaning hydrogen as a fuel is a very clean fuel option.

BIOMETHANE OR BIO-COMPRESSED NATURAL GAS FROM CNG FUELS

Bio-CNG can be used by HGVs & vans as a low-emission and low-cost alternative to diesel. It helps reduce harmful particulate emissions from engines and the CNG vehicles themselves also run approx. 50% quieter than a comparable diesel vehicle.

The CNG refuelling station operates by connecting to the national gas pipeline, compressing the gas by using on-site compressors and then dispensing it into HGV's & vans. By displacing diesel with Bio-CNG an 84% reduction in CO2 eq. emissions compared with a diesel truck.

The refuelling experience is incredibly user friendly with an automatic fill once refuelling nozzle connected to the vehicle.

For more information please see <http://www.cngservices.co.uk/>

SHELL GTL

The Certas Energy state-of-the-art bunker provides a convenient place for HGV operators to refuel on diesel, gas oil and Adblue via eight high-speed pumps.

The facility is the second refuelling bunker in the country to dispense Shell GTL fuel, offering a cleaner burning, drop-in alternative to diesel for on-road and off-road applications. The use of Shell GTL fuel immediately lowers emissions of harmful pollutants such as nitrogen oxides (NOx) and particulate matter (PM). The fuel also delivers additional performance benefits for vehicles operating in built-up urban areas, such as reducing fuel odours and engine noise levels. Shell GTL fuel will also power the site's truck wash facility for large vehicles.

For further information on the fuel options available from Certas Energy please contact fuelcards@certasenergy.co.uk



ELECTRIC CHARGING

Improved vehicle design, battery performance and falling prices, is enabling widespread electric vehicle market penetration. This combined with policy support and restrictions on other vehicles to improve air quality, such as Birmingham's Clean Air Zone will increase this momentum even further.

Tyseley Energy Park will offer a range of electric charging facilities including 150kW electric vehicle rapid chargers. Vehicle and fleet owners will be offered a lower cost electric charging unit price if they commit to a defined dwell time at the charging points.

For further information on electric charging available please contact enquiries@tyseleyenergy.co.uk

New 'GRIDSERVE Partner Network'

To support and accelerate the shift to net zero carbon transport worldwide



GRIDSERVE Partner Network will provide the technology, expertise and support to partners worldwide, and accelerate the global rollout of net zero EV charging infrastructure

The GRIDSERVE Partner Network will open up the company's 'Sun-To-Wheel Ecosystem' (comprising hybrid solar & battery farms, electric vehicle (EV) charging infrastructure, and electric vehicle solutions) to like-minded partners across the world, interested in accelerating net zero transport initiatives.

The aim is to speed up the global rollout of world-class EV charging infrastructure, powered by net zero carbon sustainable energy, in the shortest possible timeframes.

Toddington Harper, Founder and CEO of GRIDSERVE said;

"GRIDSERVE's mission is to help deliver sustainable energy on the scale needed to move the needle on climate change. In the UK we are delivering this vision at an extraordinary pace, building a 'Sun-to-

Wheel' ecosystem of hybrid solar & battery farms, high-power EV chargers, and electric vehicle leasing solutions.

"This is supported by customer experience technology that is decarbonising the UK's transport system; giving drivers everywhere the confidence to go electric, sooner than anyone could have imagined only a few years ago.

"However, to be serious about addressing the climate crisis, we need to think and act on a global scale. That's why, at COP26, we launched the GRIDSERVE Partner Network; to share our knowledge, expertise and experience from delivering and operating the leading charging network in the UK. We will help like-minded partners to also rapidly deliver the best possible EV charging networks at scale across the world."

IN JUST 5 YEARS

In just five years since being established, GRIDSERVE has delivered the UK's most comprehensive EV charging network,

recently being awarded the prestigious crown of Chargepoint Network of the Year at the EVIES. The company also builds and operates hybrid solar & battery farms, which generate close to 100 million kWh's of zero carbon energy each year. Also providing net zero carbon energy to GRIDSERVE's charging network, which serves 85% of the UK's motorway network as well as towns and cities across the UK.

GRIDSERVE opened the world's first Electric Forecourt® in December 2020 in Braintree and plans to open several more in the next 12 months, starting with Norwich, Gatwick, Gateshead, and Uckfield. Over 100 Electric Forecourts® are planned to be built as part of a £1bn+ investment programme. More than 50 additional Electric Hubs, each featuring 6-12x 350kW chargers, are also being built across the UK in a separate £100m+ rollout, with the first site opened at Rugby services and several additional sites now also under construction.



MASSIVE INVESTMENT

Supported by Hitachi Capital UK plc. and TPG's The Rise Fund, GRIDSERVE has also invested millions of pounds into research and development to deliver and operate net zero electric charging infrastructure that is functional, reliable and easy to use. It has developed relationships with some of the world's leading technology providers, including charging hardware providers ABB and Tritium, and amassed huge experience in planning, development, procurement, construction, operation, maintenance and management of large-scale electric vehicle charging hubs.

Despite considerable growth and success in the UK, a truly global rollout

of EV infrastructure is the only way to decarbonise transport in the timeframes required to limit the worst effects of climate change. GRIDSERVE is therefore sharing its many years of experience with partners globally to accelerate growth.

GRIDSERVE is already in discussions with international petrol forecourt operators, landowners and investors to deploy its infrastructure, and is using the platform created by COP26 to reach out to others to raise awareness about the GRIDSERVE Partner Network and to commence discussions.

In addition to GRIDSERVE leasing land and investing its own capital in building and operating its own EV charging infrastructure, the Partner Network provides the opportunity for partners to invest themselves, or co-invest alongside GRIDSERVE, to establish their own EV charging networks in partnership with GRIDSERVE, providing the maximum flexibility without having to build an entire tech-enabled EV charging business.

Toddington Harper added:

"Everything we have achieved in the UK has required us to overcome massive complexities and challenges;



experience we've spent years developing. It's now time to share those learnings with partners across the world and accelerate the shift to net zero transport. Our Partner Network allows us to do just that, enabling others to capitalise on our market leading EV charging solutions within their own networks and geographies."

Robert Gordon, CEO of Hitachi Capital (UK) PLC said:

"Our partnership with GRIDSERVE has been a total game-changer for electric mobility in the UK. Not only are we providing electric vehicles at some of the most competitive rates on the market, but we are at the same time developing a network of rapid, reliable and renewably powered EV charging infrastructure that will fast-track the electric vehicle revolution.

"We're incredibly excited to support GRIDSERVE in its next phase of growth as it launches the Partner Network to export its unique expertise across the world and help like-minded partners everywhere to deliver sustainable energy and move the needle on climate change."

GRIDSERVE was promoted by the UK Government as one of the world's foremost companies leading the fight against climate change on a video played at the COP26 World Leaders Summit.

COP 26: Transport

Following last year's Cop26 conference, new HGV's sold in the UK will need to have zero emissions by 2040. The Government also announced the new design for the UK's network of electric charging points.

The Government hopes the vehicle chargers, designed with the Royal College of Art and PA Consulting, will become as recognisable as the red post box or London's black cabs.

The plans came in a series of announcements on low carbon transport made on 'transport day' at Cop26.

The Department for Transport (DfT) also said new trucks of 26 tonnes and under must be net zero by 2035, which comes on top of its pre-existing pledge to phase out the sale of new petrol and diesel cars by 2030. But exemptions to the phase out dates will be considered for specialist vehicles, such as those for the military or emergency services, and for small manufacturers who need more time to adapt.

Logistics UK, which represents logistics businesses, welcomed the announcement as providing "much-needed certainty" for the industry, but warned the deadlines were achievable only with Government support.

Transport Secretary Grant Shapps said:

"The transition to zero emission transport has reached a tipping point. To support the transition to EVs, it's integral that we have the infrastructure to support it. My vision is for the UK to have one of the



best EV infrastructure networks in the world, with excellent British design at its heart."

Transport day saw the launch of a working group of ministers from 24 countries and industry leaders – including representatives of GM, Ford, Mercedes, and Volvo commit to 100% zero emission new car and van sales by 2040.

ZERO EMISSION VEHICLE TRANSITION COUNCIL

It also saw the launch of the Zero Emission Vehicle Transition Council (ZEVTC), a network of 30 countries agreeing to work together to make zero emissions vehicles the new normal.

Other announcements include 220 million dollars in funding coordinated by the World Bank to support the decarbonisation of road transport in the global south.

Nineteen countries unveiled plans for 'green shipping corridors'; ports equipped with the necessary

infrastructure to facilitate the shift to zero emissions vessels.

And 14 states, collectively making up for more than 40% of global aviation emissions, have put their names to a commitment to a new decarbonisation target under a new International Aviation Climate Ambition Coalition, the DfT said.

GUILT FREE TRAVEL

Mr Shapps said:

"I believe, as Transport Secretary, that we can get to guilt-free travel in this country. There's been an idea that's been allowed to percolate that somehow if we're going to meet all these different carbon commitments we are going to need to get to the point where we all stay home, that travel is somehow something which attracts great guilt.

"It gets worse the further you travel, so flying is, of course, the ultimate evil, as it's presented, and that's just not what we believe as the British Government. Any changes to the way we live our lives should not be the inability to go and visit you friends and family and do business."

But the UK's biggest bus and coach provider warned the UK will not achieve the shift to net zero emissions through technology alone, and urged the Government to incentivise the use of public transport.

Martin Griffiths, chief executive of Stagecoach, said;

"We need leaders to be honest with citizens that we cannot go on as we are now by simply replacing jams of diesel and petrol cars with jams of electric cars. Congestion is costing our economy billions of pounds each year, and that cannot be reduced by technology alone."

He added;

"Stagecoach is investing hundreds of millions of pounds in new clean electric buses and making major changes to reduce carbon, but we need the government's help in encouraging people to switch from cars to more sustainable public transport, cycling and walking."

And Michelle Gardner, head of public policy at Logistics UK, said;

"These dates will only be attainable if the Government provides the right support: our members need to see a nationwide network of recharging and refuelling infrastructure put in place, effective and affordable vehicles made readily



available for all, and fairer charging arrangements for the necessary power upgrades to commercial premises.

"We are disappointed that low carbon fuelled vehicles will not be available for sale after 2040. These fuels can act as interim solutions while the technology for zero emission HGVs matures; many of our members are keen to utilise these low-carbon alternatives."



UN CLIMATE CHANGE CONFERENCE UK 2021
IN PARTNERSHIP WITH ITALY

Electric vehicle charging installations at filling stations

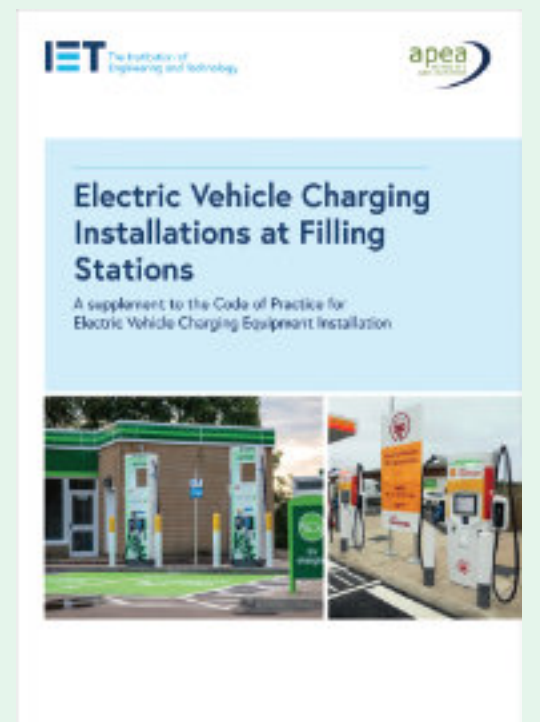
A supplement to the code of practice for electric vehicle charging installation

The Institute of Engineering and Technology (IET) has recently published the 4th Edition of the code of practice for the installation of electric vehicle chargers. As part of the rapid growth and development of the electric vehicle charging infrastructure, filling stations are seen as an obvious place for charging facilities.

This presented unique challenges, due to the presence of flammable atmospheres, with customers requiring different fuelling options at the same site, and it is recognised that difficult safety and logistical issues are linked to such installations.

When the 4th Edition of the Code of Practice for Electric Vehicle Charging Equipment Installation was published, significant technical discussions were still underway about this area to help finalise and clarify the safety issues that needed to be addressed. The work behind these meetings was led by APEA, who represent the major stakeholders in this sector. APEA and the IET are therefore now issuing this joint publication to help provide important guidance in this area.

This guidance can be obtained from the APEA or IET and is costed at £50 for a non-member and £32.50 for an APEA or IET member at www.apea.org.uk/pages/publications/a-pea-publications



Green hydrogen production

In the Port of Shoreham, West Sussex

H2 Green, a wholly owned hydrogen subsidiary of Getech, has signed a collaboration agreement with Shoreham Port. This Agreement grants H2 Green exclusive rights for the development of all port-based hydrogen, ammonia, and new onshore wind and solar power generation capacity at the Port of Shoreham, West Sussex.

They have been granted a two-year legally binding exclusive right to develop a renewable energy hub at the Port of Shoreham, West Sussex.

The Hub will initially focus on the provision of green hydrogen and renewable electricity to the port's fleet of 39 heavy forklift trucks and 12 HGV's.

Green Hydrogen will be sourced by a scalable green hydrogen production, storage and refuelling facility; optimised by its integration with new solar and wind electricity generation capacity.

The Hub will then be expanded to enable the decarbonisation of more than 800 HGV's that enter Shoreham Port daily, and to provide fuel to port and coastal marine vessels.

To deliver a third phase of hydrogen supply growth, H2 Green plans an ammonia importation facility. Ammonia is a medium for international hydrogen transport that can connect Shoreham to large-scale, low-cost, green energy projects worldwide.

H2 Green anticipate that development of the Hub will remove 45,000 tonnes of CO2 emissions each year from the port's

fleet of trucks and HGVs and be a catalyst for the wider region's transport decarbonisation.

In addition to the port's fuel and energy demand, industries operating in and adjacent to the port, including gas-fired power generation, timber & steel handling and water treatment projects, are also potential customers for the Hub's hydrogen, renewable power, and the by-products of fuel generation, such as oxygen and heat.

H2 Green and Shoreham Port will now complete detailed planning and scheduling for each element of the renewable energy hub. Shoreham Port has committed in principle to convert all suitable and commercially viable port vehicles to utilise both hydrogen and renewable energy produced by the Hub. To service additional demand from regional trucking, marine and local industrial customers, H2 Green estimates the hydrogen facility will, at full capacity exceed c.8 tonnes per day.

Jonathan Copus, CEO of Getech plc said:

"H2 Green has agreed with Shoreham Port a bold vision that will place the port's operations at the centre of both national and international decarbonisation innovation.

"By bringing together the building blocks of green hydrogen production, renewable power investment, ammonia import, and mobilising a wide range of stakeholders, H2 Green will provide the most flexible, reliable, and cost-effective green energy solution for the port, its customers and the wider region. It also links Shoreham



to international marine decarbonisation initiatives.

"H2Green's Shoreham green energy development plan showcases a scalable path for the decarbonisation of large-volume customers in marine and land transport settings. Getech intends to replicate this model across the UK and internationally."

Tom Willis, CEO of the Shoreham Port said:

"We are delighted to have selected H2 Green to develop a green energy hub at Shoreham Port. The project has the potential to make a significant contribution to the net zero ambitions across South East England through the local generation of hydrogen from renewable energy.

"The hydrogen production process is quiet, odourless and the clean fuel produced will reduce emissions across the region as transport operators convert large fleets to run on it. As a community organisation we intend to work with all our stakeholders to make this new stage of Shoreham Port's development a success."

