



Electric Vehicles (EV)

The Charge project is continuing to make progress with stakeholders through the innovative Transport and Network interactive map, due to launch on the SP Energy Networks website in March 2021. The aim of this map is to help customers and investors find the optimal location to create public charging infrastructure.

Through the Transport Model generated by our partner PTV they will be able to ascertain the amount and type of charge points required for every given location can predict where and when EV charging demand will occur in the region, helping investors to identify the best locations to install charge points as demand for EVs grows. Following the government's decision to end the sale of petrol/diesel cars by 2040, and by 2032 in Scotland, we are preparing for the future demand on our network. We have started to implement EV charging points across the country and will begin to include Rapid chargers that are 43kW or above and can charge an EV to 80% in roughly 30 minutes.

Dr Laurence Chittock, Project Lead, PTV Group, said: "This model is unique to the UK's rapidly expanding EV market. By anticipating how EV uptake might progress and understanding the travel patterns of all drivers across the project area – not just the early adopters – the model can show where infrastructure is most needed."

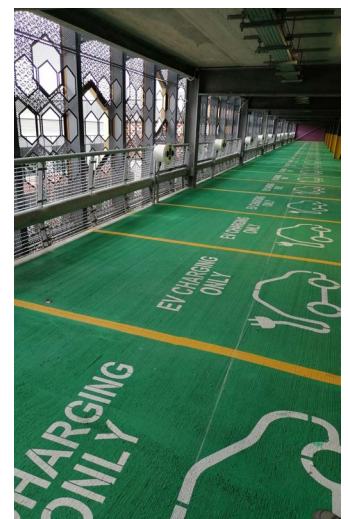
Along with our partner Smarter Grid Solutions we are continuing to develop a suite of Smart Charging Connection trials for 2021. These trials will use innovative technology and commercial arrangements to facilitate flexible connections for public charging infrastructure. We are still able to accommodate additional sites into these trials, if any stakeholders are interested please contact the Charge Team to see how you can get involved.

Throughout lockdown we have continued to develop our self-service tool for EV connections called 'ConnectMore'. SP Energy Networks looks forwards to involving our stakeholders in shaping the solution further ahead of its beta release in late 2021.

We expect this to be a major enhancement on the connection service we provide our customers in SPM and ultimately SPD.

43kW

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Heat

Across the UK, heating represents around 42% of the total non-transport energy demand, with only 7.7% of all heat energy coming from renewable energy sources in 2018.

This presents challenges for SP Energy Networks as we look to move forward a net zero carbon future. The decarbonisation of heat is a key concern for SP Energy Networks, and we are using innovative technology alongside our partners such as Taylor Wimpey Homes Heat Partnership to introduce heat pumps into new build homes. By 2030, heat pump uptake at both the domestic and grid scales is expected become much more widespread as developers move to comply with the latest government regulations on new housing stock and move from gas to low-carbon alternatives.

To support the move from gas heating to low carbon alternatives, it is important to understand how a heat pump operates. At its most basic, a heat pump operates like a refrigerator in reverse, where instead of moving the heat outside to create a cool space inside, heat is absorbed on the outside through the evaporator and moved indoors where it is released on the condenser.

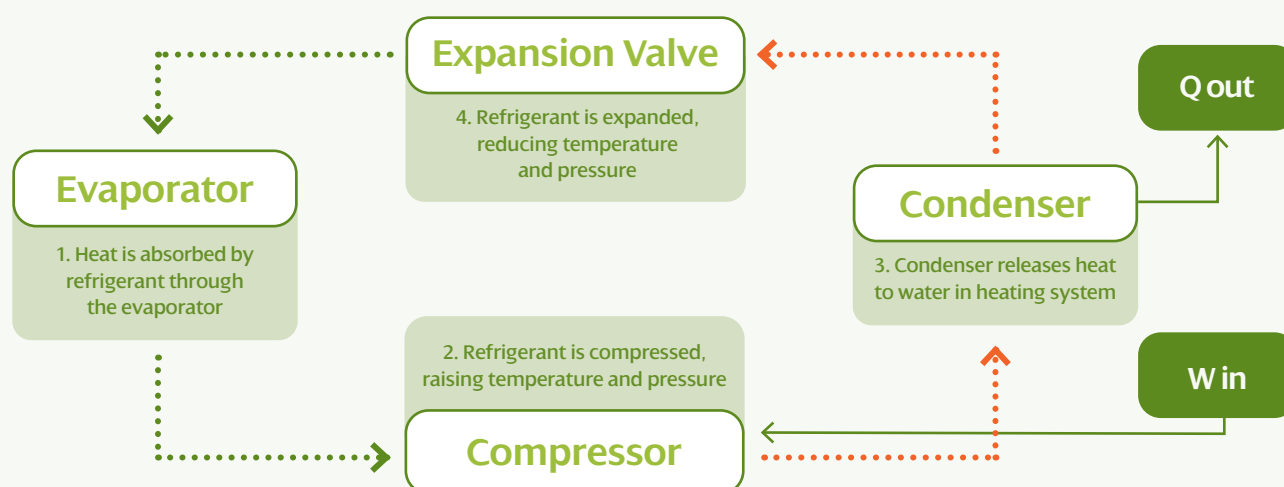
"There are 3 basic types of heat pump depending on the heat source at the evaporator, and these are air, water and ground source. Air-source and water-source use fans or pumps to draw large volumes of air or water over the evaporator, absorbing heat through forced convection while Ground-source operate using bore-holes into the ground to harvest thermal energy from the soil. At SP Energy Networks, our current focus is air source heat pump heating.

"Where the heat pump excels over conventional boilers is in its efficiency, which for heat pumps is called the Coefficient of System Performance. This can be far greater in heat pumps, particularly those which are water-sourced, as the useful energy released at the condenser is to some degree independent of the energy expended at the compressor, meaning it is possible to achieve efficiencies greater than 100%. This is the key advantage of heat pumps over conventional electric boilers, as some heat pumps can achieve as much as 4 or 5 times the input energy under the right conditions.

"Each type of heat pump has its own advantages and disadvantages with daily fluctuations in temperature affecting efficiency most in air, while ground source heat pumps have high land-use and installation costs due to their bore-holes. Water source heat pumps benefit from high and stable efficiencies however require access to large bodies of water which are not always available."

Rory Morgan, Graduate Engineer Trainee, Innovation Team, SP Energy Networks

Heat pump vapour compression cycle



Innovation

Saughton Park in Edinburgh was awarded nearly £500,000 from our £20 million Green Economy Fund, which was established in 2018 to support projects which will help the Scottish government reach their ambitious green target.

Our financial donation will support the installation of a micro-hydro scheme, a low carbon energy solution that is the first of its kind in the country.

The unique micro-hydro technology will be used on the scenic Water of Leith and will generate electricity to support the running of two ground source heat pumps, which will then provide electricity to heat the park's glasshouse, buildings and café. This will save over £18,000 in energy costs which will be reinvested into the local community in the form of new educational and social facilities.

On top of the direct benefits to the local community, this project is estimated to prevent more than 90 tonnes of carbon dioxide being pumped into the atmosphere each year – the equivalent of fully charging 11.5 million smartphones. This decarbonisation of energy aligns with Scotland's mission to become the UK's first net zero emissions country by 2045.

£18,000

saved in energy costs

1st UK

zero emissions county by 2045





DSO/Flexibility

We are proud to announce our exciting collaboration with Western Power Distribution, Scottish and Southern Electricity Networks and Northern Powergrid on 'Flexible Power'. This initiative is designed to deliver the procurement and operation of flexibility services from businesses with the potential to shift demand away from peak periods or the ability to switch their consumption to on-site generation. This joint venture provides flexibility providers with a direct path to participate in flexibility on multiple networks. Flexibility is important as it allows businesses to adapt with their fluctuating energy consumption and to be smarter with their energy, which supports SP Energy Network's aim to create a better future, quicker for our customers and consumers.

Flexible Power is a direct response to customer feedback calling for a simpler way to engage in the distribution flexibility services market. The collaboration will help streamline the process for flexibility providers and make interfacing with multiple DNOs simpler and easier by avoiding the complexities and resource intensity associated with liaising with numerous network operators.

Through the dedicated Flexible Power website, flexible providers will be able to view flexibility locations, requirement data, procurement notices and documentation published from all four DNOs at once. Contracted providers will be able to declare their flexible assets' availability, receive dispatch signals and view performance and settlement reports through the new Flexible Power Portal.

Bringing all the important information from the 4 collaborating DNO's under one roof will help encourage more flexibility providers nationwide, which will assist us in race to UK Net Zero Carbon targets by 2050.

Graham Campbell, Head of DSO at SP Energy Networks said: "Our electricity networks are fundamental to helping the UK, Scottish and Welsh Governments achieve their ambitious Net Zero carbon targets and stimulating the green economic recovery in the UK. Smart and flexible networks are necessary to ensure our customers continue to receive a secure and reliable power supply whilst being able to take full advantage of low carbon technologies and the flexibility they provide.

"The flexibility market across the UK continues to develop at pace and is pivotal to the cleaner, greener future. We know that in any emerging market, it can be tough to navigate through the challenges, so that's why I'm delighted to join forces with the other UK DNOs to launch Flexible Power to help streamline the process for providers."

"This new 'one stop shop' will lower the barriers for market participants and help more providers take part by giving them easy access to consistent information on DNO flexibility needs across the UK from one platform."



Policy Guidance

We continue to draft an update to our ESDD-01-005 Distributed Generation Connection Requirements document which we will be publishing later this year. Our Design & Standards Engineers are currently including all comments received to date from customers regarding this document, to ensure the next issue will accommodate all previous enquiries and clarifications to this document.

We would like to encourage all Distributed Generation customers to review this document and send any queries to gettingconnectedupdates@spenergynetworks.co.uk so that we can include all queries prior to publication in the next few months.