



# Innovating for Net Zero



SCOTTISHPOWER

**ScottishPower is the first integrated energy company in the UK to generate 100% green electricity. Our focus is on wind energy, smart grids and driving the change to a cleaner, electric future and we're investing over £8.5m every working day to make this happen.**

ScottishPower is part of the Iberdrola Group, leaders in sustainable innovation. Innovation is at the heart of our drive for secure, affordable clean energy for the UK.

We are innovating, testing new ideas and collaborating with partners, competitors and experts to find new approaches. Investing locally and thinking globally we have spent more than £55million in 2021 on innovation, leading the way towards a Net Zero future.

## ScottishPower Innovation Team

Our innovation team drives ScottishPower's Innovation strategy, coordinating and collaborating with leaders within our group in the UK and internationally.

We act as a first point of contact for start-up and scale-up businesses who can contribute to decarbonisation and Net Zero. We manage our key innovation collaborations with academics and other partners, including our Technology & Innovation Centre (TIC) partnership with Strathclyde University and SSE. The outputs of this programme have been independently assessed as having the potential to deliver a net cumulative benefit of **£200m**, from a total budget of just **£3.72m**.



## Iberdrola

Iberdrola is the leading private utility in the world by investment in R&D. Innovation is a strategic pillar for the Iberdrola group, underpinning the company's sustainability, efficiency and competitiveness.

For 15 years, Iberdrola has been investing in the cleantech companies of the future through our international start-up program, PERSEO. More than **€100 million** has been invested in start-up businesses that develop innovative technologies and business models to improve the sustainability of the energy sector, developing an innovative ecosystem of entrepreneurial companies focused on our Net Zero future.



# Key Innovation Projects

## HALO

HALO is an urban regeneration project based in Kilmarnock, focused on revitalising cities and towns, based on a foundation of enterprise and innovation. As project partner, ScottishPower has supported HALO in successfully bidding for up to £1.28M funding from the Scottish Government's Low Carbon Infrastructure Transition Programme for an electric heat solution for 140 low carbon new homes.

### The project showcases:

- In-home ground source heat pumps, fed by a shared ground array;
- Air source heat pumps;
- Smart Controls, Maintenance and Energy Supply; and
- Smart domestic white goods



Our partners at the University of Strathclyde will collect and disseminate the project data to help optimise the project and inform the design of further similar schemes.



## Machine Learning

Through the use of machine learning tools, the IT team have been developing solutions to improve the efficiency of call centre resources.

A call centre forecasting solution was trialled to predict customer call volumes more accurately. The machine learning solution showed a significant improvement on previous volume predictions which has the potential to create significant economic value.

Another project, using a combination of machine learning and natural language processing, was undertaken to identify when customer complaints were most likely to be escalated. The initial predictions from the model demonstrated an accuracy of 75 to 90%, driving efficiencies and real customer benefits.



## Key Innovation Projects

### Whitelee Green Hydrogen Facility

Our new Hydrogen business is developing a green hydrogen production facility at Whitelee Windfarm, with 20MW of hydrogen production capacity.

The facility will supply zero carbon, 100% renewable, green hydrogen to heavy transport and heavy industry in the Glasgow area.

The project will be powered by the wind turbines at Whitelee and by a new solar PV array, which will be developed alongside a 50MW battery storage system.

The integration of these different technologies will allow the business to test operational strategies to produce low cost green hydrogen. This will also help optimise the performance of the overall combination of technologies, as well as providing valuable grid balancing services.



### Smart Home Energy Management System

The Retail team have been developing a concept for an industry-leading home energy management system to improve customer experience of new smart home technologies through greater control, insight and interoperability.

This solution will create a modular hub, including a device within the home which will provide customers with real time home consumption data and optimise performance of smart devices.

We are collaborating with technology providers to trial the system hardware and interface equipment, which will provide customers with a product that helps them reduce their energy consumption as well as additional income opportunities through system balancing.



### **Dersalloch Windfarm Restoration Project**

Renewables achieved a global first – using energy from a 69MW windfarm to re-energise the power grid.

Restoration (formerly known as Black Start), restarting the grid in the event of a total or partial shutdown of the national electricity transmission system, is currently procured from fossil fuel power stations that can start generation onsite without reliance on external electricity supplies.

Following successful testing at our Dersalloch Windfarm, Renewables was able to demonstrate that renewable energy could also provide this service, a huge step forward in reducing reliance on fossil fuel generation technologies.

### **East Anglia ONE Pile Gripper Trial**

The process of fixing offshore wind turbine foundations to pre-installed piles on the seabed requires pile gripper systems to reduce movement. These are based on historic oil and gas technology and do not provide a cost effective solution for the offshore wind market.

Renewables has been working in collaboration with W3G Marine to test the performance of a Foundation Stability Tool, using a foundation on our East Anglia ONE project.

If the technology is proved to be effective, it would result in reduced installation time and greater flexibility in the fabrication programme. In addition, it could reduce costs for design work, reduce steel quantities and less bespoke manufacturing of components.



### **Angle-DC Project**

The Angle-DC is an SP Energy Networks project that has enhanced grid capacity. This has been achieved by converting two existing 33kV Alternating Current (AC) circuits to operate as a Direct Current (DC) circuit, providing a capacity uplift of at least 30%.

This project has enhanced renewable generation export capability in North Wales to 45 Gigawatt hours (GWh), helping double the distributed energy capacity by 2023, whilst also allowing greater precision on the control of system power flows.

The project will save approximately £20million of upgrade works in addition to reducing energy losses, estimated at £16million by 2040. With wider deployment of this solution, offshore connection costs could be reduced by over £1.7billion.

---

## CONTACT

ScottishPower, 320 St Vincent Street, Glasgow G2 5AD

[www.scottishpower.com](http://www.scottishpower.com)

[innovation@scottishpower.com](mailto:innovation@scottishpower.com)

