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# INDUSTRIAL IMPACT

## THE POWER OF SCOTLAND'S RENEWABLES SECTOR

# WIND SERVICE AT E.ON CLIMATE AND RENEWABLES

## E.ON in Scotland

**E.ON, through its renewables arm E.ON Climate and Renewables, proudly operates four onshore wind farms and one biomass plant in Scotland. From Caithness in the North to Dumfries & Galloway in the South, E.ON is also committed to further development within Scotland and continues to search for new growth activities in the onshore wind market.**

In addition to this traditional approach of development, construction and operation; E.ON also offers wind farm solutions to other wind farm owners.

**Service with an owner's eye – the mantra for every E.ON service offered for your windfarm**

The wind service organisation at E.ON provides full scope and tailor-made solutions to wind farm owners on

multiple turbine manufacturers/types across Europe. If you own or operate a wind farm in Scotland and would like to have custom made services to fit your site's specific needs, E.ON wind services can offer them.

Having extensive experience of owning and operating both onshore and offshore wind farms, E.ON understands your goals and needs as an owner, and has built up significant engineering competences and operational excellence on wind generation assets over many years.

Customers will also benefit from inhouse capabilities such as our global procurement organisation to access affordable spare parts, as well as utilising innovative tools and management systems that have been built and used on E.ON's global fleet over the years to optimise wind farms' operations and maximise site production.

**For further information please visit [www.eon.com](http://www.eon.com)**

## INTRODUCTION

Despite daily headlines on energy, climate change and the growth of renewables, few people appreciate the scale of the transformation which is steadily underway in our energy sector.

In just eight years Scotland has almost tripled its renewable energy capacity, and made a massive dent in the country's carbon emissions as a result.

The industrial benefits of this strategic transformation are as impressive as the environmental ones: renewable energy is driving innovation and clean growth across Scotland.

The sector currently employs 21,000 people, from entrepreneurs who're designing new ways to capture energy from nature, consultants who make projects viable, lawyers who negotiate contracts, a supply chain which builds wind farms, hydro plant and solar farms and an army of highly-skilled engineers and technicians who maintain our green energy infrastructure.

This document takes a snapshot of the industrial impacts of our new renewable energy economy, showcasing how the sector has built on Scotland's existing strengths to deliver the industries of the future, raising and sharing prosperity among communities across the country.

In the north, businesses like Leask Marine, Green Marine and Aquatera are expanding to cater for the growth of renewables both onshore and offshore.

On the Western Isles, BiFab's work at Arnish for the Beatrice Offshore Wind Farm is providing skilled work for 80 local people.

In the north east, firms like Ecosse Subsea Systems are using expertise gained in the oil and gas industry to capitalise on the growing offshore wind market.

Glasgow and Edinburgh are home to large power utilities as well as some of our most cutting-edge science, research and innovation organisations – companies like Limpet Technologies and Neo Environmental are developing unique products which are already being exported across the globe.

Research by Scottish Renewables in December 2016 showed Scottish renewable energy businesses like these have been involved in projects worth £125.3 million in 43 countries in every continent bar Antarctica.

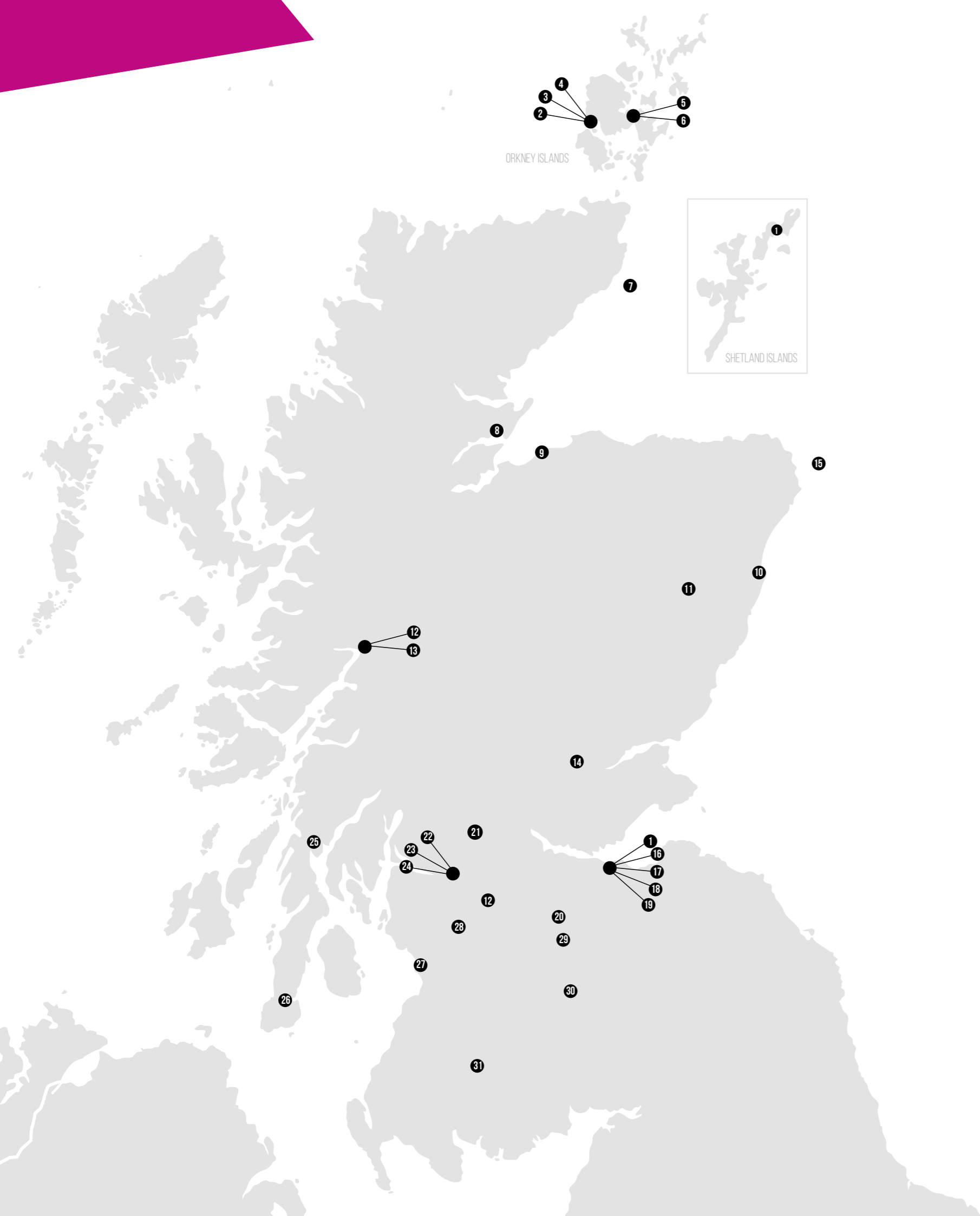
In the south of Scotland, organisations like Natural Power and Green Cat Group are nurturing workforces skilled in providing the development support that renewable energy projects need to thrive, while construction of key infrastructure projects like the Clyde wind farm has brought investment and jobs to one of the country's least-populated areas.

The industrial impact of Scotland's renewable energy sector can be felt across the whole country.

With the active backing of government, and the determination of industry, renewable energy can continue to deliver the modern industrial benefits of our commitment to tackle climate change, bring secure, affordable energy to the UK and assist in the shift to a cleaner, more sustainable energy system.

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**CS WIND UK'S TURBINE  
TOWER MANUFACTURING  
PLANT IN ARGYLL IS THE  
ONLY ONE OF ITS KIND IN  
THE UK**



## **GREEN MARINE**

Scotland's marine energy sector is built on expert supply chain businesses like Green Marine.

The award-winning firm supplies vessels and engineering and planning expertise to allow developers to install and maintain their marine technology devices safely and successfully.

Green Marine's history is in the fishing industry, where the company's founders operated a fleet of vessels from 12 metres to over 100 metres in length.

The company diversified into renewable energy in 2012, investing heavily in new vessels and training as the sector developed.

## **CS WIND UK**

CS Wind UK's turbine tower manufacturing plant in Argyll is the only one of its kind in the UK.

The site, which was bought by the South Korean-headquartered CS Wind Corporation in 2016, is seeing rapid growth.

The business has diversified from manufacturing towers for onshore wind turbines into the growing offshore wind market, opening a lucrative new income stream.

Around 100 people are employed at CS Wind's Machrihanish site near Campbeltown, with that number expected to rise as additional orders are secured. The company has signed an agreement with Siemens to

## **HIGHLANDS AND ISLANDS**

Green Marine's installation of the ANDRITZ HYDRO Hammerfest's 'HS1000' turbine in the waters off Orkney in 2013 marked a world first and showed the company's expertise perfectly: never before had a catamaran barge been moored in a tidal stream to deploy a tidal turbine.

Based within the hub of marine renewables in Stromness, Orkney, Green Marine operates across the UK and Europe and has a turnover from renewables of around £2.3 million.



produce offshore wind towers between 2017 and 2019; another with EDF Renewables with potential to provide towers for the company's 1.6GW pipeline of Scottish projects and a third which will see it co-operate over potential future contract and supply opportunities with Swedish utility Vattenfall.



## NOVA INNOVATION

Tidal energy company Nova Innovation deployed the world's first fully operational, commercial, grid-connected offshore tidal array in the Bluemull Sound in Shetland in 2016. In 2017, Nova successfully installed the array's third turbine.



The Shetland Tidal Array is unique in not only being a world first, but also in the way in which it was developed: start small, think big, move fast. This strategy is positioning Nova Innovation as a trailblazer in tidal energy technology. Nova is leading the EnFAIT Project, an EU-funded Horizon 2020 flagship project, which will ultimately expand the array to six turbines.

The Edinburgh-based company designs, builds and tests tidal energy turbines at its base in Leith. Nova, which was founded in 2010, has grown to employ 34 people in Edinburgh, Shetland and Wales and aims to be the world's leading tidal energy technology company.

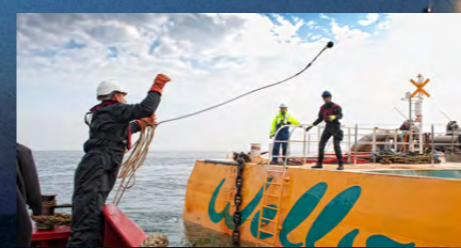


## EUROPEAN MARINE ENERGY CENTRE

EMEC is the world's leading centre for testing wave and tidal energy converters at sea.

Having hosted 19 companies, with 30 prototypes so far, more marine energy devices have been trialled at EMEC's Orkney facilities than at any other site in the world.

The centre offers purpose-built, accredited grid-connected test berths for full-scale prototypes (at the Fall of Warness for tidal developers and Billia Croo for wave developers), as well as test sites in less challenging conditions for use by smaller-scale technologies, supply chain companies and equipment manufacturers (at Shapinsay Sound and Scapa Flow).



Currently testing at EMEC's tidal test site are Scotrenewables' 2MW SR1-2000, (the world's most powerful floating tidal turbine, surpassing over 1GWh of generation in 2017) and OpenHydro's Open Centred Turbine (the first tidal energy technology to generate power into the UK grid). At EMEC's wave test site is Wello Oy's Penguin wave energy converter, which has been operating on site since installation in March 2017.

Developers which completed tests at EMEC in 2017 include Nautricity's contra-rotating tidal turbine, Tocardo's T2 tidal turbine and EC-OG's Subsea Power Hub.

EMEC also hit the headlines in 2017 producing the world's first tidal-powered hydrogen. The ramifications of this milestone are enormous: the hydrogen is carbon neutral (as it has been generated by renewables and emits no CO2) and can be used for transport, heating, agriculture, or turned back into electricity.

EMEC, a not-for-profit private company, acts as an advisor to countries looking to develop marine energy with staff having worked across the globe including in Australia, Brazil, Canada, Chile, China, Denmark, France, Japan, Republic of Ireland, Singapore, South Korea and the USA.

A study in 2017 reviewed EMEC's impact on the UK since it was created in 2003 and found the centre has generated a GVA to the wider UK economy of £284.7 million with 4,224 full-time equivalent job years.



## AQUATERA

Environmental and sustainable energy consultancy Aquatera was established in 2000 to provide a modern and innovative suite of environmental and energy planning services and products.

The company, which employs 23 people in Stromness, Orkney, has established a strong track record in renewable energy and delivers to local, UK and global markets.

Aquatera's work, led by Managing Director Dr Gareth Davies, includes preparing strategic roadmaps and energy plans, option evaluation and feasibility studies and project-specific environmental impact assessment documents. The company has also moved into marine energy project development.

Aquatera's work is almost always collaborative. The company is now working with local businesses in 10 countries outside the UK and Europe in places as varied as the Amazon Basin, Patagonia, Caribbean, Canary Islands, Caspian, Mauritius, Ache, West Papua and Nagasaki.

Aquatera has also established a database of 7,000 tidal energy sites worldwide.



## SCOTRENEWABLES TIDAL POWER

Scotrenewables Tidal Power is an innovative renewable energy development company which has pioneered a floating tidal generating platform.

The technology's inherent design advantages are such that it is recognised as a next-generation tidal technology with the potential to deliver a step-change cost reduction in electricity from tidal currents.

In 2011 the company launched the SR250 250kW prototype: the first large-scale floating tidal turbine in the world. Three years later Scotrenewables opened its own production facility for electrical system testing and assembly in Orkney.

In 2017, after more than a decade of research, design and testing, Scotrenewables launched the 2MW SR2000 turbine, which is now the largest and most powerful tidal turbine in the world. By the end of the year it had generated more than 1.2GWh of electricity - paving the way for commercial sales.

Scotrenewables employs 27 staff in its Orkney and Edinburgh offices.



Image: Colin Keldie



**SCOTRENEWABLES  
DEVELOPED THE 2MW  
SR2000 TURBINE, WHICH  
IS NOW THE LARGEST AND  
MOST POWERFUL TIDAL  
TURBINE IN THE WORLD**

## LEASK MARINE

Leask Marine is arguably the world's most experienced marine energy supply chain business, and is one of a growing number of companies in Orkney which have diversified into renewable energy.

The company, founded in 1985, made its name providing full marine inspection services, surveys, salvage, towing and general workboat support tasks in the challenging waters around Orkney.

Over the past 13 years Leask Marine has worked with wave and tidal energy developers including Sustainable Marine Energy, Andritz Hydro, Nautricity, Wello Oy, Open Hydro, Scotrenewables, on Nova Innovation's deployment of world's first fully operational tidal array and on

MeyGen, the world's largest tidal-stream project under construction.

Leask Marine employs over 30 people, with marine energy accounting for 23% of the company's turnover during 2016.



## BEATRICE OFFSHORE WINDFARM LIMITED (BOWL)

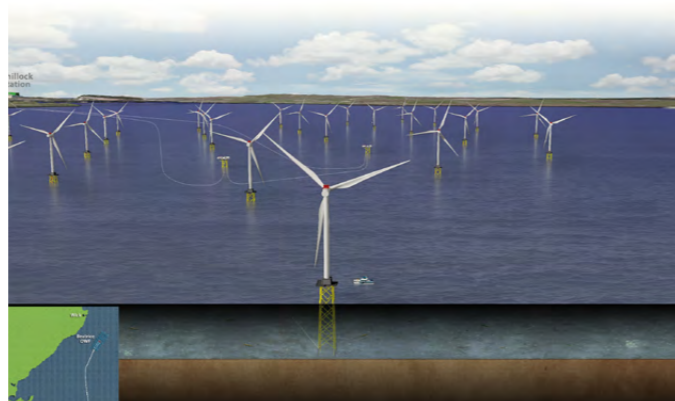
The £2.6bn Beatrice offshore wind farm, a joint venture between SSE (40%), Copenhagen Infrastructure Partners (35%) and Red Rock Power Limited (25%), is expected to add approximately £1.13bn of value to UK GDP.

The 84-turbine, 588MW scheme—one of Scotland's largest private infrastructure projects—is being developed with a supply chain which includes Seaway Heavy Lifting, Burntisland Fabrications, Subsea 7, Nexans and Siemens.

Of the total £2.6bn expenditure, around 45% is expected to be invested in the UK. Beatrice is expected to deliver a substantial impact on UK and Scottish jobs, with BOWL

construction investment expected to support more than 18,100 years of full-time employment in the UK, of which around 5,800 would be in Scotland.

Beatrice also means work for Wick Harbour in Caithness, where around £15 million of investment is turning former British Fisheries Society buildings into the wind farm's operations and maintenance base, providing 65 construction and 90 long-term jobs.



LEASK MARINE  
IS ONE OF A  
GROWING NUMBER  
OF COMPANIES IN  
ORKNEY WHICH HAVE  
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## GFG ALLIANCE

The group also has set out its 'GreenSteel' vision: using renewable energy to melt Britain's readily-available supply of scrap into liquid metals which it then engineers into value-added products.

In Fort William, GFG invested £330 million to acquire the UK's last remaining aluminium smelter, along with the two neighbouring hydroelectric stations, which power the smelting process. This secured the jobs of 170 smelter workers.

The company is also developing an onshore wind farm at Glenshero in the Highlands to provide additional power for Scottish industry including the Fort William site where it plans to develop a new alloy wheel factory and create over 400 direct jobs.

To fully close the loop, GFG's two Lanarkshire steelworks, could eventually provide the steel and fabrication facilities to make wind turbine towers for its own onshore project as well as many others.

The GFG Alliance also purchased Edinburgh hydropower developer Green Highland Renewables – a deal which includes 18 hydro-electric power stations in the Scottish Highlands and a highly-regarded team of 17 engineers, operators and designers. The company now aims to develop a further eight hydro power plants on its Lochaber Highland estate lands.

The Alliance has also signed an agreement to take a 49.99% stake in Edinburgh-headquartered Atlantis Resources, which owns the world-leading MeyGen tidal stream project in Scotland.



## RENEWABLE PARTS

Supply chain specialist Renewable Parts is the UK's leading independent provider of wind turbine parts.

Boasting a 50% growth rate over the last 24 months the company has tapped into the rapidly expanding market for aging turbines which are no longer covered by manufacturer-backed service contracts.

Renewable Parts is able to source, deliver and install components for wind turbines which have mechanical problems, dramatically reducing revenue lost when the machines are not generating power.

The company, which was founded in 2011, employs 10 people in Lochgilhead and Glasgow.

Expansion of operations in 2017 is focussed on developing repair capability through a partnership with Strathclyde University and increasing inventory holding to ensure customers can access a wider range of parts more quickly, reducing downtime and maximising clean energy generation.



## AES SOLAR

AES Solar is the longest-established solar thermal manufacturer in Western Europe and the only company to both manufacture and install solar thermal systems.

In addition to solar thermal AES Solar installs PV of all sizes, ranging from individual retrofits and new self-builds to entire housing developments and commercial buildings.

The company received more enquiries in 2016 than ever before, contributing to a turnover of around £2 million.

AES employs 10 people in Forres, Moray, including three modern apprentices, and has recently taken part in two

major funded-research projects, showing innovation in solar is happening in Scotland.

Plans for coming years include developing an already-packed export order book by enhancing the company's capability to ship products overseas in bulk.

AES is currently working with the Scottish Manufacturing Advisory Service to create an efficient manufacturing line to deal with the increase in production this will entail.



## HWENERGY

HWEnergy is one of the UK's leading biomass heat specialists.

The Highlands company provides turnkey design, build, installation, fuel supply and ongoing service of commercial and industrial biomass systems of all types, from straightforward single-boiler sites to complex district heating schemes.

HWEnergy has completed more than 270 commercial-scale projects totalling more than 50MW of renewable heat capacity and has acted as the main contractor on most of these schemes. Installations stretch from Shetland to Bradford and cover a wide range of sectors including food and drink, tourism, rural businesses, commercial premises, charities and public sector buildings.

HWEnergy were the first company in Scotland to receive accreditation under the non-domestic Renewable Heat Incentive scheme.

## GLOBAL ENERGY GROUP, NIGG

Global Energy Group's Port of Nigg is one of the UK's finest deep water ports, together with the largest covered fabrication facilities in the UK.

The site began life as a construction site for oil and gas platforms but a 'boom and bust' work cycle through the 1970s, 80s and 90s has now been replaced with more sustainable business across many energy and industrial sectors.

Global Energy Group took over the Nigg site in 2011 and has since spent £45 million developing its asset into a world-class port, yard and fabrication facility.

Nigg has been chosen by Siemens as a staging port for the Beatrice offshore wind farm, and Global Energy will

The company has since won numerous awards including a 2016 Scottish Green Energy Award for installing biomass boilers at schools in partnership with North Ayrshire Council and the H&V News Renewable Project of the Year 2014 for similar work with NHS Highland and NHS Ayrshire and Arran.

Headquartered in Fort William with an office in Bellshill, Lanarkshire, HWEnergy has a staff of 45 including engineers based across Scotland and England. The company services and maintains more than 300 sites across the country.



supply all plant, equipment and labour and associated port services to support the staging port activities - work which will commence in March 2018 and run through to late 2019.

Nigg is also the foundation and turbine assembly base for MeyGen, the world's largest tidal-stream project.

Global Energy Group has recently applied for a Harbour Empowerment Order which would enable the company to operate Nigg themselves as a port, opening up the possibility of further expansion.

Moving forward, the company will continue to strike a balance between manufacturing and services for offshore renewables, oil and gas, utilities and other industrial works.



**NIGG ENERGY PARK  
IS ONE OF THE  
UK'S FINEST DEEP  
WATER PORTS**

## NORTH EAST SCOTLAND

### ECOSSE SUBSEA SYSTEMS

Subsea and engineering technology company Ecosse Subsea Systems has successfully transitioned to renewables from its original focus on the oil and gas sector.

ESS designs and manufactures a range of tools which are used in seabed excavation and route preparation for cabling deployed in UK and international windfarm, interconnector and power generation projects.

Aberdeenshire-based ESS was recently acquired by NYSE listed Oceaneering

International Inc as part of a strategy to expand its service line capabilities in to the growing renewable energy market.

Enabling technologies acquired in the transaction include ESS's modular SCAR Seabed System, capable of completing the entire trenching work scope (route preparation, boulder clearance, trenching and backfill), and its newly developed SCARJet trenching system.

The SCARJet is an evolutionary trenching system designed for use with standard work class ROVs and adds state of the art jetting and post-lay trenching capabilities to the existing pre-cut methods offered by the SCAR ploughing tools.



### EUROPEAN OFFSHORE WIND DEPLOYMENT CENTRE

Swedish energy group Vattenfall has installed the world's most powerful wind turbines at the cutting-edge 93.2MW European Offshore Wind Deployment Centre (EOWDC) in Aberdeen Bay.

The 11-turbine wind test and demonstration facility features two 8.8MW turbines, the first time such a model has been deployed commercially in the offshore wind industry.

Together with the nine 8.4MW turbines, this enables the facility to produce the equivalent of more than 70% of Aberdeen's domestic electricity demand and annually displace 134,128 tonnes of CO2.

As a hub of innovation, the EOWDC is also the first offshore wind project to deploy game-changing suction bucket jacket foundations at commercial scale while

pairing them with the world's most powerful turbines represents another industry first.

Originally conceived by Aberdeen Renewable Energy Group in partnership with Vattenfall, the EOWDC leads the industry drive towards generating clean and competitive wind energy power – one that reinforces Scotland's global energy status and helps secure Vattenfall's vision to be fossil fuel free within one generation.



## HYWIND SCOTLAND

Hywind Scotland is the world's first floating commercial wind farm and has been built in the Buchan Deep, more than 15 miles off the coast of Peterhead.

Each of its five, 12,000-tonne, 6MW turbines are anchored to the sea bottom by three 900m chains which weigh 400 tonnes each.

The £210 million project consists of wind turbines placed on top of ballasted cylinders, combining known technologies in a completely new setting and opening up the possibility of capturing wind energy in deep-water environments.

The project was inaugurated in October 2017 and provides approximately 20,000 UK homes with electricity, displacing 63,000 tonnes of carbon emissions each year.



## MID SCOTLAND AND FIFE

### SSE

SSE owns and operates the UK and Ireland's largest renewable energy portfolio: 3,309MW of capacity including hydro, pumped storage, onshore and offshore wind.

SSE is headquartered in Perth, and its operational renewable assets and development pipeline is spread across the whole of Scotland.

SSE is currently constructing the £2.6bn Beatrice Offshore Wind Farm Limited project, a joint venture partnership of which SSE owns 40%. The 588MW scheme, located in the Moray Firth, is one of the largest private investments in Scottish infrastructure and will be capable of powering 450,000 homes when completed in 2019.

Beyond this, SSE has the capability and track record to take advantage of emerging opportunities including interests in two further offshore wind joint ventures: Seagreen and Dogger Bank.

Since 2007 SSE has invested £4 billion in renewable generation and is proud to be the leading operator of such assets in the UK and Ireland.



## WEST SCOTLAND

### WHITELEE OPERATIONS CENTRE, WHITELEE WINDFARM

ScottishPower Renewables' £1 million Operations Centre is based at Whitelee Windfarm, the UK's largest.

The state-of-the-art facility monitors around 1,000 wind turbines which can power the equivalent of around 750,000 homes.

The Operations Centre can remotely oversee all of ScottishPower Renewables' windfarm developments, from Cornwall to Caithness.

Operators use weather prediction software to plan maintenance as well as responding to calls from National Grid to alter the generation provided by the company's wind farms at times of high or low demand.

The Operations Centre was opened by Scotland's First Minister, Nicola Sturgeon, in March 2015 and can host up to 30 employees.



## WINDHOIST

Windhoist's fleet of cranes and skilled technicians travel the world installing wind turbines, supporting the global shift to clean energy from the company's Ayrshire base.

Technicians who travel with the machines are trained to work at height and on the most complex turbine systems available, providing an end-to-end solution for clients including Siemens, Vestas, Senvion and Nordex.

To date the company has erected more than 6,000 turbines in 16 countries with an installed capacity of over 11GW – more than the total amount of onshore wind currently installed in the UK.

The Irvine business employs 155 people, with most working away from their base for extended periods, and is part of a Scotland-headquartered group employing 360 people.



Images: Michael Wanley

THE COMPANY HAS  
ERECTED MORE THAN  
5,300 TURBINES IN  
16 COUNTRIES

## CENTRAL SCOTLAND

### SIEMENS GAMESA

Siemens Gamesa Renewable Energy's operations in Scotland employ in excess of 200 people, largely based out of two locations.

The Bellshill facility houses the company's Operations, Construction Management and Commercial teams. An additional facility in Inverness lies close to the Beatrice offshore development.

Siemens Gamesa maintain and service more than 1200 turbines, generating more than 2.2Gw of power

in Scotland, having constructed the majority. Among the windfarms maintained is Whitelee, the UK's largest onshore windfarm, in East Renfrewshire.

Support for windfarms operating in the Republic of Ireland is organised from Siemens Gamesa's Scottish operation.



**ENERCON UK HAS INSTALLED MORE THAN 850 WIND TURBINES, SUPPLYING AROUND 1.2GW OF ELECTRICITY TO THE UK GRID.**



**ENERCON**

ENERCON UK has installed more than 850 wind turbines, supplying around 1.2GW of electricity to the UK grid.

ENERCON holds a unique place in the UK market, supplying both large-scale developers and utilities and small single-turbine projects.

Large projects include the 69MW Corriegarth wind farm in the Highlands and the 51MW Harburnhead site close to Edinburgh. Single turbines have been supplied to independent landowners, businesses and community projects across the UK mainland and islands looking to decarbonise.

ENERCON now employs 220 people in the UK, with numbers at its head office in Edinburgh growing from 25 to 40 in recent years.

**EDF RENEWABLES**

EDF Renewables is one of the UK's leading renewable energy companies.

The business, a 50:50 joint venture between EDF Renewables and EDF Energies Nouvelles, employs more than 170 people to develop, build and operate generation projects, with a focus on onshore and offshore wind and battery storage technology. Its services business looks after the operations and maintenance of its seven Scottish wind farms

EDF Renewables is committed to continuing the growth of its renewables business in Scotland – where it already operates 319MW of renewable power projects. The company's new office in Edinburgh, which created 35 new jobs, was opened by First Minister Nicola Sturgeon in January 2017.

The company's Scottish field-based workforce has also grown from 55 to 110, spread over 10 service stations in roles such as installation, commissioning and service engineering.



The company's pipeline of Scottish projects includes delivery of the 177MW Dorenell wind farm in Moray. The site is the largest onshore wind project granted a Contract for Difference by the UK Government and is scheduled for completion in 2018.

EDF Renewables is also developing an additional 600MW of consented onshore wind projects, with more than 1.2 GW in planning or in the early stages of development.



## ITPENERGISED

ITPEnergised was established in 2013 to provide environmental and energy consultancy services and asset management to the onshore, offshore and marine renewables development and investment sectors and to corporates seeking to improve their energy efficiency and management.

Their clients have described their approach as 'refreshing', 'entrepreneurial', 'brilliant' and 'beyond a consultant'.

ITPEnergised, as part of the ITPEnergised Group, employs more than 100 staff and has worked in 150 countries. The business, which is headquartered in the Scottish capital, is a world-leading consultancy offering energy, environmental, engineering, technical advisory and renewables asset management services. It has a permanent presence in Aberdeen, Glasgow, London, Bristol, Australia, New Zealand, India, Portugal, Spain and Argentina, and is also involved in a joint venture in China.



## LIMPET TECHNOLOGY

Although wind turbines are designed to require little maintenance, when they do it's a skilled job in a potentially dangerous environment.

Limpet Technology designs, develops and manufactures innovative powered access and height safety systems that are focused on the unique challenges of the wind energy sector. Whether it's climbing long vertical ladders, entering confined spaces, inspecting rotor blades or transferring between work boats and offshore wind turbines, Limpet® solutions will make maintenance technicians safer and more productive.

Since starting in 2009, Limpet® systems have won numerous awards for product innovation and are unique in incorporating multiple and fully integrated features such as [Intelligent Climb Assist®](#), fall prevention, active heave compensation, rapid rescue and evacuation.

The family owned Company has offices in Leith, Edinburgh and in Methil, Fife. The latter has recently been taken on in order to test and develop a new solution aimed at offshore personnel transfer and is adjacent to the 7MW Levenmouth Offshore Demonstrator Turbine which is being used to accelerate the systems development.



## GLASGOW

### SCOTTISHPOWER RENEWABLES

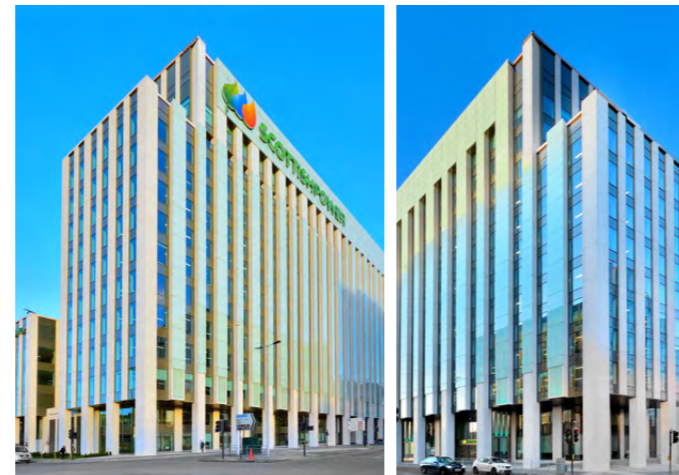
ScottishPower Renewables manages its worldwide fleet of offshore wind farms from Glasgow.

The offshore team based in the company's new HQ building is managing the development of over 4,000MW of offshore projects across Europe.

The company, part of Iberdrola, is one of the leading developers and generators of wind power in the UK. With close to 2,000MW of installed capacity, ScottishPower Renewables manages over 30 wind farms from Glasgow.

A 2016/17 investment programme will see eight new onshore projects constructed, with investment of £650 million. £2.5 billion is also being invested to build a 714MW offshore wind farm off the coast of East Anglia.

Around 250 people based in Glasgow oversee all project development, construction and operations. Currently over £3 billion of renewables investment is being delivered from the Glasgow office.



## WOOD

Wood is a global leader in the delivery of project, engineering and technical services to energy and industrial markets.

They operate in more than 60 countries, employing around 55,000 people, with revenues of around \$10 billion.

Wood's clean energy business specialise in renewable energy and grid integration, providing engineering and technical advisory services that support the delivery of projects around the world. Their services and technologies provide engineering know-how to onshore and offshore wind, solar, wave and tidal and hydro projects.

For over 15 years Wood has provided advice on renewable energy projects from small off-grid power systems, specially designed for remote locations, right up to some of the world's largest renewable energy developments, with capacities of thousands of MW, across all terrains and environments. From Mongolia's first wind farm to Jordan's largest solar PV plant, Wood is at the forefront of today's clear energy revolution.



### NEO ENVIRONMENTAL

Neo Environmental has been involved in the production of environmental reports and technical assessments for more than 500 renewable energy projects ranging from small scale wind projects to the largest solar and battery storage projects in the UK and Ireland.

The company has produced studies, assessments and reports for more than 1.2GW of green energy projects and saw its turnover increase 500% in

the two years to 2015. Over the same period the company's headcount rose from two to 16. The company have managed to maintain a healthy pipeline of projects and have completed the full suite of assessments for the planning stages of the largest solar farms (between 70MW and 80MW) and battery storage projects (100MW) in the British Isles.

Neo's Glint and Glare computer model allows potential reflection issues from solar PV panels and other sources anywhere in the world, on any day of the year, to be modelled. The company has been commissioned on projects across the UK, Ireland and abroad. Neo Environmental, which is headquartered in Glasgow, has offices in Scotland, England, Northern Ireland and the Republic of Ireland.





## SOUTH SCOTLAND

### CLYDE WIND FARM

SSE's 152-turbine Clyde wind farm is the UK's second largest, and will grow by almost 50% to 523MW when a 54-turbine extension is completed in summer 2017.

Analysis carried out by PwC shows the construction phase of the extension, which began in May 2015, will contribute £108.2 million to the UK economy and support the equivalent of 1,830 man-years of employment.

Approximately 76% of the contribution to UK GDP from the turbines will stay in Scotland, as will more than 70% of the total UK contribution from construction. During the operational phase of the site those figures are 71% and 74%.

With the addition of the community benefit fund for the extension the total Clyde Community Fund will be in excess of £60 million over the lifetime of the project.



### MUIRHALL ENERGY

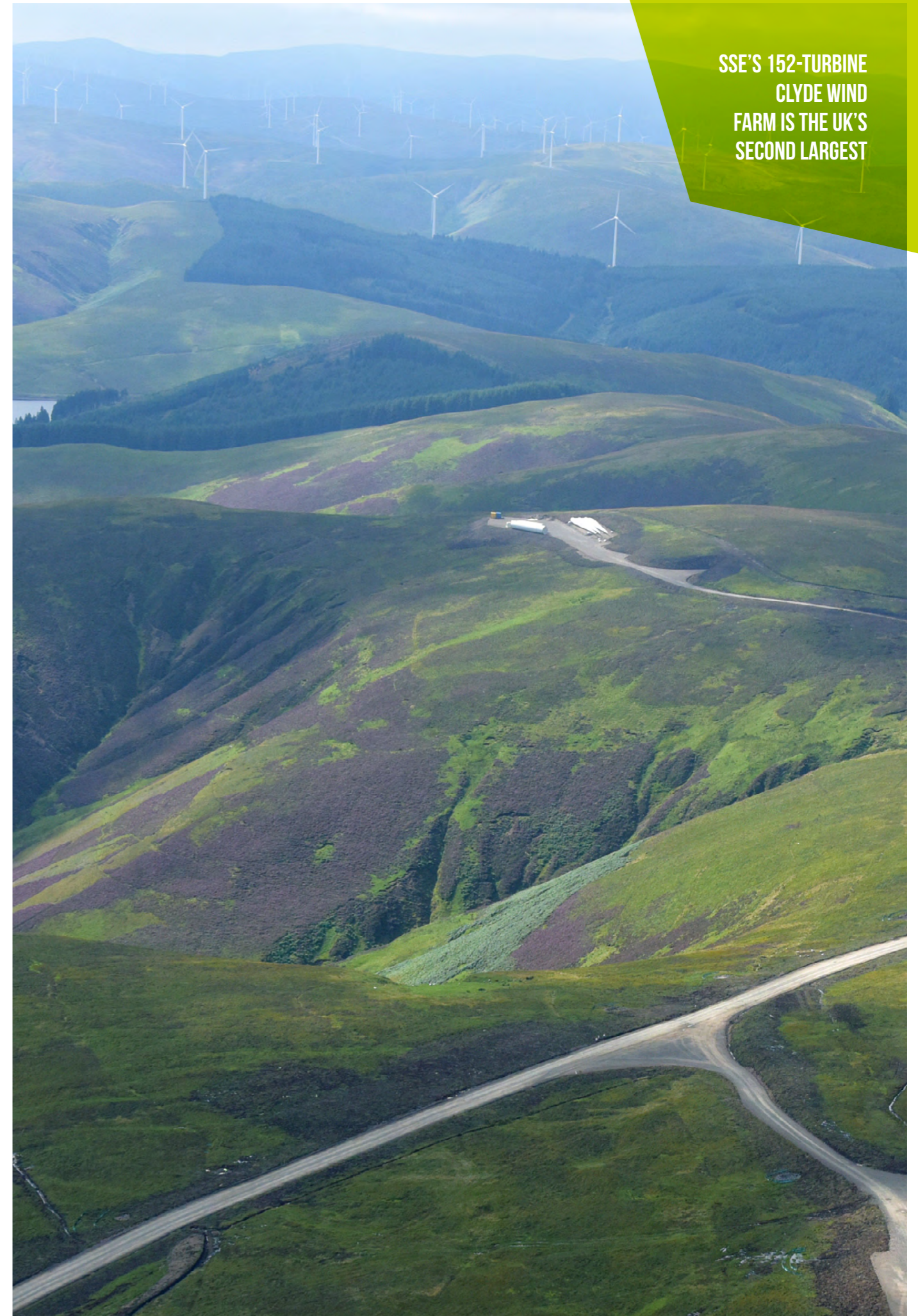
Muirhall Energy is a small but growing onshore wind development business.

The company, which employs 16 people full time and has a turnover of more than £5 million per year, is based in a converted farmhouse in the South Lanarkshire countryside, close to some of the original wind farms with which it was involved.

With 20 consented projects and plenty more currently in planning the company is continuing to invest in onshore wind energy in Scotland.



SSE'S 152-TURBINE  
CLYDE WIND  
FARM IS THE UK'S  
SECOND LARGEST



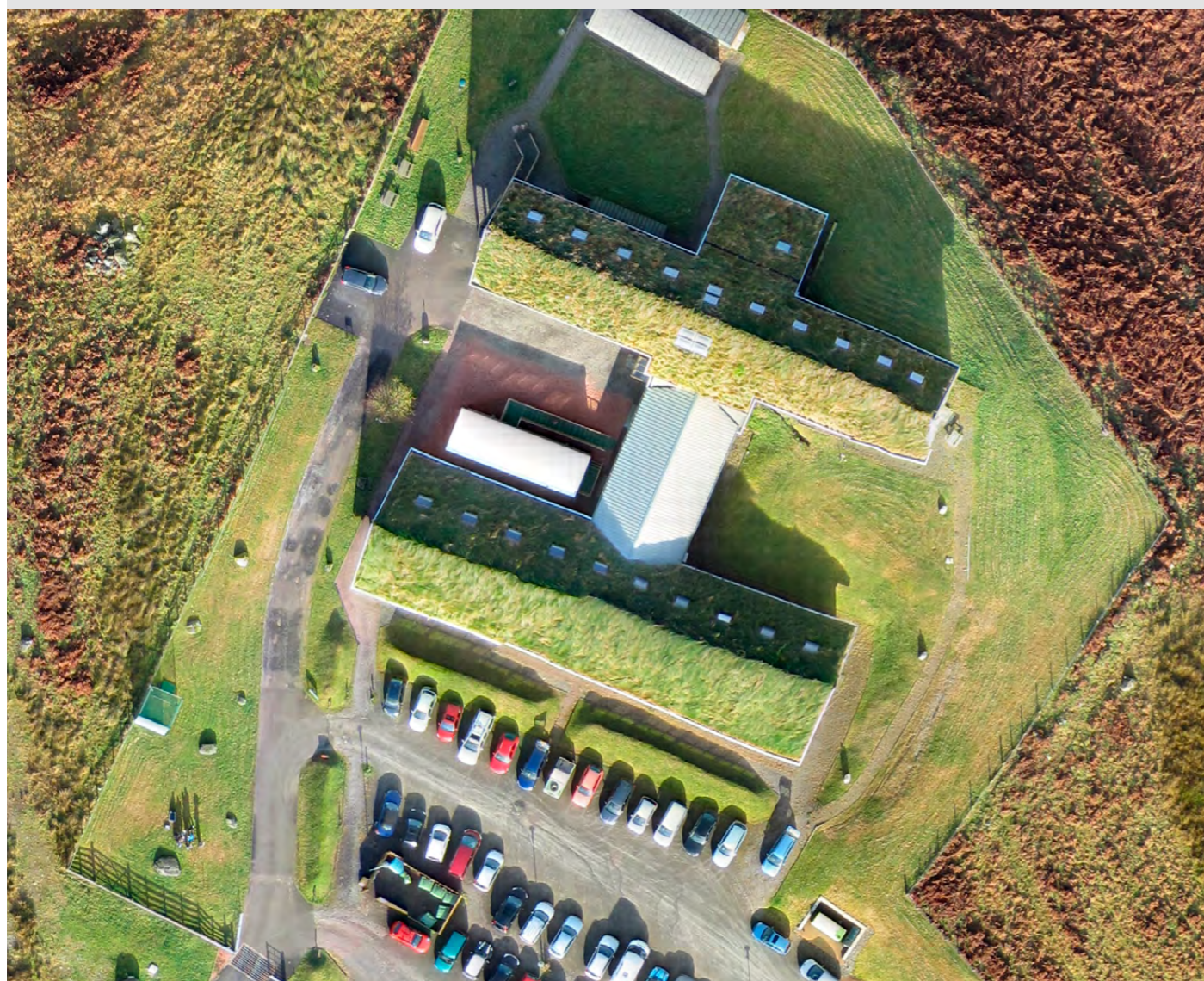
## NATURAL POWER

Independent renewable energy consultancy Natural Power manages around one in five of the UK's wind turbines – or 1.9GW – from its headquarters in rural Dumfries and Galloway.

Almost 90 employees are based at the company's Global Headquarters, known as The Green House, and Natural Power is one of the largest employers in this rural area.

Across the world, over 350 people are employed in 11 offices by the business, which has worked in 37 countries on 116GW of projects (the equivalent of 3/4 of the EU's wind power capacity).

In 2017 Natural Power doubled the size of its independent servicing and spare parts procurement team, enabling them to provide a full asset management service to more of its customer base.



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## GREEN CAT GROUP

Green Cat group employs 75 people across five companies and had a combined turnover of more than £15 million in 2016.

Green Cat Renewables was formed in 2005 to develop wind, small-scale hydro and solar energy projects.

That company alone now employs almost 50 staff across four sites: nine in Biggar, South Lanarkshire, 15 in Livingston, West Lothian, one in Thainstone, Aberdeenshire and 24 in Edinburgh.

Green Cat Renewables has delivered over 200 projects with a combined capacity of more than 250MW. It has also assisted with more community and locally-owned projects than any other company in Scotland.

Green Cat Contracting is a civil engineering contractor which builds access tracks and drainage, concrete structures and earthworks for wind energy projects up to 20MW and small-scale hydro schemes. Green Cat Contracting employs 12 people from a base in Livingston, although many of the operators and labourers are based at sites across the UK.

Specialist high voltage electrical contractor Prelec is also part of the Green Cat group and works to connect renewable energy projects to the grid. Prelec employs eight people from a base at the Midlothian Innovation Centre near Edinburgh.

Green Cat Renewables Canada Corporation is a new venture which will supply the same service GCR provides in Scotland in the Alberta Province of Canada. Much of its work will be done by the existing Scottish workforce, alongside input from four local Canadian staff.



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