FES: Energy

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FES has made a firm commitment to the growing demand for renewable energy and low carbon technology solutions, providing Energy Conservation Measures (ECM's) and solutions to provide financial and environmental improvements

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Capability

In today's environment of sustainability, rising energy costs and greater focus on carbon reduction, FES Energy provides solutions tailored to meet these challenges. FES has made a firm commitment to

the demand for renewable energy and has been successful in gaining and maintaining MCS accreditation for solar photovoltaics and solar thermal systems.

FES provides support from conception to whole life costing when considering renewable and energy saving technologies such as;

- Solar PV
- Battery Storage
- Biomass Boilers
- Combined Heat & Power (CHP)
- Anaerobic Digestion
- Voltage Optimisation
- Hydro
- Solar Thermal
- District Heating Schemes
- Short Term Operating Reserve (STOR)
- Water Source Heat Pumps
- LED lighting upgrades
- Ground Source Heat Pumps
- Wind Turbines

Wherever possible we promote carrying out as much of the installation works off site using our state of the art Pre-fabrication facility. We can produce bespoke modules to suit any project and even

construct self-contained plant rooms for Biomass and CHP. These plant rooms can then be delivered to site fully tested and commissioned ready to be connected into the existing systems.

Accreditations

As a reflection of our experience, commitment and quality, we have gained some of the industry's highest third party certification.

The new £333million Aberdeen Exhibition and Conference Centre (AECC) has the largest fuel cell installation in the UK and on a par with the largest in Europe.

The hydrogen fuel cells run on low-emission hydrogen fuels and have a total electrical output of 1.4MW, on par with some of the largest hydrogen fuel cell installations in Europe offering an independent source of reliable, affordable, low-emission heat and power for the 150-acre site. Hydrogen power-sources are beginning to take the forefront in renewable technologies, something that FES is proud to be a part of.

The energy centre includes the design, supply, installation, testing and commissioning of 3no 460kW Purecell® Hydrogen fuel cell units, natural gas boilers, 1200kWe CHP, absorption chillers, chilled water chillers, control system and associated equipment.

The HV infrastructure works include a high voltage point of connection, high voltage ring main and associated substations, transformers and switchgear. This included the design of a 33kV substation to SSE adoptable standards.

AECC Energy Centre and District Infrastructure

Client:
Robertson Construction

Construction Value:
Energy Centre & Infrastructure Package £16,000,000.00

Location:
New Aberdeen Exhibition Centre

Contract Start:
April 2016

Contract Type:
Design & Build

Contract Completion:
January 2019

FES Role:
FES M&E and Utility Contractor

FES is currently working with Stirling Council to carry out Solar Photovoltaics (PV) Installation and Maintenance works on commercial and domestic properties.

Overall, the installations will generate an estimated 2 million units of electricity each year, enough to meet the average annual electricity needs of 500 homes. Use of the panels is also expected to result in an estimated annual saving of just under £300 for each household through savings on electricity bills. Installations have reduced emissions of CO2 by just under 1.4 tonnes per property per year and a further £10 million has been pledged to the installation of solar panels between 2018 and 2022.

FES has completed the installation of Tesla Powerwall Battery Storage at 75 properties under the Stirling Council framework, with a further 120 programmed for roll out. The intention of the Framework is to target fuel poverty throughout Stirling Council's housing stock. The introduction of the battery storage with time-based control technology enables residents to store excess energy generated during the day for use at peak times, to lower energy costs and also have full use of the ToU functionality that allows the residents with a dual tariff to charge the Powerwall off-peak and use the lower rate energy through peak times where the price per kWh is much higher.

Solar PV Installation and Maintenance Framework Stirling

Client:
Stirling Council

Contract Value:
£14 Million over 6 years

Location:
Stirling Council area

Contract duration:
6 Years (ongoing)

FES Role:
Solar PV, Battery Storage

Works include:

+ Property surveys
+ Design, installation and commissioning of Solar PV systems
+ Maintenance and monitoring of Solar PV systems
+ Completion of all necessary paperwork associated with the administration of the feed-in tariff with the utility provider
+ Battery storage

Ignis Wick Energy Centre and District Heating Scheme

Ignis Wick Ltd are the owner and operators of the Energy Centre and District Heating Scheme in Wick, having taken over from the previous owners Highland Council. An energy and heating system which has been converted from burning oil to using locally sourced wood chip.

As part of the overall refurbishment and extension of services to the system, a new 165kWe/260kWth gasification combined heat and power plant was installed along with alterations to an existing 3.5MW biomass steam boiler system to improve its operating efficiencies. The new improved system now provides hot water to nearly 200 domestic properties, a local hospital and a public meeting room/concert hall via the district heating network. The system also supplies steam to the adjacent award winning Old Pulteney Distillery.

FES was engaged by Ignis to deliver the following:

+ The complete design, installation, testing and commissioning of all the electrical and mechanical equipment and infrastructure associated with the new upgrade
+ And the subsequent integration with the existing steam and electrical systems.

Client:
Ignis Wick Ltd (Equitix)

Construction Value:
£3,000,000

Location:
Wick

Contract Start:
April 2016

Contract Completion:
June 2017

FES Role:
Principal contractor with full design, build, test, commission, operate and maintenance responsibility

Stirling Renewable Heat Project

FES was contracted to design, supply, installation, testing and commissioning of an energy centre that includes a 500kWth Sewage Heat Recovery system (energy from waste), 1no 800kWe natural gas CHP unit, 6MW natural gas boilers and integration of existing biogas boilers. Acting as principal contractor, FES carried out the full construction design and build of the buildings which included ground investigations, piling, structural steel & cladding erection and building fit out. The project consisted of the construction of two buildings to facilitate the various technologies, the main energy centre at 200m2 and sewage heat recovery system building at 126m2, of both steel portal frame and composite clad construction.

The objectives for the Energy Centre was as follows:

+ Design and build fully functioning energy centrewhilst acting as principal contractor includingfull ground investigations
+ Integrating innovative sewage heat recoverysystem into large scale DH
+ Full utility installation
+ G59 application and management with ScottishPower
+ Ofgem (RHI) application and management

Client:
Stirling Council / Scottish Water Horizons

Construction Value:
Stirling District Heating Network: £1,800,000

Location:	**Stirling**
Character of Work:	**Design, build, operate & maintain**
Contract Period:	**8 months**
Project Planning Commencement:	**January 2018**
Project Completion:	**August 2019**
Role in Project:	**Principal Contractor**
Project Stage:	**Commissioning**

Low Carbon Vehicle Hub
– Falkirk Stadium

The scope of works at Falkirk Stadium was to create a new car park area for the sole use of electric vehicles. A total of 26 electric vehicle parking bays were created with 3 of the bays closest to Falkirk Stadium designated for use by disabled drivers. A mixture of 5 x 50kW Dual Rapid chargers and 8 x 22kW dual fast chargers were installed. Energy for the chargers is provided by a Solar PV system, battery storage and a new dedicated grid supply. A total of 3 dual wing canopies and a single canopy were installed over the car parking spaces within the new and existing car parks, with a total of 1272 x 295W solar modules giving an array size of 372.54kW. The expected solar generation from the system is 300,644kWh/a. The energy store is a 6x6m GRP unit accommodating 3 Tesvolt TS HV storage systems each with 15 Lithium Ion battery modules holding up to 201kWh of energy and capable of delivering up to 183kW of power. A single supply cable was also taken from the new energy store back to Falkirk Stadium to allow any excess energy generated from the Solar PV to be supplied to the stadium before being exported to the grid. As there are multiple operators onsite this will be set up as a PPA from Falkirk Council to the stadium operating company. Energy demand from the array of EV chargers is controlled by a Demand Load Management System which prioritises rapid chargers at times of peak demand and also ensures that the chargers are not allowed to breach the site limit.

Client:
Falkirk Council

Construction Value:
£1.3 Million

Location:
Falkirk

Contract Duration:
10 Months

FES Role:
Solar PV, Battery Storage and Electric Vehicle Charging

Kings Building Infrastructure
University of Edinburgh

The University of Edinburgh hired FES as a Design & Build Main Contractor on a single stage design and build contract to deliver the first of six contracts of the Kings Building Infrastructure project in the south of Edinburgh.

Over the last few years four major power outages have occurred on the campus, with these incidents highlighting the need for a timely recovery service.

FES was hired to update the Low Voltage and High Voltage electrical wiring of the campus. We took several phases as one of the best approaches to ensure the continuation of the live campus environment with minimum disruption for staff members and students.

The district heating and HV/LV infrastructure routes were to be installed within the heart of the campus on pedestrian access routes. The programme commenced during term time and occurred during key student calendar dates such as exam timetables. FES had to coordinate and manage the works extremely closely with the university. In order to do this, FES developed logistics plans that incorporated:

+ Access and Egress; maintaining safe access and egress around the campus and to buildings for students and people with disabilities
+ Movement of plant and materials
+ Barriers and signage

Client:
University of Edinburgh

Construction Value:
Energy Centre & Infrastructure Package £7,500,000.00

Location:	**Kings Building Campus**
Character of Work:	**Design and Build**
Contract Period:	**14 months**
Project Planning Commencement:	**July 2018**
Project Completion:	**November 2019**
Role in Project:	**Principal Contractor**
Key Supply Chain:	**District Heating & Switchgear**

Scottish Water Horizons

FES is currently working with Scottish Water Horizons as part of their framework to carry out Solar Photovoltaics (PV) Installation works on their assets throughout Scotland. Typical sites include Water Treatment Works, Waste Water Treatment Works and Pumping Stations. The system sizes across the installation sites range from 50kWp to 5MWp and these installations will generate an estimated 8,000,000 units of electricity each year. The installation contract includes feasibility and design for a number of sites with the ultimate aim of Scottish Water becoming Net Zero for carbon by 2045.

A typical project will involve a full turnkey solution from initial site assessment, design, quotation, construction and final sign-off by the client. These installations have involved a combination of Solar PV, Electrical and Civils design and construction all of which have been carried out by our own in house teams.

FES are a NERS accredited ICP, FES HV & Utilities division provides a wide range of engineering solutions, including electricity Private Sector up to 33kv and electricity Public Sector up to 66kv.

Client:
Scottish Water Horizons

Construction Value:
£6,000,000

Location:
Scotland wide

Contract Duration:
3 Years (ongoing)

FES Role:
Solar PV Installation Framework

FES: Energy

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BMTRADA SYSTEM CERTIFICATION OHSAS 18001

BMTRADA SYSTEM CERTIFICATION ISO 50001

BMTRADA SYSTEM CERTIFICATION ISO 14001

BMTRADA SYSTEM CERTIFICATION ISO 9001

ACCREDITED NERS NATIONAL ELECTRICITY REGISTRATION SCHEME

MCS CERTIFIED

NICEIC

FES