

CARBON REDUCTION TECHNOLOGIES

Details of City Building's expertise and capability in New Build and Retrofit of Carbon Reduction Technologies

Building a Sustainable Future

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RENEWABLES

CITY BUILDING



Building a Sustainable Future

As one of Scotland's largest construction companies, we provide a range of repairs and maintenance, manufacturing, construction and refurbishment activities across the public, private and third sectors.

As well as providing the largest construction craft apprenticeship programme in Scotland, we also operate Royal Strathclyde Blindcraft Industries (RSBi), one of the largest supported manufacturing businesses in Europe. RSBi employs over 250 people, more than 50% of whom have a disability.

City Building has sustainability at the heart of our business, ensuring we boost productivity, diversify into new markets and whilst doing so benefit the local communities in which we live and work by working in collaboration with our Stakeholders and supply chain we have embraced new and emerging carbon reducing technologies, whether within new build construction, or the retrofit of current properties, City Building has been at the forefront of these workstreams for a number of years. Some examples of this work are detailed within this booklet.

We will continue to work with all, in increasing the adoption of carbon reducing technologies creating a better environment, creating jobs and better communities. Our approach continues to build on the skills and talent within our workforce who have already delivered on so many carbon reduction installations throughout the City and beyond.





Our mission is to contribute excellence in construction, repairs, maintenance, manufacturing and training to customers, our employees, partners, suppliers and the local communities in which we work.



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ENERGY EFFICIENT SUSTAINABLE HOUSING

The construction of energy efficient sustainable housing for Dumfries and Galloway Housing Partnership (DGHP) part of Wheatley Group by reducing the carbon footprint, using the latest technologies, improving energy use.

These houses included Air Source Heat Pumps, where the heat from the air is drawn across refrigerant pipework and compressed to create heat. These effectively work as an air conditioning unit in reverse where refrigerant gas is used as the medium to convert the heat from the air.

Photovoltaic (PV) – uses conversion of solar energy from sunlight to electricity using semi-conducting materials. These are installed as flat panels where there is an unobstructed view of the sky.

PROJECT ST. MEDEN'S MONREITH NEW BUILD CONSTRUCTION



COMBINED HEAT AND POWER (CHP) System

PROJECT

MEADOWBURN CARE HOME AND DAYCARE CENTRE NEW BUILD CONSTRUCTION This construction project allowed for the installation of carbon reduction technologies and creating environmentally sustainable surroundings.

The installation of a Combined Heat and Power (CHP) is where a single fuel powered engine is used to generate electricity and heat. The CHP engine drives an alternator to generate the electricity. This technology reduces costs for heat and electricity, reduces carbon footprint and CO2 emissions. The design also allowed for the installation of Photovoltaics converting solar energy from sunlight to electricity.

There was also a requirement to control artesian water which led to the construction of a dedicated swale along with an attenuation pond as part of this project. A tiered swale was introduced to ensure the filtration of the water prior to being led into a culvert which in turn connected into the White Cart Water in the southside of Glasgow.





GROUND SOURCE HEAT PUMPS

The construction of Garrowhill Primary School on behalf of Glagsow City Council allowed for the creation of a more environmentally friendly school that was designed to inspire young people to learn.

The design of the building was aimed to be as environmentally sustainable as possible and include:

• Under floor heating

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- Ventillation system which uses fresh air to cut down on traffic noise
- Ground Source Heat Pump that extracts heat from below the ground using boreholes, reducing its carbon footprint
- Rainwater harvesting to use in school water system

In addition, the school was designed to face the nearby park to admit more light and allow children to feel more connected to the outdoors.

PROJECT GARROWHILL PRIMARY SCHOOL NEW BUILD CONSTRUCTION



LED LIGHTING

PROJECT GLASGOW LIBRARIES RETROFIT City Building undertook works to install LED lighting in some of Glasgow's Libraries. LED lighting is an energy efficient substitute for traditional lighting and carbon reducing sources. LED lights consists of numerous energy efficient Light Emitting Diodes that are grouped together to produce a specified level of light. These lights consume less electricity than traditional lights while having a longer lifespan.

Libraries within Glasgow as part of other retrofit works, had LED lighting installed.

The installation of the new lighting alongside other refurbishment works created a more comfortable and inspiring surrounding for local users for years to come.



TRIPLE GLAZED WINDOWS



PROJECT GLASGOW HOUSING RETROFIT

Our Triple Glazed Windows manufactured by RSBi in Glasgow have been installed in many homes in Glasgow.

The extra pane of glass reduces the conductivity of the window, helping retain more heat in the home. This makes homes warmer, cosier and can help towards reducing heating bills.

Our units are 32mm thick using toughened glass and are argon filled, helping to insulate homes and decrease the amount of heat that escapes through the window as well as being effective for a longer amount of time.



EXTERNAL WALL INSULATION (EWI)

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After



PROJECT GLASGOW HOUSING RETROFIT

As an approved PAS2030 Installer, City Building have undertaken a number of External Wall Insulations (EWI) projects throughout Glasgow and Dumfries and Galloway.

Insulated render systems provide a fast and economical solution to reducing the heat loss to properties through the external walls. This improves comfort and the appearance of the property whilst reducing fuel costs and carbon footprint.

The walls are prepared using rigid phenolic insultation board, reinforcing alkali resistant fibre glass mesh coat finished with a dashing render complete with dry dash aggregate. The thickness of the insulation board can be adjusted to achieve the required levels depending on the existing wall.

PHOTOVOLTAIC

PROJECT PHOTOVOLTAICS GLASGOW RETROFIT

Photovoltaic (PV) is the conversion of solar energy from sunlight to electricity using semi-conducting materials. These are generally formed as a flat panel that is installed where it has an unobstructed view of the sky. City Building have retrofitted these in many buildings across Glasgow.





PROJECT

Retrofit technology to optimise storage heating Retrofit

Connected Response is a cuttingedge technology that uses retrofit technology to release households with electric storage and water heating from Economy 7 night time charging and support reducing fuel costs.

City Building have installed Connected Response's technology in Wheatley Housing Group's customer's homes in Glasgow including Load-Switches and heating thermostats which connect wirelessly to the Connected Response monitoring system allowing for optimum heater charging times for each individual property.

CONNECTED RESPONSE







RAINWATER HARVESTING

As part of Glasgow City Councils Gen 5 Nursery Programme, City Building is constructing new build early years learning and childcare facilities in various parts of the city.

The nurseries will have Rainwater Harvesting facilities installed. This technology reuses rainwater collected in an underground tank to pump the water around the nurseries to flush all toilets. As toilets are traditionally flushed using potable water this approach will conserve potable water with the rainwater used in its place. This will also cut water bills.

Each nursery will have 46 Solar Photovoltaics Panels mounted on the roof between the skylights producing 19kWh of renewable energy per day.

All nurseries will be fitted with Air Source Heat Pumps which supply the nurseries with heating and hot water by taking heat from external air. This will replace gas boilers and will be the first GCC nurseries built utilising air source heat pumps for heating and hot water for Glasgow City Council and contrubute to reducing the carbon footprint.

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PROJECT

GENERATION 5 NURSERY PROGRAMME NEW BUILD CONSTRUCTION

ENERGY EFFICIENT BOILERS

PROJECT INSTALLATION OF ENERGY EFFICIENT BOILERS RETROFIT

To reduce the cost of heating customer's homes, we are installing **A** rated energy efficient hybrid style boilers in some of Wheatley Housing Group's properties, which as well as future proofing any energy supply changes also reduce our carbon footprint.



ACCREDITATIONS

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@ marketing@cbglasgow.co.uk