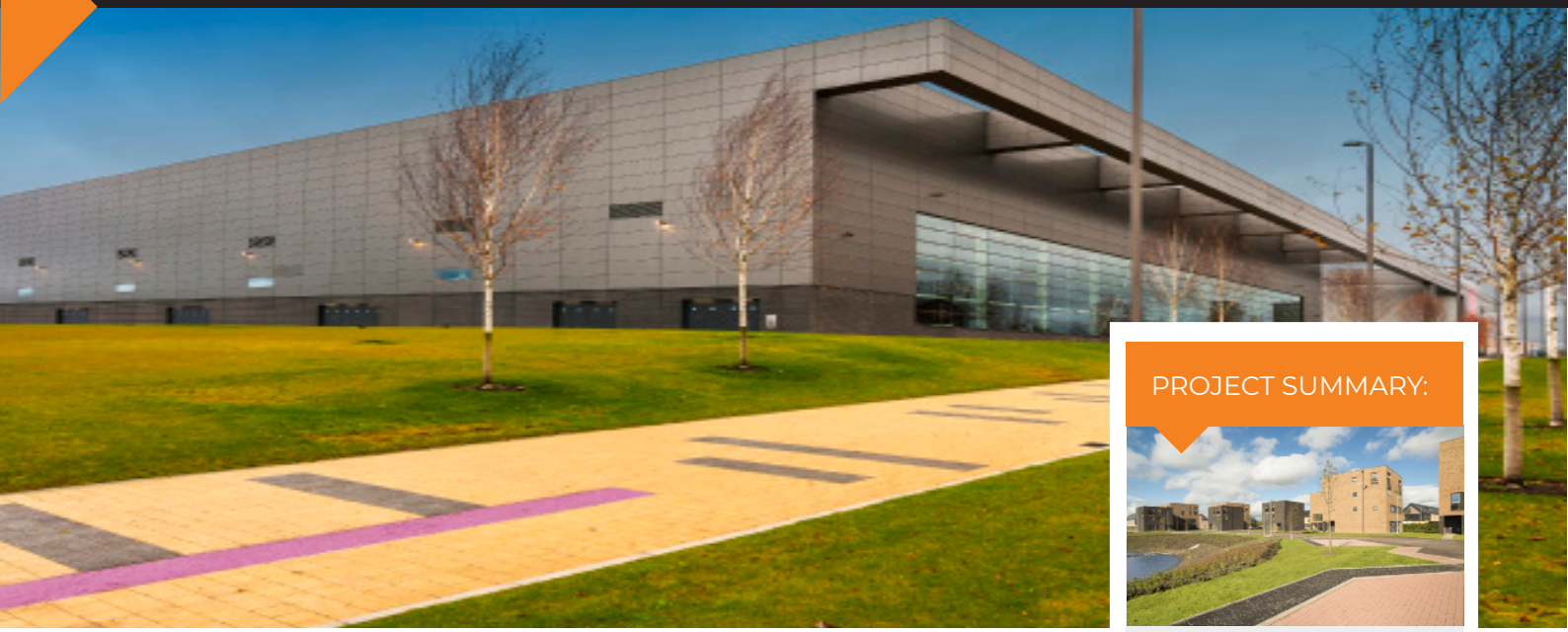
VITAL ENERGi

CASE STUDY

2014 Commonwealth Games

CHP ENERGY CENTRE AND DISTRICT HEATING



OVERVIEW

Vital Energi is helping the City of Glasgow realise its ambition to become one of Europe's most sustainable cities and to make the 2014 Commonwealth Games, which it is hosting, "the greenest games ever".

Scotland's largest city aims to cut 30 per cent of its CO2 emissions by 2020 and details how it plans to achieve this in its Sustainable Glasgow Report 2010. This states that district heating will play a major role in helping the city cut carbon.

City Legacy Consortium, the consortium of builders responsible for delivering the Athletes' Village properties, commissioned Vital Energi to design, supply and install a community heating system for the 2014 Commonwealth Games' Athletes' Village.

The new homes are being built to achieve "eco homes excellent" standard and deliver a 60 per cent reduction in carbon emissions. The additional inclusion of the community heating system should increase the level of carbon reduction to 95 per cent.

Despite a very tight timescale, Vital Energi finished ahead of schedule with the construction of its bespoke low carbon energy system which comprises modern Combined Heat and Power (CHP) technology housed in a purpose built new energy centre building.

This will deliver all the heating and hot water for the development through a 28km buried network of pre-insulated pipes which connect the 704 homes in the Athletes' Village, the Sir Chris Hoy Velodrome (formerly the National Indoor Sports Arena and Velodrome) and a 120-bed Care Home.

CHALLENGE

Within a very tight timeframe, City Legacy Consortium was looking for an innovative and future-proof, low-carbon energy solution for the 2014 Commonwealth Games Athletes' Village.

The winning company would need to design, supply and install a community heating system, and continue to operate it until the eventual post-Games completion in 2016.

As part of the ambition to become the most sustainable Games ever, new homes were built to achieve an "eco homes excellence" standard and deliver a reduction in carbon emissions.

PROJECT SUMMARY:

CLIENT
City Legacy Consortium

PROJECT
CHP, District Heating

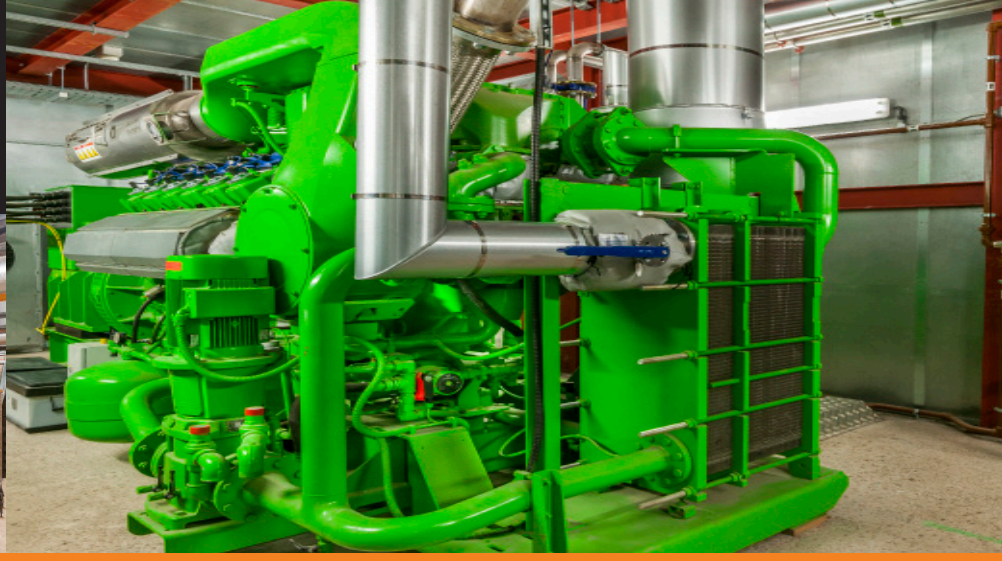
TIMESCALE:
July 2011 – December 2014

CONTRACT VALUE:
£9.5 million

THE BENEFITS:

- Helping to reduce overall Games carbon emissions by 95 per cent to make them "the greenest games ever"
- Achieving aims of Sustainable Glasgow Report 2010
- Future-proofed for further expansion
- Potential to interconnect with other district heating schemes accross Glasgow in the future

The energy centre contains a 844KW CHP engine, 3 x 3MW back-up gas boilers and a 70,000 litre thermal store



"The Energy Centre at the Athletes' Village shows the way forward for sustainable living in Glasgow, with reduced carbon emissions and lower heating bills making this new neighbourhood something for other developments to aspire to. The connection to the Emirates Arena will make the system even more efficient. This is another example of the preparations for the Glasgow 2014 Commonwealth Games leaving us a legacy, in this case making Glasgow a greener city"

BAILIE LIZ CAMERON, EXECUTIVE MEMBER FOR BUSINESS AND THE ECONOMY, GLASGOW CITY COUNCIL

THE SOLUTION

City Legacy Consortium appointed Vital Energi, under instructions from Glasgow City Council, to design, install, commission, test and operate a bespoke low carbon energy system.

The system comprises modern Combined Heat and Power (CHP) technology housed in a purpose built new Energy Centre building. Vital Energi has also designed, supplied and installed a 28km network of buried pre-insulated district heating pipes to connect 704 homes in the Athletes Village, the Sir Chris Hoy Velodrome (formerly the National Indoor Sports Arena and Velodrome) and a 120-bed Care Home to the energy centre.

The Energy Centre houses an 844kW CHP engine, three 3MW back-up gas boilers and a 70,000 litre thermal store. It has been future proofed to include capacity for an additional CHP engine, boiler and thermal store in order to accommodate connection to the 750 homes planned for the Legacy Phase of the development.

The district heating installation was made up of 14,000 metres of Aluflex and Steelflex pipework for the branch lines and 14,000 metres of Series 1 pre-insulated steel pipe for the main district heating mains. As always, we looked at the whole-life cost and performance of the installation when specifying the network, installing pipe which had an aluminium diffusion barrier. While this added a small capital cost to the project initially, diffusion barriers can reduce heat loss by 15-30 percent, therefore reducing money lost for the Energy Services Company in the future. It can also substantially reduce CO2 emissions, further increasing the benefits.

The pipework is joined with the trade marked, ultra-efficient BandMuff jointing system which can significantly extend the lifecycle of installations 30-50 years. The lifecycle of the project will be extended further by the alarm system which can pinpoint issues to within 1 metre. Its digital remote monitoring capability allows for efficient surveillance of the system without having to go to the project. An alarm is raised if there is any moisture detected in the foam insulation which will reduce the chances of it turning into a link and therefore minimise disruption for the residents.

When fully operational it will also generate and export electricity to the national grid.

THE CONCLUSION:

The design of the energy centre ensured that it can also meet the city's future aspirations for further expansion and interconnectivity. Vital Energi worked flexibly with a consortium of clients on this project to ensure that the outcome was the right fit for Glasgow as a sustainable city, and for the 2014 Commonwealth Games.

CONTRIBUTED TO REDUCING CO2 EMISSIONS BY

95%

Winning the prestigious contract to create a low carbon energy solution for Glasgow's 2014 Commonwealth Games Athletes' Village has placed Vital Energi in the proud position of being central to the city's ambitious plans to become one of Europe's most sustainable cities and leave a lasting Games legacy for future generations.