VITAL ENERGi

CASE STUDY

CAMDEN LOCK

CHP ENERGY CENTRE AND DISTRICT HEATING

OVERVIEW

The Camden Lock Village scheme will see the creation of 50,000sqm mixed-use development to include 9,175Sq metres of employment space, including 195 residential units, a food quarter, converted railway arch commercial premises, a cinema and a school.

The scheme also include the refurbishment of the existing Network rail viaducts and the canal side public areas.

The scheme received planning permission in November 2012 and, due to there being no nearby heat network the development could connect to, we would create a new, basement level low-carbon energy centre and district heating and cooling network. The system was designed by Hoare Lea with consultants Aecom acting on behalf of the developers Mace.

CHALLENGE

We have extensive experience of delivering low-carbon energy solutions in Camden and previous projects have included the King's Cross development as well as the Somers Town heat network.

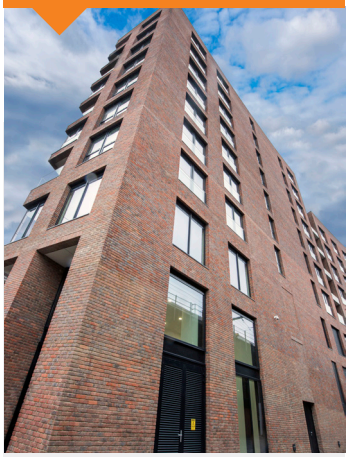
The energy centre is situated in the bottom basement (B2) level of the tower and Mace are taking an innovative approach to the project by simultaneously building from the ground up, whist also excavating two floors below, removing 50,000 cubic metres of earth.

As part of the development Mace constructed the largest basement on the site between two adjacent railway viaduct structures. They used a top-down method, constructing the basement floors during excavation of 50,000 cubic metres of spoil, to minimise soil movement and reduce overall construction time.

The subterranean energy centre houses a 185kWe CHP engine, two 1,700kW condensing boilers, three 8,000 litre thermal stores and four low temperature hot water skids. We also installed the cooling infrastructure which included four chilled water skids and three 663kW air cooled chillers located on the roof. This system will provide the heating and cooling for 195 residential dwellings as well as cinema, food quarter and commercial space.

As this energy centre was situated two floors below ground all plant was delivered

PROJECT SUMMARY:



CLIENT
Mace

PROJECT
CHP, District Heating

TIMESCALE:
90 Weeks

CONTRACT VALUE:
£3.26m

THE BENEFITS:

> Turnkey energy solution

> ·Improved delivery solutions, substituting twin pipe for single

> Trouble free installation on congested site

The network is made up of five primary district heating and two district heating networks.

The Vital team had good industry and energy centre knowledge to bring to the project, they knew what they were talking about and had a very good level of communications, good reporting and good point of contact in the relevant teams.

JACQUES DE LANGE, SENIOR M&E MANAGER - MACE

THE SOLUTION

via an open shaft known as a "mole hole" which was dedicated to plant movement operations. Due to the congested nature of the site, deliveries were scheduled with consideration for other contractors to ensure there were no clashes and our team attended daily co-ordination meetings to exchange information and help create a schedule which was optimal for all involved.

Outside of the energy centre we also installed the district heating network and is responsible for the supply and commissioning of the Hydraulic Interface Units. The commissioning step is particularly important as it can have a big impact on the overall performance and if not done correctly can result in inefficiencies which bring higher running costs.

The single most significant challenge of the project relates to the Network Rail viaducts that pass through the site area. The lines sit on two 150-year-old brickwork structures which split within the site boundary, carving the already congested site into four separated areas. The lines operate 24 hours a day as combined passenger and freight routes, with only a few minutes between services. The project team have managed crane operations, foundation excavation, basement excavation and drainage installation while ensuring that the railway stays safe and operational at all times.

One of the restrictions imposed on the district heating is that we could only have 12m of trench open at any one time and no trenches could be left open overnight. Ideally, without restrictions, we would choose to have 72m of trench open to facilitate quicker installation. Despite the restrictions of the trenches, we were able to maintain progress by having welding and jointing teams with a full-time presence on site so that they could install when the trenches were made available to them. .

Space restrictions on the site also made us handle district heating storage and manoeuvring in a different way. Normally pipework and equipment would be stored in a secure compound, but due to the lack of space we stored materials off site, calling them in as needed. The pre-insulated pipework used for district heating networks is normally delivered in 12m lengths, but on this project, in response to the restrictions, we used 6m lengths, which resulted in more welding, but allowed us to comply with all of Network Rail and Mace's requests.

Due to some of the district heating being installed under the railway viaduct, anti-vibration cameras were installed to record any movements when digging and work was stopped if any risk to the viaduct was suspected work would need to be stopped while Network Rail investigated.

The project involved the installation of primary district heating and district cooling networks which were made up of series 2 Logstor pipework. The solution also utilized a range of other Logstor products including ALU-PEX Twin, Steelflex, Pex, Twin and Steel Pipework, which were integrated to aid the installation process, whilst delivering optimised performance.

The network is made up of five primary district heating and 2 district cooling networks which connected 190 dwellings, the food quarter, cinema and commercial spaces, which included 31 railway arches which were being converted into retail premises. Overall the network was made up of 1,000m of district heating and 200m of district cooling.

One of the issues which can arise on sites of this type are clashes with other services. To overcome these we held onsite co-ordination and daily district heating meetings. This aimed to avoid clashes where possible and create solutions where not. Some of the clashes involved oil lines and oil cooled power cables which had a 1m restriction zone around, so the on-site team would create small variations to the route to ensure the installation was installed safely, while performing optimally.