

Client: Morgan Sindall

Location: Wembley, North London

Sector: Education

Project value: £3,000,000

Project: Sudbury School



Brief

We were asked by our client to carry out mechanical and electrical works to the new extension and refurbishment of the existing school as part of a £7 million expansion and refurbishment programme. This was needed to help meet increasing demand for school places in the London Borough of Brent. As part of the redevelopment, planning requirements stipulated that the new build block must meet a BREEAM rating of 'excellent' and the school decided to hold the existing building to the same standard.

Action

To do to the 'excellent' BREEAM rating required, renewable technologies were stipulated from the outset. These included the use of air sourced heat pumps for the heating system, as well as sedum roofs, photovoltaic cells to feed electricity into the grid, plus sun and wind catchers to provide natural light and ventilation. Additionally, water and energy saving devices have been introduced throughout the building.

As part of the project we chose the Daikin altherma flex type air-to-water heat pump; to provide heating for both the new build and refurbished areas of the school. It replaces a traditional single pipe gas fired boiler that previously provided the school's heating and hot water provision. Jaga low temperature radiators with fresh air injection, controlled by room mounted carbon dioxide sensor, were also used and are connected to the heat pump system to increase the overall energy efficiency of the project.

As a high temperature heat pump, Daikin altherma flex type is a highly efficient and versatile hot water and heating solution, delivering high water flow temperatures of up to 80°C, with two thirds of the heat generated from renewable energy. By reducing the total primary energy use, Daikin altherma flex type can help to improve the energy performance of buildings, reduce running costs and cut carbon emissions.

It is a modular system, connected by refrigerant pipework to multiple indoor hydrobox units. At Sudbury Primary School, eight 45kW outdoor units have been placed on the first floor roof of the building connected to 24 14kW hydroboxes in the basement. The use of a noise inverter compressor in the indoor units means that they produce less sound than standard household appliances such as washing machines, dishwashers or refrigerators so there is no noise disturbance in the school buildings.

Outcome

The project at Sudbury Primary School was a complex one; requiring JCA to install the new system while still keeping the school warm, during one of the coldest winters on record so that it could operate with minimum disruption to staff and pupils. Work was carried out on a phased basis, with each phase requiring the relocation of classrooms.

At JCA we are experienced in working and operating on a live site, whether it is a school, data centre or anything in between. At Sudbury Primary School our role was to engineer and manage the installation of services, including everything from heating, ventilation and intelligent lighting to data systems and fire and intruder alarms.

The most complicated aspect of the heating installation was to ensure that the existing buildings remained warm enough for the children while we replaced the old gas boiler with the new heat pumps. This meant that the schedule of works had to be designed to ensure that work in the existing buildings took place in the school holidays.

