CASE STUDY
Royal Alexandra & Albert School

The Royal Alexandra and Albert school is set in the grounds of Gatton Park near Reigate and was designed by Capability Brown.

2MW ground source heat pump systems

23km of lake loops in two lakes

157 x150m of boreholes

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isoenergy was selected to work with the Royal Alexandra and Albert School in 2019 to convert the school buildings from ageing oil boiler systems to new heat pump systems.

In total, there were 13 buildings that relied on inefficient oil boilers. The aim was to reduce the overall reliance on oil boilers and fossil fuels completely. Oil boilers were used in a wide range of different ages and types of buildings including boarding houses, classroom blocks, the dining hall, the swimming pool and the Grade II listed Gatton Hall itself.

The Royal Alexandra and Albert School also improved their energy efficiency in other areas by replacing a majority of its lighting with LEDs and increasing the amount of loft insulation installed in all of its buildings which will further reduce the consumption of energy on-site.

As the primary aim of the project was to reduce carbon emissions and running costs, 2MW of ground source heat pump systems were installed, displacing the 750,000 litres of oil consumed each year. The energy for the heat pumps comes from a mix of boreholes and closed-loop lake collectors that are split across a number of areas on the grounds.

isoenergy was asked to plan the project in depth using several roll-out phases. The initial planning stage took almost six months to complete before starting works on a pilot project involving two of the boarding houses. The remaining buildings were then converted to heat pump systems over the course of a year.

Four Ecoforest heat pumps in the Gatton Hall plant room

In total, there are 11 plant rooms on the site servicing 13 buildings. Each of the plant rooms is connected to one of a range of shared ground arrays, either borehole or lake loops depending on their proximity. The heat pump systems produce both heating and hot water.

Before the project commenced, the Headmaster, Mark Dixon explained: “The energy-saving project we are planning is one that will revolutionise the way we source energy, whilst being sensitive to the 260 acres of historic parkland in which the School is located. By 2021, we hope to be one of the greenest schools in the country.

Now the systems have been up and running for a year, the school is enjoying a significant reduction in heating bills. This is coupled with an initial 80% reduction in their carbon emissions which increased to 90%, in part due to the heat pumps, but also from switching to a 100% renewable electricity tariff to power them.

Each of the boarding houses has its own plant room connected to a shared ground array, either in the lake or using boreholes

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