



Environmental Sustainability  
team  
Estates Services

# Case Study

## Plant Sciences heat pump

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### Background

The expansion of the heating and cooling systems to condition the newly refurbished greenhouses at Plant Sciences provided the opportunity to link the now bigger systems together, to recover excess heat in the cooling circuit, and push this in to the heating circuit and recover excess cooling in the heating circuit and push it in to the cooling circuit directly, using 4 brand new water to water heat pumps.



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### Project Delivered

The opportunity to link heating and cooling systems together is optimal when the heating system is set up to run at 40 Degrees Celsius. This enables the excess heating in the cooling circuit to be passed through the heat pump and be boosted up to 40 deg. C.

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The set of the HVAC provision was ideal for modification and integration providing an opportunity to show what heat pumps are able to deliver. The team are always on the lookout for innovative way to save energy

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### Outcomes

The end result is the ability to condition a bigger volume of space and reduce overall electricity use at the same time.

There are still the traditional air source heat pumps on site that 'top up any' demand expected in the height of summer and depths of winter. The new configuration will work to recover the most energy in all weather conditions. Having mild conditions up until Christmas has meant that it has been saving a lot of energy because these are the conditions when it can work at its highest efficiency.

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### Conclusions

Savings are around 10% of building electricity use despite the refurbishment increasing the conditioned greenhouse space by 20%. This project cost £106k and will remove 111 tonnes of carbon from the University's emissions. The project will also generate annual cost savings to the department in the region of £24k.

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### Contacts

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