MITSUBISHI ELECTRIC

Case Study

University benefits from inverter-driven chiller solution

e-series

When Cardiff University needed to replace an aging chiller cooling some of its third-floor laboratories, the specialists from Cooltherm Wales were called in to reverse engineer the most energy-efficient solution.

The replacement **e-series, inverter-driven chiller** will help to massively reduce the carbon footprint of the comfort cooling for the laboratories. Equally importantly, the new system is anticipated to result in important energy cost savings of around £4,000 a year for the University.

The Cooltherm team in Wales was chosen to design a bespoke full turnkey chiller plant to provide the university with the most efficient and low carbon system as possible.

The Cooltherm experts back-engineered the existing system and regrouped all the data to ensure the design was as efficient as possible, as well as maximising the performance of the system.

The chiller is needed to provide cooling to thirteen indoor fan coil units located within the third-floor laboratories, as well as the cooling coil for an Air Handling Unit. The maximum cooling capacity was determined to be 50kW at +6/+12°C flow and return water conditions.

The existing pump had also been undersized which had caused past issues with cooling so Cooltherm designed a new pump skid using two Lowara 'Run and Standby' pumps to suit the maximum required flow rate and pressure loss through the existing hydraulic circuit.

These pumps are inverter driven which helps to deliver the right flow rate through the system and ensure the minimum power consumption to meet the demand for instantaneous cooling.

> “The choice of chiller was really important, A 90kW Mitsubishi Electric e-series chiller was selected because it uses highly efficient scroll compressor technology to minimise the starting current and reduce carbon emissions.”

Romain Pernet,
Projects Supervisor, Cooltherm

The e-series is also available off-the-shelf, unlike traditional chillers which can take several weeks to build. The e-series offers a soft-start of just 8Amps, compared to a conventional chiller which would have an average starting current of 180A. This is anticipated to save the university **£4,000 a year on energy costs**.

Up to six individual modules of the e-series can be connected together to provide a system capacity from 90kW to 1,080kW. Each modular unit can also be positioned in a row or bank of up to six connected units using the same in-built internal header, reducing the plant space requirement and making installation easier.

“This project combined a high level of engineering with very high performance equipment and project-management was a crucial aspect of the job with everything from the crane lift to commissioning well organised and prepared,” added Romain Pernet.

“The client was really happy with the outcome and is now planning to install another similar system within the university, with a second e-series already delivered.”

EACV-P900YA-N
e-Series Modular Chiller

Case Study **Cardiff University**

e-series

Installation Summary

Outdoor Units:

1 x 90kW e-series Modular Chiller

- Highly efficient inverter scroll compressors
- Modular to maximise space saving
- Built-in internal headers for simple and quick install
- Up to 6 individual modules can be connected to offer a single system capacity of up to 1080kW

e-series

MITSUBISHI ELECTRIC
Changes for the Better

Telephone: **01707 282880**
email: **air.conditioning@meuk.mee.com**
les.mitsubishielectric.co.uk

@meuk_les
@green_gateway
Mitsubishi Electric Living Environmental Systems UK
Mitsubishi Electric Cooling and Heating UK
mitsubishielectricuk_les
Mitsubishi Electric Living Environmental Systems UK
BLOG thehub.mitsubishielectric.co.uk

UNITED KINGDOM Mitsubishi Electric Europe Living Environment Systems Division, Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, England. Telephone: 01707 282880 Fax: 01707 278881
IRELAND Mitsubishi Electric Europe, Westgate Business Park, Ballymount, Dublin 24, Ireland. Telephone: (01) 419 8800 Fax: (01) 419 8890 International code: (003531)

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Note: The fuse rating is for guidance only. Please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of April 2021

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