MITSUBISHI ELECTRIC

Case Study

Offshore solutions specialist upgrades chiller system to support sustainability needs

R32

As a global leader in delivering sustainable offshore projects for the energy sector, Subsea 7 has built its success on engineering expertise and specialist technologies.

So when the company was looking at energy use in its Aberdeen East Campus office, the facilities team realised that they needed to upgrade the chiller system serving the 4-storey building.

Subsea 7 Campus Office Aberdeen

The company's multi-disciplinary teams design and deliver cost-effective offshore energy solutions that can provide sustainable operations and greater efficiencies to its clients.

These include full energy lifecycle services and when Facilities Maintenance Manager Grant Wisely and Maintenance Engineer, Andy Gorvett, were looking at the energy use at the company's East Campus building, they initiated a case study on the existing chiller system to investigate the ongoing repair costs and find a viable remedy.

The two existing 840kW chillers were generating 1.7MW of cooling for the office block where 900 people work and repairs over 12 years had been costly.

The system supplies cooling via chilled beams throughout the East Campus building, alongside an air handling unit which delivers tempered air to the offices.

"We studied the performance of the existing chillers and this showed that they were oversized," explained Andy Gorvett. "In addition to this, the cycling of the system wasn't optimised and, being fixed-speed, the units did not have the technology to be able to wind down to reduce energy consumption.

"It was quite clear that we wouldn't be able to simply fix the issues with the existing chiller so we started to look at other options and this is where we came across the new e-Series chillers."

Subsea 7 Campus Office Aberdeen

One of the Climaveneta chillers has now been replaced with six 180kW modular e-Series chillers - the first R32 units to be installed in the UK. These modern, inverter-driven chillers are specifically designed to modulate the cooling load to match the demands of the building.

This enables them to be much more energy efficient than a traditional fixed speed system.

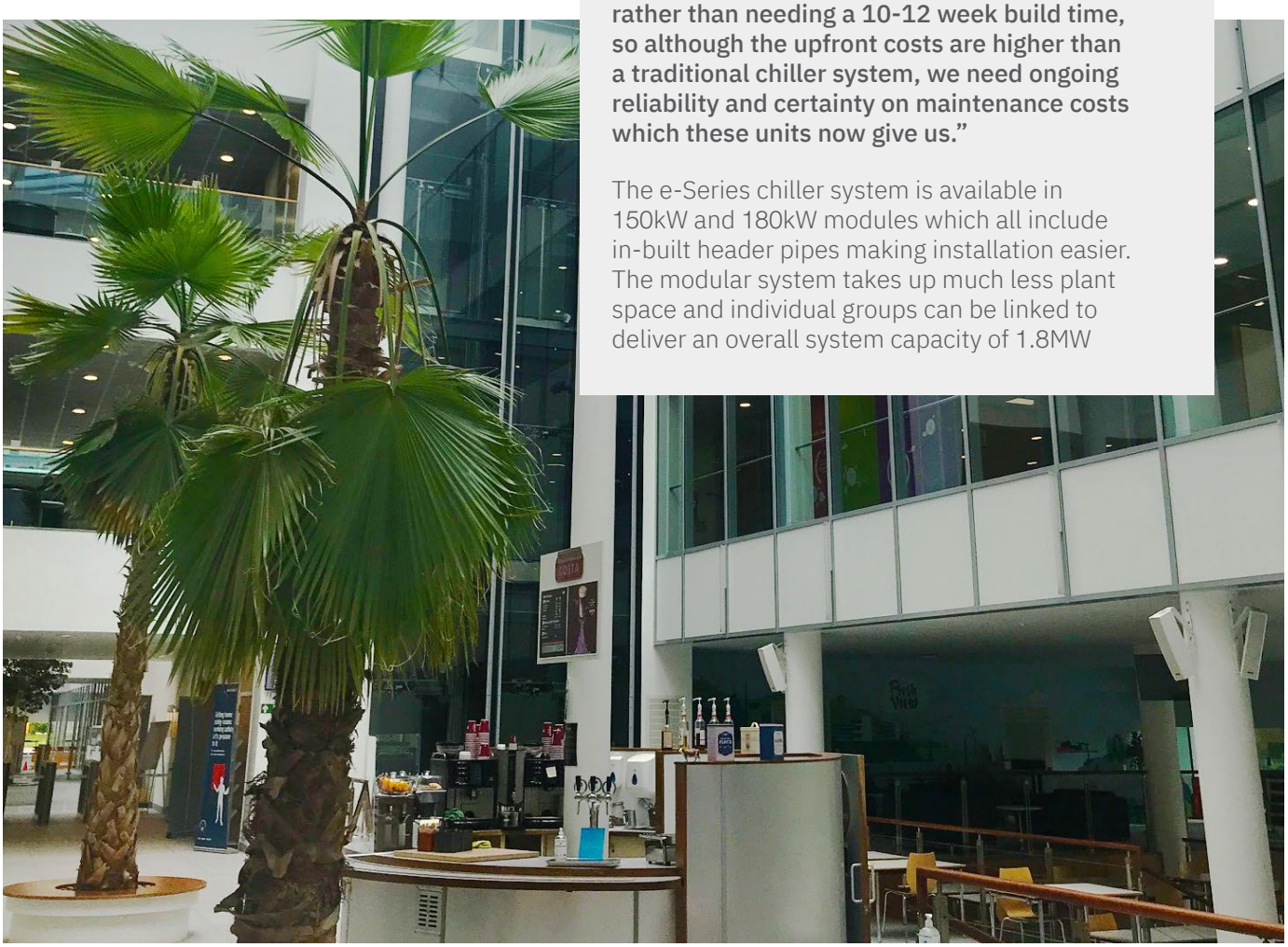
"Sustainability is a key focus for Subsea 7 so when we were looking at alternatives, the fact that the new units run on a R32 refrigerant, which more than halves the climate change potential impact of the system, was another major plus," added Andy.

Manufacturer Mitsubishi Electric was also quick to point to other installations using the e-Series chillers, including the maternity unit of a major hospital in Berkshire - although the Subsea7 project is the first UK installation of the R32 e-Series models.

"23 of the hospital modules were installed and commissioned last year and there have been no faults, or call outs for maintenance in all that time which was impressive," explained Andy.

"The units were also available 'off-the-shelf' rather than needing a 10-12 week build time, so although the upfront costs are higher than a traditional chiller system, we need ongoing reliability and certainty on maintenance costs which these units now give us."

The e-Series chiller system is available in 150kW and 180kW modules which all include in-built header pipes making installation easier. The modular system takes up much less plant space and individual groups can be linked to deliver an overall system capacity of 1.8MW



The beauty of the e-Series is that individual units can be shut off for maintenance without the whole system being turned off.

This makes changing out a unit or adding additional ones much easier in future.

The e-Series also comes with a 5-year warranty as standard, which was another major consideration for Andy Gorvett and his team: **“Like any business, we had to make the business case for this change of system and that these new chillers were the correct decision,”** he explained.

Andy is a fridge engineer by trade and the e-Series units tick all the boxes for him: **“Not only have we increased the reliability and performance of the system, we have future-proofed the business with lower GWP units. We are now expecting a reduction in energy use by about 30 per cent and we are expecting to reduce our maintenance costs.”**

The second of the Climaveneta units will remain for the time being but the plan is to replace it with more R32 e-Series units in the future. New primary pumps were installed as part of the upgrade and were fitted with Mitsubishi Electric VSD (variable speed drives) to increase efficiency and control of energy use.

“At Subsea 7 we have built our business on early engagement with our customers and that is also what impressed us about Mitsubishi Electric,” added Andy Gorvett, **“Their team has been on hand from day one and the result has come through a collaborative approach to the project, which matches our ethos and is exactly as it should be.”**

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Subsea 7 Campus Office Aberdeen

R32

Installation Summary

Outdoor Units:

6 x 180kW modular R32 e-Series chillers

MITSUBISHI ELECTRIC

e-series

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Changes for the Better

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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 September 2021

Green Gateway greengateway.mitsubishielectric.co.uk