

Energy efficient cooling introduced at Jaguar Land Rover

Chillers



e-series

Jaguar Land Rover's principal design facility in the UK has been equipped with a new e-series chiller system from Mitsubishi Electric. The new system was installed as part of a major refurbishment with the overriding aim to improve on the energy efficiency of the old system.

Jaguar and Land Rover are two of the UK's most eminent car manufacturers, with the two brands being responsible for some of the most iconic cars in history, including the Jaguar E-Type and the Land Rover Defender.

Both formerly part of British Leyland in the late 1960s, the companies were reunited to become a single entity under the ownership of the Ford Motor Company in 2002. Since 2008 it has been a wholly owned subsidiary of Tata Motors.

e-series

The Jaguar Land Rover Gaydon Centre, a former RAF site, is situated close to the village of Gaydon, Warwickshire, and is one of its principal engineering centres. The site has its own test track facilities and employs over 4,000 people. Jaguar Land Rover began a refurbishment of its Research and Design facility, known as Building 531, in spring 2016. The new cooling system not only had to be more energy-efficient, it also had to be quieter than the previous system.

Chiller systems have been used for decades to deliver controlled cooling to buildings, but with increasing pressure on energy efficiency and running costs, **Mitsubishi Electric's e-series modular chiller provides a low-carbon, cost-effective option.**

The e-series modular chiller has two inverter driven compressors that allow the unit to operate between 8% - 100% of capacity. By having a broad operating range, advanced inverters and sophisticated controls, the e-series can produce exceptional part load efficiencies which is where most systems will operate.

A unique modular approach allows up to six individual units to be connected together to provide a system capacity between 90kW and 540kW. Using this modular approach reduces space requirements and simplifies lifting and installation.

Jaguar Land Rover's new cooling system was designed by Norvent Pipework and the installation was carried out by IDS Electrical. The system consisted of eight EACV-P900YA-N e-series cooling only chillers, plus eight MELCOBEMS MINI interfaces, which provide individual indoor unit connections to a third-party Building Energy Management Systems (BEMS) via RS485 by either Modbus RTU or BACnet from a common platform.



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Mel Baynham
Jaguar Land Rover

Modularity was a defining factor from the very start of the project as Mel Baynham at Jaguar Land Rover explains, “We pushed for modular due to the fact that if a unit went down we would be able to keep the system running while that module was being repaired. It also needed to be a highly efficient system capable of looking after a design office containing 2,000 people. We looked at a number of chillers but the Mitsubishi Electric system met all of our requirements, including next day delivery, and was identified as the clear frontrunner.”

Two inefficient chillers were removed from the facility to make way for the new modular system and Jaguar Land Rover now expect the Mitsubishi Electric solution to pay for itself in energy savings. The new system also delivers low noise levels thanks to highly efficient components contained within the e-series and its unique shape.

Jaguar Land Rover’s cooling system is operated by a Trend Controls Building Energy Management System (BEMS) and although there were a few teething problems relating to the controls, the new cooling system is now performing exactly as expected. Neil Hyatt from Trend Control Systems, comments, “There were some setup challenges, but once these were sorted everything worked well. The sequencing of each bank of chillers is done via the Trend BEMS system via hard wiring VFC enable signals. We can then view the chiller temperatures and any faults via a Modbus link to the **MELCOBEMS MINI interfaces.**”

With the system now fully operational and providing a more comfortable working environment, Jaguar Land Rover can focus its efforts on refining automotive technologies at a significantly reduced energy cost.

e-series



Installation Summary

CHILLERS | CONTROLS

Equipment:

- 8 x EACV-P900YA-N e-series cooling only chillers
- 8 x MELCOBEMS MINI Interfaces



EACV-P900YA-N



MELCOBEMS MINI

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Making a World of Difference



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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) or R134a (GWP:1430). 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).



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