

ENGINEERING  
TOMORROW

*Danfoss*

## Case Study | Danfoss Optyma™ Plus condensing units

Multi-refrigerant,  
**A2L-ready Optyma™ Plus** condensing units  
deliver **ultra-reliable**  
and **green cooling**  
for priceless rare blood  
samples

When contacted to install new cold room storage and temperature control for an NHS hospital's blood lab, CB Refrigeration needed to ensure absolute reliability. So, the contractor turned to the Danfoss Optyma™ Plus condensing unit range.

### HIGHLIGHTS

- **Failsafe operation, with automatic changeover**
- **100% system backup**
- **Project program of <5 weeks**
- **Ultra-low GWP refrigerant R455A**
- **Compliant with EN378 standard**

**"We've got decades of experience providing cooling solutions for the pharmaceutical sector, protecting assets worth millions. So, we're used to planning for every eventuality, thinking about where it could go wrong, and safeguarding against every possibility."** – **Tom Hannaby, Managing Director, CB Refrigeration**

Across the NHS, millions of pints of blood are used in transfusions every year. To ensure blood stays safe and available, it needs to be stored in very specific conditions – usually between 2°C and 6°C.

So, when one hospital's blood storage and testing lab reached the end of its life, it needed to act fast to protect precious samples. To install a new, effective system as quickly as possible, the hospital turned to refrigeration and air-conditioning engineering specialists, CB Refrigeration.

Well-established in the retail, hospitality and pharmaceutical sectors, the contractor has built a reputation on installing complex cooling solutions that provide the utmost reliability and performance – regularly using Danfoss components for their dependability, ease of use, and ongoing support.

**The challenge:**  
**a new, wholly reliable temperature-controlled lab and cold room**

With its previous system no longer functioning reliably, the hospital needed CB Refrigeration to advise on, design, and install measures that would allow technicians in its new lab to both store and test blood at accurate, consistent temperatures.

The project required two separate designs. First, a cold room to store the blood – as a cost-effective alternative to having multiple fridges. Second, a controlled workspace for lab technicians that would consistently maintain the correct temperature even during technician changeover.

While reliability is always a priority for CB Refrigeration, in this case it was an absolute necessity. The hospital blood



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**This blood can't be replaced. It's worth more to patients than any money. So, the cold room and air conditioning solutions we put in place needed to be absolutely bulletproof.**”

*Tom Hannaby, Managing  
Director, CB Refrigeration*



bank stores rare and specialized blood types that would be irreplaceable if lost through faulty storage or high lab temperatures.

Tom also recalls the other complexities in the project: “It’s an exceptionally busy lab, so we needed to factor in a huge number of people, processes and items. And of course, we had to hit a very precise installation window to fit with the other contractors building the lab.

“So, we needed to schedule everything down to a tee – and lean on tried-and-tested equipment we could trust, with a clear business case.” Tom got any sort of support he needed from his wholesaler Wolseley Climate: “They helped us address the PED and the EN378 as we opted for ultra-low A2L products, and we formalized that in a risk assessment. When you’re working with this, you’ve got to work safely.”

**The solution:**  
**two cooling systems working in tandem, both featuring Optyma™ Plus condensing units**

CB Refrigeration installed two cooling systems, which can work in tandem or maintain the correct temperature individually – creating a failsafe should one system malfunction.

Likewise, the control measures go a step further than usual to deliver absolute reliability.



“To prevent any type of failure, we built an automatic changeover system with multiple alarm parameters,” says Tom. “Rather than just having an alarm that’s set off when the temperature reaches a certain level, we included pre-alarms as a preventative measure.

“We installed over 25 different temperature probes, all UKAS approved. These monitor if the temperature moves even one degree away from its set point—ensuring we can stay in complete control of the environment and providing the right support if necessary.”

Both cooling systems rely on Danfoss Optyma™ **Plus** condensing units, which are designed for use with ultra-low GWP A2L refrigerants. As a result, CB Refrigeration could charge the system with R455A—which, with a GWP of 148, future-proofs the installation as regulations tighten.

Tom was also impressed that the units are among the quietest in their class, ensuring low noise levels for office workers nearby.

“We’re known for quality, and I need equipment and support that aligns with that ethos,” says Tom, “So the choice to use units from the Optyma™ **Plus** range was an easy one.

“Having a unit that works with ultra-low GWP refrigerant was another bonus. We took the opportunity to educate our client about the future of refrigerant regulations – and they really appreciated the upgrade. The benefits were very clear.”



## **The result:** smooth installation and a delighted customer

Although there's still validation and testing to be done, Tom says hospital chiefs are "over the moon" with the new facilities.

The team at CB Refrigeration were able to deliver absolute reliability in the cold room and air-conditioned laboratory, with granular control temperature control to protect every blood sample. And with the plug-and-play format of Optyma™ **Plus** condensing units, the installation was fast and painless.

As an additional benefit, using R455A will deliver considerable cost savings for the hospital in the future—negating the need to update systems or increase operational costs as the F-Gas regulation tightens.

While this project is still at an early stage, CB Refrigeration intends to strengthen the relationship with Danfoss in the future.

"In this industry, it's all about building a reputation and working with our clients to build the best solutions," says Tom. "And along with their efficient, reliable cooling equipment, the support we get from Danfoss is a significant factor in that."



*Installed cold room.*

### **Danfoss products used:**

- 2 x Optyma™ Plus multi-refrigerant condensing units
- ERC 214 controller kit
- TE2 thermostatic expansion valve
- EVRv2 solenoid valve

Evaporators from Kelvion company.



### **For further information, or to talk about your own project, please contact:**

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