



Precision Cooling for the Pharmaceutical Sector

Services: [Turnkey Refrigeration Package](#)

Project Overview

We provided a customised solution for a global veterinary health care provider for their new facility where they develop vital vaccines and antibiotics for animal health. This specialist project required exceptionally precise temperature control, requiring us to leverage our expert skills to find a suitable solution that would meet our client's requirements. The client set us a brief to deliver:

- The supply and installation of six, 10-metre-high coldstores, ambient air locks, holding areas and incubators
- Control panel design
- Associated electrical installation services

The coldstores needed to operate within strict temperature tolerances, provide 100% standby and back-up and be energy efficient.

With a total of 4000m³ of chilled cold storage, including 400m³ freezer storage, this was a large-scale project with a strict schedule. We successfully completed this project two weeks

ahead of schedule and the system is now running smoothly and well within the 1C temperature fluctuation requirement.

Our Solution

We delivered a full turn-key refrigeration package from designing and modelling the cooling system, to manufacturing the refrigeration packs, installing and commissioning the whole system, and the ongoing service and maintenance.

Two dual temperature refrigeration packs were connected to two roof-mounted condensers. To prevent unconditioned ambient air from entering the main cold room areas, the airlocks were fitted with interlocking roller doors. An isolation switch fitted to one of the chilled holdings delivers chilled storage at 12C or ambient, without it affecting the main system.

We managed all aspects of the refrigeration installation, including the sign-off and validation of associated mechanical and electrical services, ensuring everything was delivered correctly, was of the highest quality, and met all health and safety and documentation requirements.



Project Challenges

The brief included the installation of a complex control system which would provide 100% back-up resilience, as even a small temperature variance would compromise the products being stored. To achieve this, we designed and installed the plant and control system so that each pack could maintain the coldroom set point temperatures independently of the other, should one fail because of a major mechanical fault or gas leak. To do this we utilised split evaporator coils with twin controls that would automatically transfer the full connected load to the other pack if a fault is detected. The split units were also timed to alternate on a weekly basis to ensure each one maintains optimum operational efficiency.

Six large scale coldstores were required for this project, with the largest measuring 27.3m (L) by 11.2m (W) by 10.5m (H). The sheer scale of these coldstores presented a logistical challenge and working at this height required specialist safety measures. We have extensive experience in managing projects at height, and so to ensure the health and safety of those working on the installation, we used high-level scaffolding, a dedicated access lifter, a buddy system with spotter and two-way radios.

Key Benefits

- Through our complete end-to-end solution, the client benefited from a single point of contact for each stage of the project, preventing delays and stalling points
- By carrying out 3D temperature modelling of the system before installation, we verified the system to ensure it would operate effectively within the strict temperature tolerances. This helped us to remain on programme
- The central plant runs multiple evaporators instead of individual engines running single evaporators, which is a more space and energy efficient solution. This helps to keep the client's running costs low and maximise storage space, without compromising cooling capacity
- Using our extensive knowledge and experience, we designed and built a system with 100% backup control, thereby protecting high value products by maintaining set point temperature at all times

- Our in-depth O&M manuals detailing high level technical information facilitated effective building management post-construction. The seven O&M manuals developed, reflecting each sign-off procedure, were critical to achieving project progress and obtaining certification

“The level and extent of commissioning data required to satisfy pharmaceutical validation criteria is the highest possible, and Space Engineering Services delivered the specified tight temperature control parameters and the stringent and extensive handover pack information. We wouldn't hesitate to recommend their performance and look forward to working with Space Engineering Services again.”

Richard Sutton,
PJ Hegarty (Principle Contractor)

