

Project Showcase:

Profile Group Hautapu Facility Cambridge



For Profile Group Limited's first build in their new Hautapu industrial complex, an environmentally-friendly, energy efficient HVAC system was paramount to achieving their 5 Star Green Star Rating. R32, as the lowest Global Warming Potential (GWP) refrigerant in the VRF market, made R32 Hybrid the logical choice.

CAMBRIDGE



EQUIPMENT BREAKDOWN

- R32 Hybrid
- Split Systems
- Centralised Control

The Goal

Profile Group Limited's industrial campus build near Cambridge is an effort to consolidate a number of smaller factories into one large site. Building A is the first of three, with Architectural Glass Products (AGP), a state of the art double-glazing manufacturer and APL Manufacturing (APLM), a division of APL Window Solutions – one of New Zealand's largest manufacturers of Aluminium Windows and Doors, occupying the building.

The Challenge

The masterplan of the 44,000m² complex includes environmental work and a number of onsite facilities to cater for the large number of staff employed on the site, while also targeting a 5 Star rating using the current Green Star Industrial Tool.





Photo Credit: Foster Construction LTD



The Mitsubishi Electric Solution

R32 Hybrid was put forward by the Consulting Engineer to fit within the space constraints, provide simultaneous heating and cooling, minimise refrigerant use and provide a similar comfort level to a chilled water system. This was also the logical choice to comply with a number of Green Star requirements and played an important part in achieving their 5 Green Star Rating for the building.

R32 Hybrid Combines all the Benefits of Traditional VRF with Significantly Lower GWP

While traditional VRF complies with the Green Star requirement for a non-Ozone Depleting refrigerant, R32 Hybrid was chosen by the building owners as it uses less refrigerant.

Furthermore, R32 refrigerant has 33% of the GWP of R410A – the lowest GWP in the VRF market – meaning the system retains all the benefits of a VRF system but with substantially lower environmental impact.

Flexible Design and Modularity of the R32 Hybrid System Provides a Tailored Solution

R32 HYBRID

With Building A comprising of a large manufacturing space surrounded by 3 separate office spaces, the modular architecture of R32 Hybrid suited the capacities required. Three independent systems were built up over these office spaces removing the need for large amounts of reticulation infrastructure around the overall building footprint.

Water is at the Heart of the Indoor Units

By using water as the heat transfer fluid for the majority of the air conditioning system, R32 Hybrid minimises the overall amount of refrigerant charge in the system and minimises the need for expensive leak detection systems as there is no risk of refrigerant escaping into room spaces.



Photo Credit: Foster Construction LTD





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Simultaneous Heating and Cooling

R32 Hybrid is an advanced simultaneous heating and cooling system with heat recovery and delivers a proven alternative solution to traditional R410A VRF systems. The more frequently heating and cooling simultaneous operation occurs, the higher the energy saving effect becomes.

Mitsubishi Electric Technology Enhances Energy Efficiency

Not only is energy saved via R32 Hybrid's Heat Recovery Operation when providing simultaneous heating and cooling, energy efficiency was further improved by using Mitsubishi Electric High Efficiency Aluminium Flat Tube outdoor coils. The resulting increase in part load performance would ensure that year-round efficiencies are further increased.

Building A has 112kW of nominal cooling installed over 4 R32 Hybrid Systems with further expansion on the site planned over the coming years.

Full Equipment Breakdown

Total Capacity:

Heating Capacity: 191.4 kW Cooling Capacity: 168.5 kW

Outdoor Units

4 x PURY-EM250YNW-A1-BS High COP

Heat Recovery Units

4 x MUZ-GL35VGD Single Split Units

- 3 x MUZ-GL50VGD Single Split Units 2 x MUZ-GL80VGD Single Split Units
- 1 x PUHZ-HW140VHA Monobloc Hot Water Unit

Indoor Units

4x PEFY-WP100VMA-E Medium Static Ducted Units 4x PEFY-WP40VMA-E Medium Static Ducted Units 7x PEFY-WP25VMA-E Medium Static Ducted Units 8x PEFY-WP50VMA-E Medium Static Ducted Units 4x MSZ-GL35VGD Single Split High Wall Units 3x MSZ-GL50VGD Single Split High Wall Units 2x MSZ-GL80VGD Single Split High Wall Units

Branch Controllers

4 x CMB-WM108V-AA Hybrid Branch Controllers

Controllers

32 x PAR-40MAA Wall Controllers 1x PAC-IF031 Flow Temperature Controller 1x PAR-W21 Hot Water Wall Controller 1x FSW 125/140 Flow Switch Kit 9x MAC-334IF-E Interface 1x AE-200E Central Controller 1x PAC-YG10HA-E I/O Adapter 1x BACnet Licence

Contractor

McAlpine Hussmann Hamilton

Consultant eCubed Auckland

Builder Foster Construction LTD