

SeeWoo Invest in Bespoke Solution for Chinese Supermarket

FOREWORD



The SeeWoo Group is one of the largest suppliers of Oriental foods in the UK with three retail stores, wholesale operations, restaurants and a food production factory. One store, located in the heart of London's Chinatown, started as a small grocery in 1975 and has now grown into a thriving supermarket.

SeeWoo had increased the size of their Chinatown supermarket, extending into the adjacent property, but due to building constraints that made the installation of off-the-shelf type systems very difficult, the property has never had any form of heating or comfort cooling in its 40 year history.

THE PROJECT

Expanding their refrigerated offer, the client wanted to add fresh meat, fish and live fish tanks.

R404A refrigeration units were to be replaced with central plant to cover

the entire site. Priorities of the project included energy efficiency, utmost reliability, low noise, low GWP for future-proofing, ventilation, comfort cooling and heat recovery - all of

which had to be delivered without any downtime or closure of the busy trading store.

THE SOLUTION

Ultra Refrigeration was selected by the client to provide a bespoke solution. Ultra manufactured two custom Integrated Power Packs (IPP), both of which are triple-stage externally compounded booster systems with integrated heat recovery. Purposefully designed by their CAD engineers, and built upon a steel frame, the two packs, heat recovery station, and condenser and servicing platforms were fully assembled ready for crane lifting over the building, and onto the flat roof area to the rear of the premises. Each pack containing four LT, two MT, and one HT compressors, with independent variable speed drives was controlled by advanced custom software, delivering smooth and reliable suction pressures.

A reliable alternative to R404A, the system utilises low GWP refrigerant Opteon XP40, having used it on a number of projects, Ultra have found it to provide preferable temperatures for heat recovery.

Speed controlled EC fans deliver stable head pressures, varied according to ambient or store conditions for optimum efficiency and heat recovery. Heat from both refrigeration packs is recovered to a water circuit with additional heat top-up from the air source evaporator integral to the dual condenser.

The water circuit, also capable of comfort cooling, distributes heat throughout the store via ceiling cassettes and tempers air entering

the building via a heat exchanger located in the air handling units, designed and built on-site by Ultra's team of engineers.

In order to cool the live fish; plate heat exchangers, one connected to each pack, chill glycol to just below 0°C, it is then pumped around a small circuit to internally chill the salt water via a secondary specialised, purpose built plate heat exchanger. A custom, RDM Intuitive TDB, controller both monitors and controls the pumps, valves, glycol and saltwater temperatures.

The client's live fish display was at the forefront of the retail project, it was essential that the store front window did not mist to obscure the view from passing customers. Ultra designed and built a dehumidifier, connected to the central plant with custom control software, using RDM's free license TDB programmable logic software. Based on the stores current cooling or heating demand dry air is distributed over the window by chilling and reheating, air is then recirculated via a ducted unit mounted discreetly above the ceiling. The system operates only when required by detecting the moisture content deposited on the glass using a resistive sensor built by Ultra exclusively for this application.

Each ceiling cassette features customised controllers, delivering heating or cooling to each area of the shop. Each cassette can be zoned for optimum comfort and energy control,

for example heat is prioritised over the checkouts, whilst cassettes in the chilled food isles have a lower priority.

Selected from the Intuitive TDB range of Programmable Logic Controllers, manufactured by RDM, the 38 controllers are networked to the DMTouch, a touch screen central monitoring point, also manufactured by RDM, located near to the manager's office.

The system constantly monitors refrigerant pressures, coldroom door use, temperatures, water pressure, and faults, while recording any anomalies and instantly relaying them to on-site staff and by email to SeeWoo's Technical Services Manager, Henry Pirie, and to Ultra's support services team.

In addition, the DMTouch takes input from the fire alarm to shut down ventilation systems in the event of a fire and from the intruder alarm so that case lighting, heating and cooling can be disabled when the store is closed.

The DM touch also contains highly customised 'virtual' control software to automate heating or cooling demand, valve and defrost control whilst timers, ambient conditions and occupancy data are broadcast throughout the local network enabling smart control of devices without the need for human intervention; or error.

SUMMARY

The new store, located in Central London offering a broad selection of live seafood, fish, and meat, opening was marked with an official ceremony

including a lion dance and ribbon cutting by Haitian Lu from the Chinese Embassy. The investment in technology and plant equipment

ensures reliability, longevity, and minimal energy and operating costs.

ULTRA REFRIGERATION

Ultra Refrigeration is at the forefront of commercial refrigeration application, winning the ACR News award for Environmental Project of the Year in collaboration with

Climalife, Chemours and the Co-op. They provide services to the catering, leisure and food retail trades. Ultra's reputation is highly regarded for the design and implementation

of refrigeration solutions in the most challenging of locations and for special applications including ultra-low temperature, close control and humidity regulation.

