



Breaking new ground for transcritical CO₂ systems

BITZER Australia approached SWEP to create a new transcritical CO₂ system for a Woolworths grocery store in Sydney, Australia. SWEP has led the global development of ultrapressure BPHEs for transcritical supermarket refrigeration for the last decade and was prepared to solve the challenges that the hot Australian climate poses for transcritical systems.

Read more on [swep.net](https://www.swep.net)

Designing a new transcritical solution

BITZER was asked to design a transcritical CO₂ system at a Woolworths store in Sydney, Australia.

BITZER has been making a contribution with innovative products and services for 80 years. Their products maintain the optimal temperatures on buses, trains and in buildings to ensure food stays fresh on its way to customers around the world.

SWEP was able to provide a technical solution for this project, which allowed BITZER to design a system to meet the requirements of the customer. The design of the chilled water thermosyphon unit with low refrigerant side pressure drop was essential to the operational principle of the system.

A powerful system

SWEP B12, B200T and B18 BPHEs were used in this project. The project also features: Chilled Water production (+8/+12) via CO₂ thermosyphon for store air conditioning. Suction superheat control for low temperature compressors via liquid. Condensate subcooling via flash gas. Vapour condensing via R134a mechanical resilience unit. Heat reclaim to water via discharge gas for store heating.

An award-winning solution

The SWEP and BITZER designed system was commissioned in December 2018 and handled the January 2019 heatwave in Sydney with flying colours.

In early February 2019, an ambient peak temperature of 48°C ambient was recorded on the gas-cooler deck, yet the system – which serves 34kW of frozen produce load, 205kW of chilled produce load, 325kW of space cooling and 12kW of heating – delivered compliant temperature performance to all connected loads. When asked why BITZER chose to team up with SWEP on this project, Ian Suffield, National Engineering Manager, BITZER Australia, said “We work with SWEP on a lot of different



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projects every year. The product knowledge and support available from SWEP by Australian based engineers means we get great service and technical advice within a short time. The SWEP product has also shown the versatility of their range with the number of different solutions we needed for this project.”

In 2019, Woolworths won the Refrigeration Excellence category at the AIRAH awards and continues to

break new ground for transcritical CO₂ systems in Australia’s hottest climates.