CASE STORY

THE CUSTOMER
BITZER Australia, an industry leader in compressors, engineered refrigeration packages, pressure vessels, and air conditioning solutions.

THE CHALLENGE
Maintain critical temperature parameters for multiple loads, even when ambient temperatures reach 48°C.

THE SOLUTION
Create a new transcritical CO_2 system for a Woolworths grocery store in Sydney, Australia.

THE HEAT EXCHANGERS
The new system depends on SWEP B12, B200T and B18 brazed plate heat exchangers.

THE RESULTS
The system delivered exceptional temperature control to all connected loads – including a 34-kW frozen produce load, a 205-kW chilled produce load, 325 kW of space cooling and 12 kW of heating, even when peak temperatures reached 48°C.

Breaking new ground in transcritical CO_2 systems

SWEP
A DOVER COMPANY

BITZER Australia, a global leader in compressor technology, approached SWEP with a proposal to collaborate on the creation of a new transcritical CO_2 system for a Woolworths grocery store in Sydney, Australia. Over the last decade, SWEP has been the global leader in the development of ultra-pressure BPHEs for transcritical supermarket refrigeration. They were ready and willing to address the myriad challenges that the hot Australian climate poses for transcritical systems.

SWEP's ability to deliver a technical solution for this project enabled BITZER to design a system that could meet the customer's requirements. The design of the chilled water thermosyphon unit, with its low refrigerant-side pressure drop, was essential to the o system's operation.

SWEP B12, B200T and B18 were key to this project. Chilled water (+8/+12) was generated via CO_2 thermosyphon. Suction superheat control for low temperature compressors via liquid. Condensate subcooling via flash gas. Vapor condensing via R134a mechanical resilience unit. Heat reclaim to water via discharge gas, for store heating.

The role of SWEP BPHEs

SWEP B12, B200T and B18 brazed plate heat exchangers were key to the success of this project. The system uses a CO_2 thermosyphon to generate chilled water, which is then used for store air conditioning. SWEP BPHEs are also used to control the suction superheat for low-temperature compressors; condensate is subcooled via flash gas. The system utilizes vapor condensing via an R134a mechanical resilience unit; reclaimed heat from discharge gas is used to warm water, which is then used for store heating.

Why choose SWEP?

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 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 CO_2 systems in Australia's hottest climates.

More About BITZER

For the past 90 years, innovative products and services from the BITZER Group have helped maintain optimal temperatures on buses, trains, and in buildings, ensuring food stays fresh on its way to customers around the world. Perfection and precision shape their operations –efficiency and sustainability their way of thinking. With skill and passion, BITZER continuously advances the development of compressor technology. In Australia and New Zealand, BITZER is a technology leader not only in compressors, but also in engineered refrigeration packages, pressure vessels, and air conditioning solutions

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