



# PICK N PAY JOHANNESBURG SOUTH AFRICA

In South Africa size matters and supermarkets don't get much bigger than Pick n Pay's new flagship store, The Falls. With a trading area in excess of 4,800 m<sup>2</sup> The Falls incorporates a deli, a butchers, a fish counter and a large restaurant that offers everything from Sushi to gourmet hot dogs and hamburgers.

The store is the latest of Pick n Pay's premium stores, a concept that puts the focus firmly on fresh food. Despite the "premium" label no item at The Falls costs more than an equivalent item at a regular Pick n Pay store. Instead Pick n Pay focus on providing a "premium" feel by offering a broader offering and a much greater selection.

Everything about The Falls has been tailored to cater to an increasingly prosperous and cosmopolitan South Africa. One of the more unusual features of the supermarket is that it incorporates two separate entrances each designed to give customers a completely different experience. The first entrance offers a traditional shopping experience whilst the second is focused on the large fresh food and groceries department.

With such a large store and such a heavy focus on both fresh and frozen food, Pick n Pay required a powerful cooling and refrigeration solution. To deliver this the company approached specialist refrigeration experts Matador.

## Cascading CO<sub>2</sub> Refrigeration

Pick n Pay were eager that every aspect of their flagship store was at the very cutting edge. This extended to the refrigeration system and Pick n Pay wanted nothing but the most energy efficient solution for their substantial cooling needs.

Matador proposed and supplied a R134/CO<sub>2</sub> Sub-Critical Cascade-type system. This is a complex but hugely energy efficient solution that is far friendlier to the environment than traditional cooling systems. It was also designed to outperform cheaper installations and installed to the highest possible standards by Matador.

The system itself comes in two parts. A



70.9kW CO<sub>2</sub> based system operates at temperatures down to -32 C while a 648.77kW R134a refrigerant system operates at temperatures at -10 C. Working together the two systems achieve cooling to a wide range of temperatures without using excessive energy or utilising CFC gases.

### Insulating a cascading refrigeration system

One of the consequences of implementing a sub-critical cascading system is that it requires a considerable length of pipework to connect the two systems to each other and even more to connect the system to the refrigeration cabinets in the store itself. With this pipework all operating at temperatures below -10 °C and some operating much colder still there is always a risk of moisture condensing on the pipes.

The only way to stop condensation is to raise surface temperatures above the dew-point by using insulation. Thermal perfor-

mance is always important for any insulation material but preventing condensation requires a particular set of attributes and characteristics beyond just a low thermal conductivity.

A low pipe temperature creates a strong partial water vapour pressure gradient that forces moisture towards the pipe. Installing a vapour barrier is the only way to stop this movement and keep both the pipe and the insulation dry. The effective lifespan of an insulation solution will be heavily influenced by the strength of the vapour barrier and the quality of installation.

### Water vapour protection built in

Matador knew that, when it comes to insulating refrigeration pipework, Kaiflex was the insulation material they would use.

Kaiflex is ideally tailored for use on refrigeration

pipework thanks largely to the built in water vapour barrier that the closed cell structure provides. With Kaiflex protection against moisture ingress isn't reliant on an externally applied water vapour barrier membrane. Since every one of the thousands of cells that forms Kaiflex features its own in-built vapour barrier damage to the surface of Kaiflex insulation is normally only superficial – the pipe stays dry.

Staying dry means longer lasting insulation. With no moisture ingress to reduce thermal performance Kaiflex insulation continues to save energy and prevent condensation over long periods of time. As standard Kaimann offers a 5 year manufacturing guarantee for Kaiflex but under the right circumstances Kaimann can also offer an extended 10 year warranty for customers. This made it a natural fit for a refrigeration system that's expected to be in operation decades from now.