

It was a public call that got Condor's attention. As one of the biggest supermarket chains in Brazil and all of Latin America, they saw the opportunity of switching to natural refrigerants and receiving help from an MLF (Multilateral Fund, short)- funded project, issued by the UNIDO field office.

Based in the city of Curitiba, Condor's proximity to Eletrofrío, the supplier and installer of the Propane- and CO<sub>2</sub>-based cooling system, was chosen for this unique transition process. Until then, no company in Brazil had worked with similar equipment using propane, mainly due to their fear of its potential flammability.

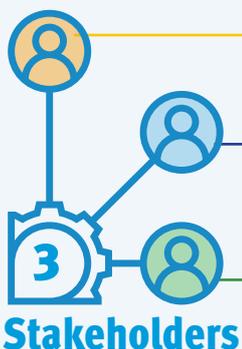
Condor decided to transition to this new technology in a new store opening in April 2019. The installation process of the new supermarket and its new technology took 90 days. Today, they are already looking into expanding this new technology to more of their supermarket branches all over the country.



## REFRIGERATION SYSTEM TECHNOLOGY

In most Condor supermarkets the refrigeration system is split into two sectors: a cooling and freezing part. Before the first attempt to use natural refrigerants, Condor had several other technologies in place.

- 1** | First, they used R-22 direct expansion, then switched to interacted expansion and introduced glycol.
- 2** | Then they started using R-134a and glycol for cooling in medium temperature systems, and R-404a and glycol for freezing in low temperature systems.
- 3** | In a third transition, they replaced R-404a and glycol with a cascade system, using R-134a and R-744 (the natural refrigerant CO<sub>2</sub>) for freezing systems.
- 4** | Today, the system operates on R-290 instead of R-134a and glycol in the cooling segment; as well as R-290 and R-744 in the freezing system. The glycol in the medium temperature system condensates the R-744 in the low temperature system.



### UNIDO Brazil

Edgard Soares Pinto Neto, Sérgio Oliveira, Ever Fiorentino and Alessandro Amadio served as facilitators and consultants and posted the MLF-call

### Condor supermarket

Aliceu Darci Brambilla, Director of Business Expansion

### Eletrofrío

Rogério Marson Rodrigues, Brazilian refrigeration company which has been on the market for over 70 years. In this project they served as tech suppliers and installers, as well as maintenance service providers

# 7 BARRIERS AND HOW TO OVERCOME THEM

## **Sometimes you need a push from the right direction.**

In Condor's case, this was a public call issued by the UNIDO field office and their partner Eletrofrío. Condor was selected out of three other supermarkets. The final decision to participate was made by the Director of Business Expansion, Aliceu Darci Brambilla. From UNIDO's point of view, Condor was chosen due to their geographical proximity to Eletrofrío.

## **Motivation might be different, but the goal often the same.**

Condor saw the new system as a way to promote their sustainable actions: "Dissemination of the project through advertising was a great benefit," says Brambilla. This aligns with their internal green policy: to find technology which reduces GHG emissions and improves overall energy efficiency. As the first supermarket to install such a system, they benefitted from the perception in Brazil and internationally.

## **Consultancy increases trust.**

Condor looked to train already employed people, in order to provide opportunity and knowledge for future development. Brambilla's role was to convince other directors and managers of the benefits of CO<sub>2</sub> and propane. However, the process was supported by experts at Eletrofrío. This helped overcome the biggest obstacle out of UNIDO's perspective: Reservations towards technical capacities, since they were cautious of propane's flammability. Today, safety is ensured: There is a sensor in each chiller that is monitored remotely. Once it indicates a leak, the ventilation system reacts automatically, doubling the flow and turning off the module with the alarm. These precautions go hand in hand with the goal of avoiding excess maintenance: If necessary, only the failing module is removed and taken to the factory for maintenance.

## **Positive and negative side effects can hold each other in balance.**

Condor sees cost as the biggest burden. They were able to go ahead due to the unique call posted. However, there is further motivation for initial investment: In their Curitiba store, Condor was already able to reduce energy consumption. In the near future, chillers might be manufactured in scale. With the increase in volume, deployment costs are likely to benefit everyone. Since this is the first system installed in Brazil, Condor and Eletrofrío expect to reduce energy consumption and hence reduce costs even more.

## **Not shying away from international partners can help overcome a lack of knowledge.**

Eletrofrío was already a partner supplier to Condor. With Eletrofrío's experience and investment in research on new and sustainable technologies, the company seemed like the perfect choice. By cooperating with international suppliers, they had access to technology which was not available in Brazil: Swedish company Multichannel AB provided evaporators and condensers, Italian company Dorin provided compressors. Propane was also imported from Italy, since local manufacturers did not have enough demand to produce R-290 with the required level of purity.

## **A new facility can be perfect for a fresh start.**

Instead of replacing technology in an existing store, Condor chose one which was being constructed. This way they were able to include the installment of new Propane chillers without having to interrupt sales operations and cooling of products. "It was a very well-planned project executed with sufficient time," the kick-starters at the UNIDO field office say. "As it was a totally new experience, it was worth it," Brambilla says.

## **A proven business case can increase awareness about energy efficient refrigeration systems.**

"European companies supported us with their experience. A future difficulty will be the lack of legislation in Brazil for the use of flammable fluids", says UNIDO. However, this barrier has been overcome by the introduction of ISO 5149 in 2020. Big supermarkets chains can initiate change. The Condor store has invited other supermarkets to visit and see the system. With new facilities already being put up in Sao Paulo and Chile, this change seems to be on the right path.