CUSTOMER INSIGHT: COVIRAN

Food Cooperative Looks to a Greener Future
“This architecture seems to be very beneficial both from an environmental sustainability and energy efficiency point of view. With Solstice® N13, this approach brings some certainty as we plan for the future, with a lower refrigerant charge size and much lower GWP, which in turn creates tax advantages.”

Manuel Serafín Pérez, Industrial Refrigeration Manager, Covirán

Scenario: Placing Refrigeration at the Heart of Sustainable Operations

Covirán is committed to sustainable development, thus responsibly using all their resources. To achieve this, Covirán works hand-by-hand with members, workers, suppliers and clients.

Covirán is a food distribution company made out of more than 2,800 small and medium-sized independent retailers. Currently this cooperative ranks number 2 in Spain in terms of sales, and number 3 in Portugal. In 2014, Covirán had over 3,245 supermarkets in the Iberian Peninsula.

Covirán’s commitment is to the social economy, through continuous investment in local people and communities. The extensive development in recent years and the success of the expansion project into Portugal have earned them awards and recognition.

To increase efficiency in storage and distribution, Covirán serves customers through a complete logistics network of 27 distribution platforms, 3 of them in Portugal. The logistics network is constantly adapting to both the structure and number of warehouses. This has been achieved via a corporate commitment to the incorporation of new members, as well as the expansion and consolidation of the Cooperative in new regions, helping to optimize resources and providing flexibility in order to reach locations not previously served.

High on the business agenda for Covirán is environmental care, and so when the Cooperative needed to install a new refrigeration system at a logistics centre near Madrid, it worked closely with its specialist partner Systemfrost to develop a solution that would combine best-in-class performance with sustainability.

Systemfrost designed a cascade system utilizing Honeywell’s Solstice N13 (R-450A) and CO₂ (R-744), focusing on meeting key criteria around energy efficiency, emissions reduction and refrigeration performance. Honeywell’s Solstice N13, selected for the MT system, is a new generation HFO refrigerant blend that is a non-flammable, non-ozone depleting replacement for R-134a, with 60% lower Global Warming Potential (GWP).
System Background: Contributing to Coviran Coslada Goals
The Covirán Coslada (Madrid) logistics warehouse extends in total to 12,000 m². The centre employs around 50 people and distributes to Spain’s northern regions.

The new refrigeration installation designed by Systemfrost includes 3 freezer rooms, one dual-temperature room and a large, chilled dispatch area, and incorporates two evaporative condensers, one for the CO₂ side of the system and the other for the mid temperature section.

The machine room has been constructed in a separate housing to optimize ventilation, to afford protection from ambient conditions (rain/wind) and is elevated to minimize material ingress.

System Architecture
Total charge: 1,020kg of R-450A

<table>
<thead>
<tr>
<th></th>
<th>Dispatch area</th>
<th>Dual temperature room</th>
<th>Freezer rooms</th>
<th>CO₂ condensing</th>
<th>Low temperature</th>
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<tbody>
<tr>
<td>Packs</td>
<td>Zanotti</td>
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<td>2 x 4MA-22X</td>
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<tr>
<td>Compressors</td>
<td>2 x 4MM-22X</td>
<td>4 x Emerson</td>
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<tr>
<td></td>
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<tr>
<td>Controls</td>
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<td>-10 ºC</td>
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<tr>
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<td>+45 ºC</td>
<td>+45 ºC</td>
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</tr>
<tr>
<td>Cooling capacity kW</td>
<td>53.8</td>
<td>159</td>
<td>96.6</td>
<td>74.3</td>
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<tr>
<td>Refrigerant</td>
<td>Solstice® N13 (R-450A)</td>
<td>Solstice N13 (R-450A)</td>
<td>Solstice N13 (R-450A)</td>
<td>CO₂ (R-744)</td>
<td></td>
</tr>
</tbody>
</table>

The system is remotely monitored by temperature deviation alerts, ensuring a service resolution in less than 2 hours for frozen food and less than 4 hours for chilled food, thereby securing the centre’s operations and safeguarding product quality.

The new installation satisfies a key requirement of Covirán’s CSR (Corporate Responsibility Programme) to meet sustainability goals as well as social and economic criteria. This commitment extends to a continuous search for the most competitive and environmentally-friendly refrigerants to minimize emissions and improve energy consumption – hence the decision to invest in Solstice N13.

Results
- The system using Solstice N13 (R-450A) is expected to reduce annual energy consumption by more than 3%.
- The system using Solstice N13 is expected to achieve lower direct CO₂ emissions of 60% per year compared to a comparative system using R134a.

Feedback: A Greener Approach to Food Logistics
“This architecture seems to be very beneficial both from an environmental sustainability and energy efficiency point of view. With Solstice N13, this approach brings some certainty as we plan for the future, with a lower refrigerant charge size and much lower GWP, which in turn creates tax advantages.”

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“R-450A has been easy to handle. We considered the customer’s request to improve carbon footprint and worked closely with engineering consultant Tewis to accommodate the lowest possible GWP refrigerant into the most efficient design. R-450A (Solstice N13) provides us with a simple solution. So far, the results have been very positive.”

Eloy Moreno, Systemfrost
Available tools

Simulation software
Honeywell's refrigerants modelling software is a free-download software program that eliminates the guesswork involved in selecting a refrigerant by allowing refrigeration engineers to run simulations based on actual data. The tool runs property calculations of refrigerants, conducts thermodynamic evaluations of air conditioning and refrigeration cycles, and provides a first principle thermodynamic comparison of new alternative refrigerants for retrofit applications or new system designs.

The software models systems from simplified basic cycles to large, complex refrigeration systems. The results can be exported to Microsoft Excel, where the data can be manipulated in a variety of ways. The software also creates typical Mollier diagrams (Pressure-Enthalpy, Temperature-Entropy).

Smart phones apps
Download Honeywell PT calculation applications for iOS and Android free.

Literature
Honeywell has a wide range of literature available on Solstice® N13 including case studies, customers references, etc.

Information and contact
For information and support on new applications, contact your local Honeywell representative, visit www.honeywell-refrigerants.com/europe or send us an email at fluorines.europe@honeywell.com

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