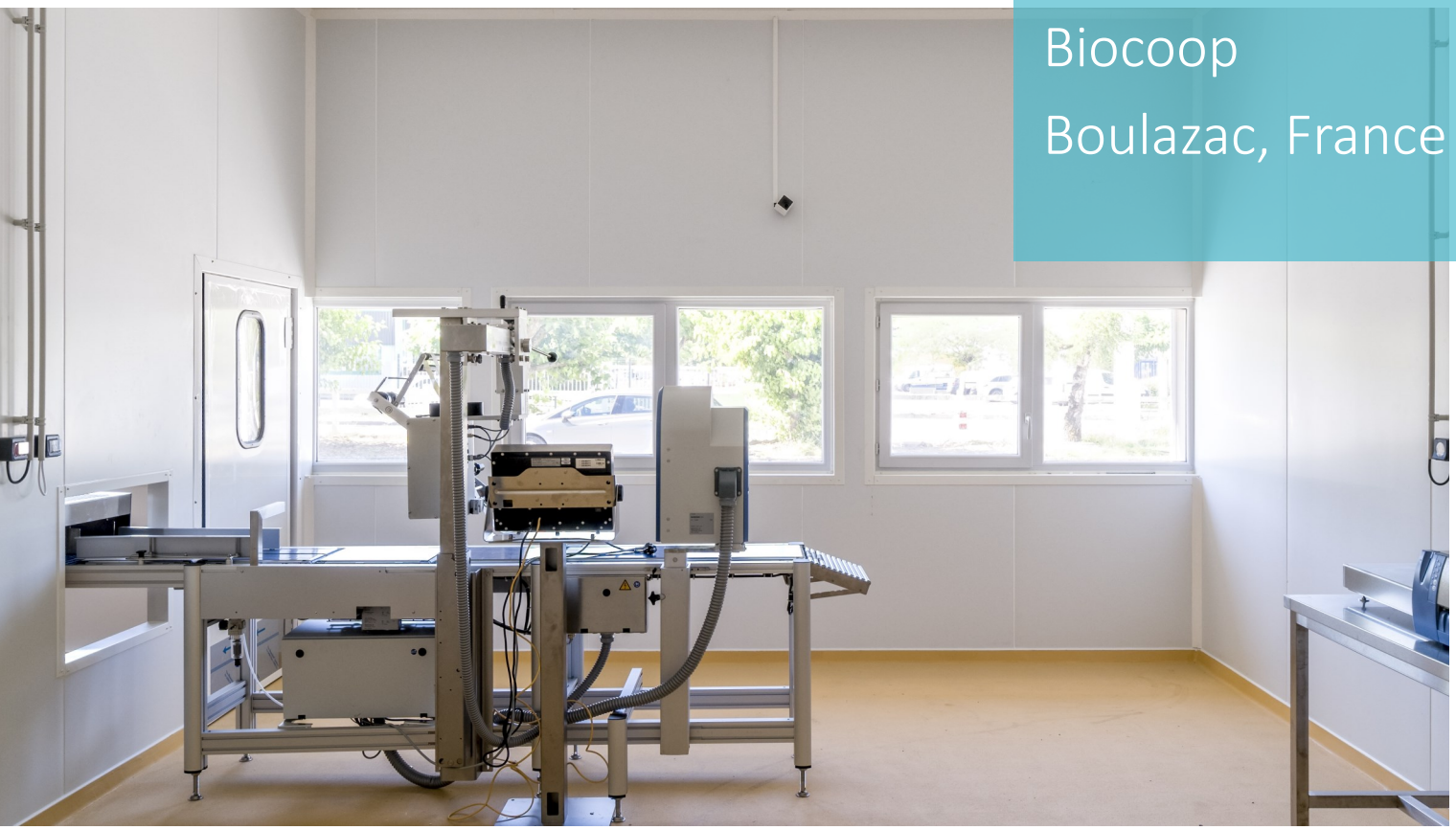
FOOD PROCESSING

Biocoop
Boulazac, France



First Daikin CO_2 refrigeration system installed in France: Meat processing laboratory opts for natural refrigeration solution

Biocoop is a leader in organic food distribution, with a network of over 500 organic stores. In 2017, a Biocoop franchisee with a number of shops and restaurants in the Aquitaine region, decided to open a new butchery and charcuterie processing laboratory at Boulazac in the Dordogne, to service both its own outlets and the Biocoop network in the southwest of France.

As a long-standing customer of installer Froid Cuisine 24, the franchisee sought the company's help in researching and installing a refrigeration solution for the 1,200 square metre laboratory. A Daikin partner since the installer company's inception 20 years ago, Froid Cuisine 24 initially suggested Daikin's ZEAS refrigeration solution. With several Daikin installations already in place, the franchisee was very satisfied with the company. Additionally, the ZEAS solution was one with which Froid Cuisine 24 had a lot of experience.

However, with increasingly strict regulations on the use of higher GWP refrigerants and wishing to follow the Biocoop philosophy on sustainable development, it was decided to opt for an alternative that used CO_2, which as a natural refrigerant has no impact on global warming, despite the additional cost of the equipment and its installation compared to a traditional system.

"At Biocoop, we regularly make significant investments in finding solutions that bring about a maximum of energy savings…The CO_2 system is a real plus when it comes to promoting our approach," explains Fabien Marzano, Biocoop Site Manager.

The installer assessed a range of alternative solutions. As long-standing partners, Froid Cuisine 24 approached Daikin about the possibility of a ZEAS CO_2 system. With the subsequent acquisition of Zanotti and the Integration of the Tewis brand, Daikin was able to offer a new solution based on the franchisee's preferred refrigerant.

Minimal changes compared to conventional installations

The managers of Froid Cuisine 24, new to Tewis transcritical technology, visited a similar installation and the Tewis factory itself, which gave them the confidence in opting for a Tewis system. A second visit in advance of the installation process focused on critical points including piping for the transcritical CO_2 technology. This offered additional reassurance, given the relatively minor changes needed in comparison to a traditional refrigeration solution. Froid Cuisine 24 has additionally demonstrated its commitment to service support, by obtaining the necessary specialist qualifications and setting up an on-call system for weekends.

“We have always had great confidence in Daikin technologies. Their engineers are always able to find technological solutions capable of accommodating any environment.”

Sébastien Toulouse, Froid Cuisine 24

Project Requirements

- ☐ Air conditioning
- ☐ Control
- ☐ Air Curtain
- ☐ Air Purification
- ☐ Heating
- ☐ Heat Recovery
- ☐ Hot water
- ☑ Refrigeration
- ☐ Ventilation

Year of installation

2018

Installed Systems

Transcritical CO_2 system

Safe, effective and energy efficient

Sited in a large industrial area away from residential developments, there were no planning restrictions in respect of noise and visibility or limitations on floor space. Employee safety and energy efficiency however were key, along with system continuity.

Within the laboratory, there are varying requirements for temperature control, spread across eleven different areas. The Tewis/Daikin 78.3 kW transcritical system provides positive cooling (0 to +2°C in some rooms and +8 to +10°C in others) to meet a range of needs throughout. Thirteen 1.8 kW to 10.5 kW evaporators (one/two per room) are directly connected to the transcritical system, while a second, insulated R-452 system was chosen to provide refrigeration in a separate cool room. An air treatment system using a ducted network provides air conditioning to corridors in the laboratory.

In the casings preparation room, where corrosive products in use posed a potential risk to the CO_2, an alternative system operating on R-134A refrigerant was installed.

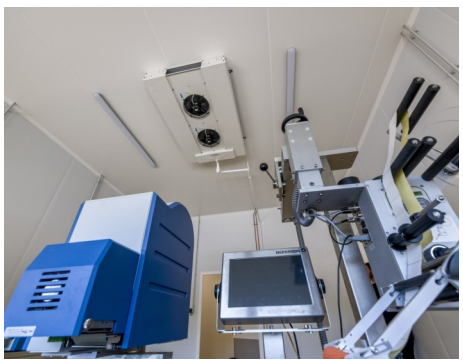
The transcritical CO_2 system provides cooling to meet different processing needs across multiple zones.

Additionally, a water/CO_2 exchanger was installed to provide the chilled water needed in the two dryer and oven areas, as well as a 25 kW CO_2/glycoled water exchanger. A 50 kW, 20/45°C water desuperheater has also been integrated with the Tewis system to recover heat, providing domestic hot water and compensating for kitchen ventilation as required.

To ensure maximum safety, CO_2 leak detectors have been fitted to all laboratory equipment. These are connected to an audible and visible alarm system which sends automatic alerts by email and SMS.

A communication gateway runs from the transcritical system to each evaporator, connected via a central management system from PC to laboratory, to Froid Cuisine and Tewis.

The Daikin solution provides temperature control according to each area’s requirements using a range of systems.



Leak detectors are connected to a central alarmed system for maximum safety.

The transcritical CO_2 system provides sustainable, energy efficient refrigeration in keeping with Biocoop’s aims.