



Process chambers' wall insulation

In food and beverage industries there are many buildings and chambers that need to keep a certain temperature, which in practice is typically a tight range of temperatures, i.e. 2-3°C for fresh meat keeping or 10-12°C in fresh food working areas.

Keeping the temperature within this tight range is a matter of two main issues, the refrigeration machines power and the insulation of the chamber and buildings.

This food industry developed a project on increasing the insulation thickness from 10 cm to 30 cm, reducing the heat loss from 100 W/m² to less than 30 W/m².

The refrigeration needs due to loses in the walls was reduced by 70%, while the cooling consumption in reducing or keeping the temperature of the food pieces was similar. In the overall, this reduction is approximately 5% of the electricity needed to keep the right range of temperatures.

Description

This Spanish food industry uses finned coils in a number of different applications to transfer heat either into or out air streams.

What is the improvement focus?

When the industry is facing some infrastructure renovation, as increasing the capacity or renovation

of the buildings for process, increasing the overall insulation is an interesting energy efficiency measure. It also improves the building or chamber envelope and makes it modern.

Benefits

The increase in the insulation thickness brings energy efficiency

'Building and chamber insulation support industry energy efficiency'

Spain

Food industry

TRL 9

Investment cost

135.000 €

Savings

11.000 €/year

91.000

kWh/year

Main NEBs (other benefits)

Best ROI

benefits and improves the overall industrial plant.

The result in this industry was an energy efficiency improvement of 5% (7% energy savings in the refrigeration system), thus the food industry reduced its energy consumption from 1,821,000 kWh to 1,730,000 kWh.

BEST PRACTICES - BUILDING FACTSHEET

Calculations

The calculations show a quick idea of the costs and returns of this practice, as well as the economic impact after the implementation of the renovation. In order to be clear, the initial situation is directly compared with the final situation and a table of differences is shown broken down into the different key points of savings, using an average price of electricity and emissions considering their expected evolution.

	Data
Productive capacity [t/year]	2,000
Annual energy consumption currently [kWh/year]	1,821,600
Annual improvement energy consumption [kWh/year]	1,730,520
Annual energy savings [€/year]	91,080
Annual economic savings [€/year]	10,930

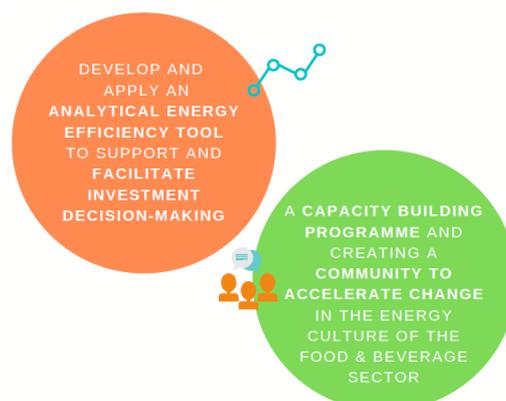
Total investment (€)	135,000
Energy savings [kWh/year]	91,080
Average electricity price [€/kWh]	0.12
Average emission price [€/tCO ₂]	20.00
Emission reduction [tCO ₂ /year]	27.32
Energy economic saving (€)	10,930
Emission economic saving (€)	546
Total economic savings (€)	11,476
Return period (years)	11.8

About ICCEE

The project ICCEE, www.iccee.eu, funded by the EU programme Horizon 2020, aims at improving energy efficiency in the cold chain of the food & beverage sector and making it easier for the sector:

- to undertake energy efficiency measures across the entire supply chain
- to accelerate the implementation of energy audit results

ICCEE follows a holistic approach that moves from a single company perspective to the assessment of the entire cold supply chain. Existing financing schemes for SMEs will be assessed: the optimal ones will support the implementation of energy efficiency measures. ICCEE objectives build on 2 pillars:



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