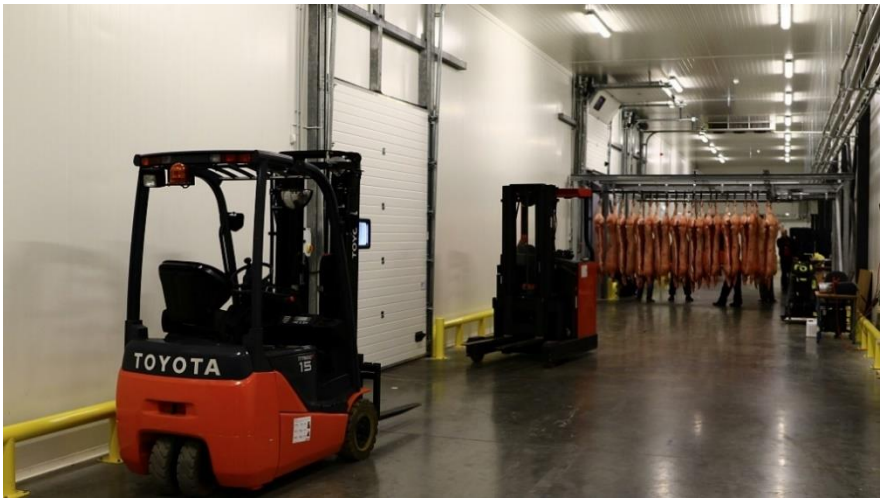
BEST PRACTICES – AUXILIARY TECHNOLOGY
FACTSHEET

ICCEE
Improving Cold Chain Energy Efficiency in food and beverage sector



Consumption and emissions savings

'Switching lights to LED"

Latvia
Freezing industry
TRL 9

Investment (real or estimated)

26 000 €

Savings

2 883 €/year

17,72 MWh/year

Main NEBs (other benefits)

Reduced greenhouse gas emissions

Longer lifetime of lighting system

Company "Rīgas Saldētava" is one of the largest refrigeration storage complexes in Riga. The company offers storage of products at different temperatures in cold stores from -20 °C to +6 °C. Each customer can determine the appropriate temperature for storage. The company has a total of 12 production storage cameras.

The company underwent an energy audit that suggested the switching of lighting to LED types for reduced energy consumption. This led to the switching of lighting to LED type lighting in refrigeration cameras and their connecting corridors.

Description

According to the Energy efficiency law, Rīgas saldētava is considered as a big energy consumer and has an obligation to carry out energy audit and introduce at least three energy efficiency measures within next the next four years.

Based on that, the company carried out an energy audit and switched to LED lighting in refrigeration cameras and corridors.

Before tubular fluorescent lamps were mostly used. Lighting was manually controlled. In refrigerating cameras lighting was switched on only when needed, but it burned longer in the hallways.

The corridors of the cold storage contain 52 tubular fluorescent lamps, while the freezer chambers contain 192 tubular fluorescent lamps.

Benefits

According to the energy audit calculation, lighting consumes 52.66 MWh of electricity per year, representing 8.33% of all energy consumed. According to the energy audit analysis, switching lights to LED reduces energy consumption by

17.72 MWh per year and CO_2 emissions by 1 931.8 t.

The replacement of the fluorescent lamps to LED results not only in energy savings, but also in longer lifetime for the lighting system, and the heat emitted by the bulb is also less. LED luminaires will also reduce maintenance costs in refrigerating chambers where a specific temperature is to be maintained. LED luminaires provide less discharge of heat from luminaires, thereby also

reducing electricity consumed for cooling.

Opportunities and barriers to implementation

Opportunities	*Barriers*
Increased lifespan of lighting system	Lack of trust in the potential savings and increased lifespan of lighting system
Better lighting quality	Lack of skilled workforce
Lower energy consumption and lower energy costs	
Reducing greenhouse gas	

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 new equipment. 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.

	Initial situation	Final situation
Productive capacity [t/year]		
Annual energy consumption [kWh/year]	631 500	613 780
Annual energy cooling consumption [kWh/year]		
Annual economic energy expenditure [€/year]	89 141	81 184

	Switching lights in 4th freezer chamber	Switching lights in the rest of the freezer chambers	Switching lights in cold storage hallways
Total investment (€)	1 600	19 200	5 200
Electricity savings [kWh/year]	1 780	7 840	8100
Average electricity price[€/kWh]	0.16	0.16	0.16
Average emission Price [€/tCO_2]	25	25	25
Emission reduction [tCO_2/year]	0.194	0.854	0.883
Energy economic saving (€/year)	284.8	1 254.4	1 296.0
Emission economic saving (€)	4.85	21.36	22.07
Total economic savings (€)	289.65	1 275.76	1 318.07
Return period (years)	5.5	15	3.9

References

[1] Company internal energy audit acording to Latvian Regulation No. 487 Regarding Energy Audit of Enterprises

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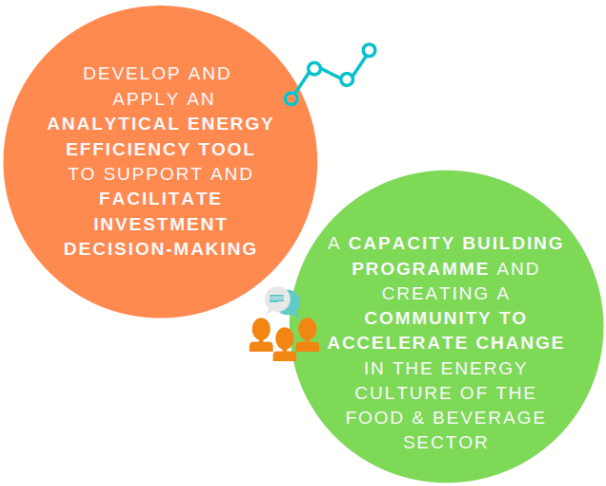
About ICCEE

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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