



# The Canning Sector and climate change mitigation



The canning industry is not among those that generate the greatest impact on climate change. However, there's a link between their activity and the greenhouse gas emissions, there are many easy mitigation measures to be implemented.

The intensive use of energy is the main impact of the sector, since it requires the use of heat and cold for a large number of its operations. In this area is where we can find measures to be implemented, as insulation systems in heat and cold processes, where the investment return period is very short.

The use of HCFC's gases in the process of freezing involves a high global warming potential once they are released into the atmosphere. Therefore, it becomes necessary to do a proper use and management of these gases to reduce their climate impact.

Finally the organic waste generation and its metanization possibility generates a worst problem because the heating global potential is bigger than what the CO<sub>2</sub> has.

## Strategies for reducing emissions

- Improving energy use in production processes, especially in cooling and heating processes.
- Avoiding the use of HCFC's gases in the cold generation.
- Organic waste manage and treatment, to avoid its metanization.

## Proposal of mitigation alternatives of gas emissions with greenhouse effect in the canning sector

### VEGETABLES SUBSECTOR

- Better use of energy in productive processes, by:
  - Scalding and cooling:
    - Promoting the reuse of water.
    - Promoting the good installation design increase the efficiency in the immersion system.
    - Ensure the good insulation, cover and the adequate water level inside the tank to avoid overflows and to reduce evaporation and heat loss.
  - Energy Recovery:
    - Recovering the pasteurized liquid heat to pre-heat the input product.
  - Steam generation, by:
    - Recovering the steam condensate in different industrial processes.
    - Using fuels with lower environmental impact.
    - Carrying out periodic and preventive equipment maintenance.
- Cooling gases in the cold generation.
  - Management of coolant fluids, gases like HCFCs management, by:
    - Avoid leakage in our cooling systems.
    - Good management at the end of its lifespan.
- Management and treatment of organic waste:
  - Compost production to avoid metanization.
  - Methane production (CH<sub>4</sub>) and use as alternative fuel instead of fossil fuels, to reach neutral CO<sub>2</sub> emissions.
  - Thermal advantage by recovering calorific energy by combustion.

### GENERIC ALTERNATIVES

- Rational use of energy:
  - Avoiding the use of more energy than necessary.
- Best practices in auxiliary operations:
  - In steam generation systems.
  - In compressed air generation.
  - In cold generation.
  - In air-conditioned rooms.
- To reduce atmospheric emissions:
  - Using low emission substances and products.
  - Applying low emission processes and production systems.

### MEAT SUBSECTOR

- Locking systems controlled by photo cell.
- Automatic locking systems controlled by timer.
- Systems installation to minimize the cold leakage in chambers, by several alternatives:
  - Locking systems controlled by photo cell.
  - Automatic locking systems controlled by timer.
  - Air curtains.
  - Plastic slats.
- Heat recovery in the refrigeration plant, that can be used to preheat the water.
- Thermal insulation of cold and hot surfaces, to avoid heat losses.
- Sterilization operations and automatic hot water temperature control in the slaughterhouses.
- Improve the management of compressed air to reduce the energetic consumption, by:
  - Disconnect the main compressor after the slaughter operations.
  - Use a smaller compressor if it's possible.
  - Avoid losses applying a proper and preventive maintenance.
  - Reduce the compressed air pressure to reduce the compressor's electric consumption.
- Implement a management of the cooling system.



## Case study: Fish canning company (Morocco) (Source: MedClean-31)

The company is dedicated to the preservation and fish canning, so the energy consumption of the cooling system is very high.

The company decided to carry out an environmental audit and identified improving opportunities in energy consumption and other opportunities to optimise its production process.

### GENERAL MEASURES TO REDUCE EMISSIONS

In order to prevent pollution and greenhouse gas emissions to the atmosphere, the company implemented the following measures:

- Energy recovery in sterilizers and its reuse in heating soft water.
- Improvement in boiler output.
- Lagging of pipes.
- Condensate recovery.
- Optimisation of electricity consumption.
- Improvement of lighting system.

### RESULTS

Measures	Economic savings	Reducing CO <sub>2</sub> emissions* t/year
Recovery and reusability energy	8.68 t / year fuel	26.5 t CO <sub>2</sub>
Improvements in boiler efficiency	18.03 TEP	57.33 t CO <sub>2</sub>
Pipe Coating	12.01 TEP	38.19 t CO <sub>2</sub>
Condensate recovery	9.75 TEP	31 t CO <sub>2</sub>
Optimizing power consumption	0.75 TEP	-
Improved lighting	0.45 TEP	-

\* Results achieved by the fuel used

### INVESTMENT COST AND AMORTIZATION

Action	Investment (€)	Economic savings (€/year)	Recovery period
Recovery and reusability energy	1,740.76	2,215.31	9 months
Improvements in boiler efficiency	1,531.46	4,390.20	4 months
Pipe Coating	5,411.17	2,960.43	1.8 years
Condensate recovery	5,405.95	2,348.24	2.3 years
Optimizing power consumption	1,272.59	1,388.53	11 months
Improved lighting	916.26	377.76	2.4 years
<b>Total</b>	<b>16,278.19</b>	<b>13,680.47</b>	