

RECP Best Practice Catalogue

*Increase the capacity of the refrigeration unit
for CO₂ saturation*

Developed within the framework of MED TEST II



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



The SwitchMed Programme is
funded by the European Union

Best Practice - Increase the capacity of the refrigeration unit for CO₂ saturation

SECTOR:	Food & Beverage
SUBSECTOR:	Manufacture of beverages
PRODUCTS	Carbonated and still mineral waters in 25 cl and 100 cl glass packaging, and in PET bottles, 50 cl, 100 cl, 200 cl and 500 cl. Flavoured mineral water and soda in 25 cl glass and 100 cl PET packaging.
CATEGORY	Technology upgrade/Eco-innovation
APPLICABILITY	Utilities

COMPANY SIZE	400 employees
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Description of the Problem (Base Scenario):

During the beverage carbonation phase, the water is cooled to below 7 °C to assure the good solubility of CO₂ and binding of the desired amount. A diagnosis of line operation has shown that the set temperature of the water is not reached during the carbonation phase because of the insufficient capacity of the cooling unit. This results in poor CO₂ fixation in the water and consequently creates non-compliant products that are discarded. This loss of product leads to losses of raw materials, water and energy, as well as an increase in the amount of PET packaging waste and the volume of waste water to be treated, insofar as the non-compliant products are removed to the company's sewerage system. In addition, it was found that the cooling unit is in a dilapidated state, and requires frequent maintenance operations which causes the line to stop and productivity to drop.

Description of the Solution

Increase the capacity of the cooling unit from 460 to 1,100 kW to improve CO₂ saturation.

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Economic Benefits

Decrease of the number of stoppages and interventions by the maintenance teams.

- The operational gain is +/- 6,750 €/month (for a total of 15 days of interventions per month) on the basis of one intervention per day at +/- 2 hours maximum stoppage. (The cost of operation is 225 €/hour)
- 720 €/year corresponding to a savings in sugar of 5%.
- 146 €/year corresponding to a savings in water of 2%.

Environmental Benefits

Fewer raw material losses (mainly sugar) and less water consumption.
Savings on sugar raw material is estimated at 5% of the NPO, or 1.5 tons/year
Water savings is estimated at 2% of the NPO, or +/- 100m³/year (treated water for flavoured preparations)

Not relevant

Health and safety impact



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Capital investments & financial indicators	Cost: 50,400 € Return on investment: 7 months
Suppliers	Imported
Other aspects	No technical barriers, no impact on product quality
Implementation	