

RECP Best Practice Catalogue

*Increased efficiency of heat recovery in the
pasteuriser*

Developed within the framework of MED TEST II



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



The SwitchMed Programme is
funded by the European Union

Best Practice - Increased efficiency of heat recovery in the pasteuriser

SECTOR:	Food & Beverage
SUBSECTOR:	Manufacture of dairy products
PRODUCTS	Pasteurised milk; Fermented milk; Custard; Fresh cream; Milk curd; Milk yoghurt; Butter
CATEGORY	Process control or modification
APPLICABILITY	Process
COMPANY SIZE	299 employees



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TEST Training kit

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Description of the problem (Base scenario):

The company has a main pasteuriser that processes an average of 128 million litres of milk a year. It is a standard plate heat exchanger with three exchange sections. Analysis of the inlet and outlet temperatures of the various sections has shown that the heat recovery section has an exchange efficiency of 67% while this efficiency is greater than 90% in energy-efficient exchangers. In addition, the recirculation rate of cooling water is 80% instead of 100%.
These low heat recovery efficiencies and this rate of recirculation of cooling water cause overconsumption of energy and water.

Description of the Solution

The improvement measure is to increase the efficiency of the heat recovery section of the pasteuriser to 90% (at least 85%).
This can be achieved through the addition of additional heat exchange plates in the heat recovery section which will save energy and cooling water.

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Economic Benefits	Increasing the heat recovery efficiency to 85% allows: Savings of natural gas heating of 230,397 m ³ /year or € 4,435.0/year Cooling water savings of 10,913 m ³ /year or € 2,705.3/year Electrical energy savings of 217,873 KWh/year or € 7,124.5/year Total financial savings: € 14,264.8/year
Environmental Benefits	Water savings of 10,913 m ³ /year Reduction of GHG emissions linked to the use of natural gas by 486 tons of CO ₂ e/year as well as those related to the use of electrical energy of 146 tons of Co ₂ e/year or a total reduction of 632 tons of CO ₂ e/year
Health and safety impact	Not relevant

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Capital investments & financial indicators	Cost: € 25,764.7 Return on investment: 1.8 year
Suppliers	Original equipment supplier
Other aspects	No technical barriers
Implementation	