

RECP Best Practice Catalogue

Return of hot condensates to the boiler

Developed within the framework of MED TEST II



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



The SwitchMed Programme is
funded by the European Union

Best Practice - Return of hot condensates to the boiler

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	Process control or modification
APPLICABILITY	Utilities
COMPANY SIZE	400 employees



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TEST Training kit

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Description of the Problem (Base Scenario):

An investigation of the steam system has shown that the return of hot condensates, coming from different installations and equipment such as a steriliser, the juice and beverage preparation line, the glass washer and the PET washer, back to the boiler, is not guaranteed. This design, an open circuit, leads to overconsumption of energy and water and chemicals for treating boiler water.

Description of the Solution

The improvement measure is to ensure the return of hot condensates to the boiler supply tank. This results in the installation of a return circuit of nearly 50 m of insulated pipe with 2 centrifugal pumps, flanges and valves.

The return of hot condensates will allow:

- Contribution to the heating of the feed water tank, and, consequently, the improvement of the boiler's energy efficiency;
- Limit intake of newly softened water;
- Reduce consumption of water treatment chemicals.

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Economic Benefits	For a natural gas consumption of 5,959 MWh/year, the total energy contained in the steam consumed represents approximately 5,372 MWh/year to give a boiler efficiency of 90%. Taking 21% of this heat for recycled condensates, the estimated energy gain is 1,179 MWh/year. The financial gain for energy is 2,738 €/year. The financial gain from the reduction of water consumption and treatment is estimated at 1,500 €/year. Total savings: 4,238 €/year
Environmental Benefits	Energy gain is estimated to be 1,179 MWh/year For an emission factor of 0.00021 tons of CO₂/KWh for natural gas, the reduction of GHG emissions is 246 tons CO₂e/year The gain in water consumption corresponding to 21% of the annual production of steam is estimated at 1,518 m³/year.
Health and safety impact	Not relevant

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Capital investments & financial indicators	Cost: 3,000 € Return on investment: 0.71 year
Suppliers	Local providers
Other aspects	No technical barriers, no negative impact on product quality
Implementation	