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Regional Activity Centre for Cleaner Production

MINISTERIO DE MEDIO AMBIENTE

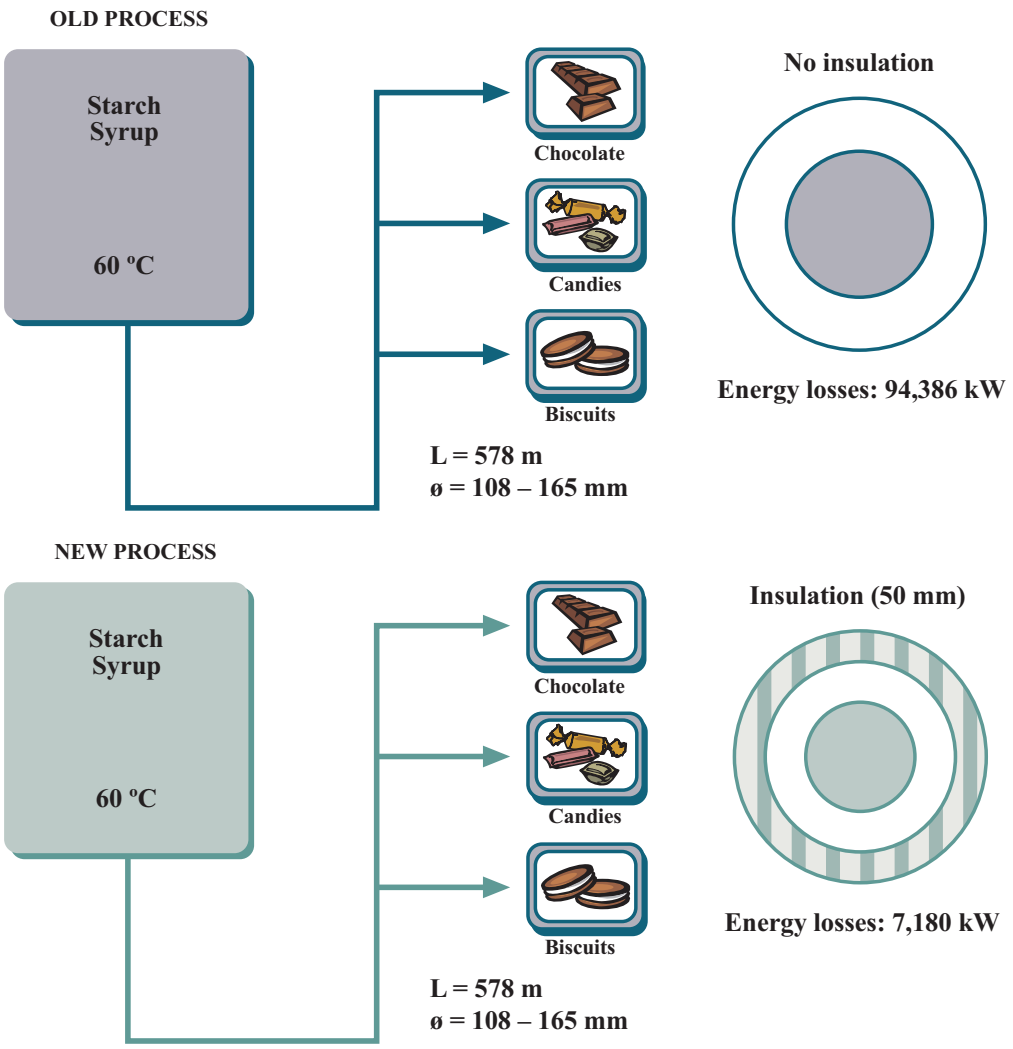
Generalitat de Catalunya
Government of Catalonia
Department of the Environment and Housing

No. 54 Pollution prevention case studies

Reduction of energy losses in the transportation pipes

Company background	KRAŠ d.d. Food Industry is one of the leading Croatian companies in the food sector, notably in the area of confectionery. The company manufactures chocolate, candy and several kinds of biscuits. KRAŠ d.d. is located in Croatia and has several production centres spread throughout the Croatian territory. The confectionery production started in 1911, and in 90 years of existence, it has created an ample offer of a high-quality range of products and a recognisable KRAŠ trade mark, which has become well-known in all markets throughout the world. The company has 1,750 employees and an annual turnover of 82,899,000 million euros.
Industrial sector	Food industry. Confectionery (production of chocolate, sweets and biscuits).
Environmental considerations	Candy products are made up of three main compounds: sugar, starch syrup and aroma. Starch syrup is transported from the storage tanks to the three production lines by a shell and tube heat exchanger. The total length of the circuit is 578 m, with a diameter of 108 - 165 millimetres. Starch syrup must be heated to 60ºC in order to be transported through the pipes. The exchange medium is hot water, which keeps the temperature of starch syrup and assures its transportation from the tanks to the process lines. The fuel used for the preparation of hot water is gas.
Background	The company had considerable losses of energy in the process of transporting starch syrup through pipes, which entailed significant costs of gas and energy consumption.
Summary of actions	After considering the possibilities for reducing energy loss, the company decided to insulate the transportation pipes with an insulation material (50 millimetres thickness).

Diagrams



Balances

Material balance	
Reduction in gas consumption (m^3/year)	51,960
Reduction in CO_2 emissions (t/year)	102
Reduction in energy losses (kW/year)	87,206 (92%)
Economic benefits	
Savings (€/year)	9,671.5
Investment (€)	11,992.7
Payback period	1.2 years

Conclusions

With the implementation of this good housekeeping practice of insulating the transportation pipes, the company has considerably reduced the use of energy in form of gas. Thus, KRAŠ d.d. Food Industry has obtained important economic benefits that allow the investment to be paid back in a short period of time.

By implementing this alternative, the company has also improved the working environment.

NOTE: This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.

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