

# MedClean Propre Limpio


**No. 75**
**Pollution prevention case studies**

## Cleaner production in production of bakery and cake products

<b>Company</b>	Krajina klas Banja Luka is a company founded in 1997. The company developed from a small bakery with a few employees into a company with around 60 employees. All types of bread and baked goods are being produced in the company, including the production of cakes and ice creams, as well as sale of catering equipment and bakery and pastry equipment.
<b>Industrial sector</b>	Production of bakery and cake products.
<b>Environmental considerations</b>	Within the EC LIFE Third Countries project "Capacity Building in Cleaner Production in Bosnia Herzegovina" (2002-2005), an initial screening of the company revealed an excessive water and energy consumption, and identified organisational faults, as well as inefficient waste management.
<b>Background</b>	On the basis of the environmental diagnosis of the company, several measures were identified, which, with small investments, would contribute to the improvement of the environmental efficiency of the company. The measures referred mainly to the improvement of energy efficiency of the plant, as well as to the waste recycling and better organisation of the transport of raw materials and final products toward the points of sale.
<b>Summary of actions</b>	<p>Three types of measures for the improvement of environmental efficiency of the company were proposed:</p> <p>Technical measures:</p> <ol style="list-style-type: none"> <li>1. Construction of a front chamber before the entrance into the cooling chamber in the cake production line, in order to avoid mixing of outer warm air with the cold air from chamber, and thus reducing energy losses.</li> <li>2. Displacement of fans for extraction of the warm air and fresh air inlet, in order to improve the effect of ventilation and to save energy.</li> <li>3. Building a 3 cm thick insulating panel (made of polyurethane) between the refrigerator and the bakery stove in order to thermally insulate the refrigerator, and thus reduce its energy consumption.</li> </ol> <p>Organisational measures:</p> <ol style="list-style-type: none"> <li>1. Change in business organisation in the company in order to reduce involvement of management staff in performing the executive tasks. Reorganisation has been established according to the "Pareto principle", meaning that the main technologist should solve only 20% of the problems but of 80% of importance.</li> <li>2. Reorganisation of the delivery of raw materials and final products by changing delivery routes as well as by bringing drivers' attention to the need of regular maintenance of vehicles in order to rationalise fuel consumption.</li> </ol>

Good housekeeping measures:

1. Collecting the packing material waste separately in all facilities and selling it at the waste market instead of its disposal at waste dumps. The revenue is paid into a fund for the employees' social program, thus further motivating them to recycle and to take care of environmental protection.
2. Collecting the organic waste separately (waste from fruits, fillings, biscuits) and giving it to the nearby farmers, without compensation, for cattle feeding, instead of its disposal at waste dumps.

Measures for increasing the energy efficiency:

- a. Introduction of the work discipline of not turning the lights on during the day when there is no need to.
- b. Activation of the hibernation command on computers as well as turning off the photocopy machines, computers, printers and air conditioners after the end of working hours.
- c. Avoiding turning on the air conditioning unless all doors and windows are closed, and putting down the blinds in order to reduce the sun's heat getting through and heating the area.
- d. Finding the most satisfactory location for the refrigerator, further away from the source of heat, regular cleaning of the cooling areas on the rear of the refrigerator, checking that the thermostat is adjusted to the appropriate temperature.

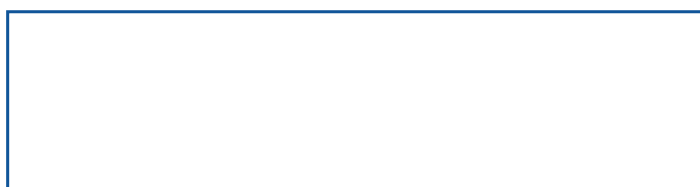
Measures	Costs (€)	Annual savings (€)
<b>Technical measures</b>		
Construction of the front chamber before the entrance into the cooling chamber	153	1,595
Displacement of fans	453	1,360
Building the insulating panel	6	186
<b>Organisational measures</b>		
Reorganisation of the deliveries	0	114
<b>Good housekeeping measures</b>		
Collecting the waste packing material separately	77	92
Collecting the organic waste separately	0	51
Measures for increasing the energy efficiency	0	406
<b>Total</b>	<b>689</b>	<b>3,804</b>
<b>Investment payback period</b>		2.2 months

## Conclusions

By introducing several measures that focused mainly on good housekeeping measures, with relatively modest investment the Krajina klas company succeeded in improving the energy efficiency of its premises. With the above-mentioned measures, the company saved 7,568 kWh of electricity annually. In addition approximately 1.2 t of packing material waste and about 600 kg of organic waste were collected and recycled instead of being disposed of at the landfill.

**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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