

# Mediteranean Clean Propre Limpio


**No. 61**
**Pollution prevention case studies**

## Water consumption and wastewater effluent reduction

<b>Company</b>	GAVRILOVIC®, Meat Processing Plant in Petrinja (Croatia).
<b>Industrial sector</b>	Food sector (meat processing).
<b>Environmental considerations</b>	GAVRILOVIC® uses large amounts of water (approximately 2,000 m <sup>3</sup> of water everyday) in its production process. Water is used for product sterilisation, generating steam, cleaning the plant, and cooling purposes. The plant's water costs account for up to 53% of total production utility costs. The high content of minerals in the water causes build up in the pipes and heat transfer equipment leading to unnecessarily high operation costs. Wastewater from the factory flows through the non-operational water treatment plant and into the River Kuba.
<b>Background</b>	Within the framework of the program called, "Capacity Building for Cleaner Production", supported by UNIDO and the Croatian government, and with the support of an EcoLinks Challenge Grant, GAVRILOVIC® carried out a project to reduce water consumption and wastewater effluent.
<b>Summary of actions</b>	<p>The implementation of the project involved the following actions:</p> <ol style="list-style-type: none"> <li>1. Flow meters were installed in the can sterilisation room and in the boiler room to monitor, collect and process data on water flow patterns.</li> <li>2. A Water management plan was developed: <ul style="list-style-type: none"> <li>• compliance parameters regarding water consumption and demineralisation for a water re-circling facility were established;</li> <li>• monitoring procedures and data processing methods for water re-circling were developed;</li> <li>• the Water management plan outlined water savings strategies based on water consumption and effluent patterns.</li> </ul> </li> <li>3. A pilot reverse-osmosis, water-recycling unit was installed.</li> <li>4. The staff in charge of washing and cleaning the containers and the facilities were trained in water management to introduce the new system and to promote efficient water use.</li> <li>5. The pilot recycling facility was activated and audited. Monitoring and data collection and analysis were conducted. Testing the pilot facility helped to determine the volume of water to be re-circled. Based on the data collected and analysed during monitoring of the pilot water recycling facility, a feasibility study was conducted and improvements were generated.</li> </ol>



Battery of can pasteurisers

Action	Raw materials savings	Economic savings*	Investment	Payback period
Good housekeeping practices	Reduced water consumption by 30%	€180,544	€44,605	3 months
Installation of reverse-osmosis unit	Return of the condensate	€29,736.6	€159,303	22 months
	Recycling of water from cooling system	€11,682.2		
	Recycling of water from can sterilization	€18,585.4		
	Collecting and processing 25,000 m <sup>3</sup> /year of rainwater	€26,550.6		
<b>Reverse osmosis unit total savings</b>		€86,554.8		
<b>Total savings</b>		€267,099	€203,908	9 months

\* Exchange rate of 01/01/01: 1 € = USD 0,94160 ([www.oanda.com/convert/classic](http://www.oanda.com/convert/classic)).

## Conclusions

As shown in the table, both environmental and economic benefits are derived from the implementation of a full-scale water management program at GAVRILOVIC®. For example, company savings are estimated at €267,099 per year by improving water-use practices, installing a water recycling facility, and collecting and processing rainwater. The Water management plan promotes a 30% decrease in water consumption, from 6 million to 4.5 million cubic meters. The total wastewater load is reduced by 23%. A water recycling facility, as revealed by the pilot study, allows for the annual reduction of 56 tonnes of suspended substances and 20 tons of fat in water effluent.

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

Case study presented by:

**Ecolinks**

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