

# MedClean Propre Limpio



Regional Activity Centre  
for Cleaner Production



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

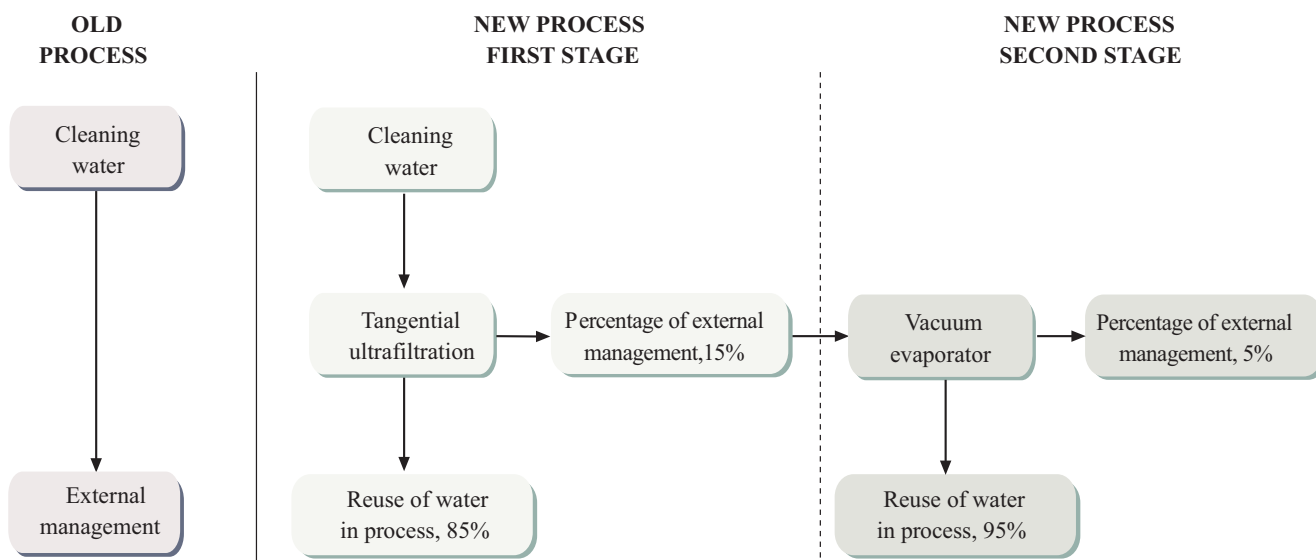
No. 69

Pollution prevention case studies

## Minimisation of the volume of wastewater and saving of resources by recycling at source

<b>Company</b>	DETERVIC, SA, Vic (Spain).
<b>Industrial sector</b>	Chemical sector.
<b>Environmental considerations</b>	<p>The company DETERVIC, SA, is devoted to the manufacture of soaps, detergents and other cleaning and shining products for industry.</p> <p>The production process at DETERVIC, SA, consists of introducing chemical reagents to the mixers, according to the exact formula of the product to be manufactured, and its agitation in accordance with the time specified for each formula. Then, the product is packaged straight into the supply containers.</p> <p>At the end of the process of mixing of the chemical products in the mixers, they are washed, which generates wastewater which is handled as hazardous waste.</p>
<b>Background</b>	<p>DETERVIC, SA generated liquid waste, the principal component of which was water to a very high percentage, the remainder being the discharge of the different products that were retained in the mixers. This situation led the company DETERVIC, SA to seek a solution that would allow an improvement to the company's environmental and economic situation, at the same time as reducing the consumption of natural resources. Action was directed in accordance with the following premises:</p> <p>Action was directed in accordance with the following premises:</p> <ul style="list-style-type: none"> <li>• Attaining a process which allows the reuse of the water contained in the waste.</li> <li>• Minimising the quantity of waste that finally has to be handled externally after having separated the aqueous part.</li> <li>• Obtaining the shortest period for return on investment and the lowest treatment cost.</li> </ul> <p>Since membrane and vacuum evaporation technologies are an alternative to the classic wastewater treatment techniques, it was decided to study the possibility of implementing a process of these characteristics at DETERVIC, SA.</p>
<b>Summary of actions</b>	<p>This action has had two stages:</p> <ul style="list-style-type: none"> <li>• The first stage consisted of implementing a treatment system by means of a tangential ultrafiltration process with a treatment capacity of 2 m<sup>3</sup>/day. This is a selective filtration technique which uses semipermeable membranes that allow the separation of very small diameter solid particles with an 85% yield and reuse of cleaning water. The most concentrated waste, generated by ultrafiltration, is a hazardous waste that was externally handled.</li> <li>• The second stage consisted of treating the concentrated waste generated by ultrafiltration by means of a vacuum evaporation plant with a treatment capacity of 150 l/day. This stage allows 95% minimisation of the concentrated waste and, therefore, the reuse of 95% of the water obtained in the evaporation process.</li> </ul> <p>Since membrane and vacuum evaporation technologies are an alternative to the classic wastewater treatment techniques, it was decided to study the possibility of implementing a process of these characteristics at DETERVIC, SA.</p>

## Diagrams



## Balances

	Old process	New process
<b>Balance of materials</b>		
Water consumption	424 m <sup>3</sup> /year	3.2 m <sup>3</sup> /year
Aqueous waste for external management	424 m <sup>3</sup> /year	3.2 m <sup>3</sup> /year
<b>Economical balance</b>		
Cost of water	176.4 €/year	1.33 €/year
Aqueous waste management costs	90,000 €/year	1,120 €/year
Aqueous waste transport costs	10,800 €/year	96 €/year
Energy cost	0 €/year	22,952 €/year
<b>Savings and expenses</b>		
Saving in the purchase of water		175.07 €/year
Saving in aqueous waste management		99,584 €/year
Energy cost		22,952 €/year
<b>Total savings</b>		76,807.07 €/year
<b>Investment in installations</b>		€79,100.9
<b>Payback period</b>		1.03 years

## Conclusions

With the execution of this project, it was possible to reduce the consumption of water used in the industrial process by 421.8 m<sup>3</sup>/year, in addition to a reduction of 421.8 t/year of aqueous waste generated by the cleaning of the chemical product mixers, waste which is classified as hazardous. Furthermore, this action has allowed the company to achieve the targets set within their ISO 14001 continuous improvement plans.

This action is thanks to the Minimisation Opportunities Environmental Diagnosis (MOED) carried out by the company in collaboration with the Centre for the Enterprise and the Environment (CEMA) during the year 2002.

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



Regional Activity Centre  
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Dr. Roux, 80  
08017 Barcelona (Spain)  
Tel. (+34) 93 553 87 90  
Fax. (+34) 93 553 87 95  
e-mail: cleanpro@cprac.org  
http://www.cprac.org