

# Medi*Clean* *Propre* *Limpio* **terranneum**

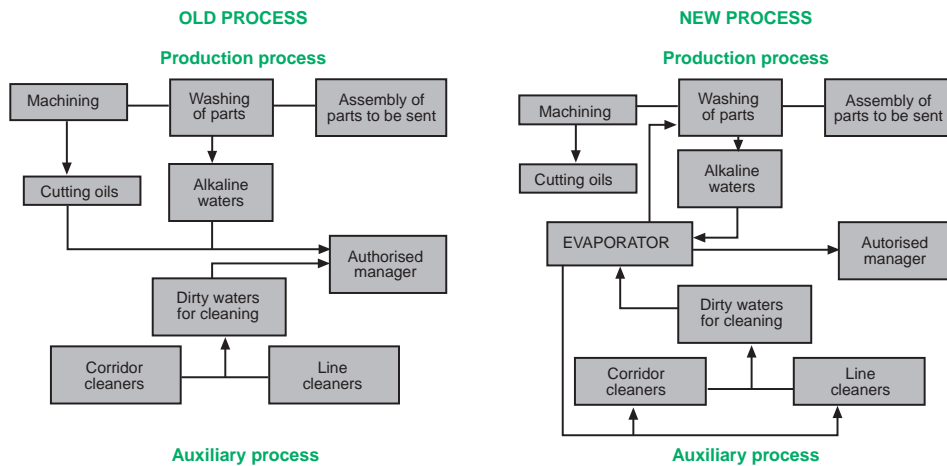
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Pollution prevention case studies

## Minimisation of waste and resource savings by recycling at source

<b>Company background</b>	Componentes Mecánicas, S.A. (COMESA) (Barcelona, Spain). COMESA makes gear boxes and rear axles for industrial vehicles.
<b>Industrial sector</b>	Metallurgy. Manufacture of parts for industrial vehicles.
<b>Environmental considerations</b>	<p>The production system is spread over different unit processes corresponding to each basic parts (gear wheels, cogged axles and halfshafts, etc.) in the gear box and the rear axle in such a way that production is not in line but by groups.</p> <p>Generally speaking, the parts undergo a machining stage in which water and cutting fluids (drill fluids) are consumed and a rinsing stage, before they are assembled and sent out. The aqueous waste generated in these stages of the process, together with dirty water from the auxiliary cleaning process of the site's production line, are treated by an authorised outside waste manager.</p>
<b>Background</b>	<p>As explained above, COMESA was generating liquid waste the main component of which was water (approx. 95%) with the other 5% corresponding to drilling fluids and oil residue. This situation led COMESA to seek a solution that would provide at the same time both improvements in environmental conditions and economic management.</p> <p>The initiative was guided by the following premises:</p> <ul style="list-style-type: none"> <li>- Achieving a recycling process that would allow for the reuse of the water contained in the waste.</li> <li>- Minimising the amount of waste that would ultimately have to be dealt with outside the company having separated the part with most water from the waste.</li> <li>- Achieving these two objectives with a fast return on investment (2 years at most), thus making it necessary to achieve reduced treatment costs.</li> </ul>
<b>Summary of actions</b>	<p>The initiative consisted in installing a vacuum evaporation unit which, after filtration, treats the following waste: cutting oils (drilling fluids), spent part rinsing baths and dirty water from the floor and line washes. This unit generates two effluents. One is a concentrate (5% of the starting volume) and is subsequently managed by an outside company. The other is a distillate and corresponds to the water contained in the waste. This water is taken to two 1000 litre tanks where it is stored for its subsequent use as water in the auxiliary cleaning process and in the rinsing baths of the parts.</p>

## Diagrams



## Balances

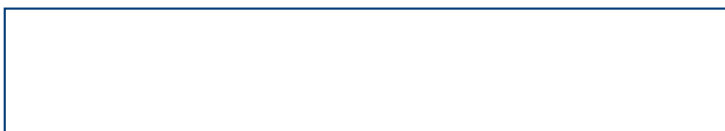
	Old process	New process
<b>Comparison of material</b>		
Water consumption	634,000 l/year	118,000 l/year
Liquid waste to be treated	654,000 l/year	33,000 l/year
<b>Economic comparison</b>		
Water consumption cost	2,193.7 €/year	781.3 €/year
Liquid waste management cost	149,363.5 €/year	7,861.2 €/year
Energy and unit maintenance cost	-	7,843.2 €/year
<b>Savings and costs</b>		
Water consumption saving		1,412.5 €/year
Liquid waste management saving		141,502.3 €/year
Energy and maintenance costs		7,843.2 €/year
<b>Total savings</b>		135,071.6 €/year
<b>Investment in facilities</b>		82,078.9 €
<b>Payback period</b>		0.61 years = 7 months

## Conclusions

The unit installed provides some considerable technological advantages: low electricity consumption, high output due to continuous working 24h/day and a compact air-tight system that causes neither problems of smoke nor smells.

The objectives set at the start have been achieved by this initiative. The considerable reduction in waste to be managed (95%), and lower water consumption due to its reuse both in the production and auxiliary processes (a reduction of 81%), have given a fast payback period.

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



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