

# Mediterraneum

Clean  
Propre  
Limpio



Generalitat de Catalunya  
Government of Catalonia  
Ministry of Territory  
and Sustainability

No. 158

## Pollution Prevention Case Studies

### Productivity and Environmental Performance Improvement in the Printing Sector

<b>Company</b>	Gràfiques Ortells, S.L.
<b>Industrial sector</b>	Printing ISIC Rev. 4 no. 1811 (International Standard Industrial Classification of All Economic Activities)
<b>Environmental considerations</b>	<p>Gràfiques Ortells, since it began operating, has been concerned about the environmental impact caused by its activities. Aware of the possible impact the facilities could have on the environment, the company is committed to developing its activities based on the protection of and respect for the environment, within a framework of continuous improvement.</p> <p>One of the main aspects of the company's environmental policy is developing and enhancing current activities with an emphasis on minimising solid effluents and gas and noise emissions as a philosophy in pollution prevention as well as saving energy and natural resources.</p>
<b>Background</b>	<p>The company was founded by Humbert Ortells in 1945, and it currently specialises in offset printing, with a strong family tradition that originated in the Gràcia district in Barcelona.</p> <p>The company is known for the high quality of its products and services and for employing the correct production process management tools to minimise the environmental impact of its activities.</p> <p>In 2007, Gràfiques Ortells decided to culminate their commitment to environmental protection with the implementation of an environmental management system based on standards ISO 14001:2004 and EMAS.</p> <p>In 2009, the company took another step in its commitment to respecting and protecting the environment, implementing the FSC standard.</p>
<b>Summary of actions</b>	<p>Gràfiques Ortells has applied important changes to its operations that required significant investment, with remarkable environmental benefits.</p> <p>In 2002, it incorporated computer-to-plate (CTP) technology, which resulted in environmental benefits such as:</p> <ul style="list-style-type: none"> <li>• Elimination of or significant reduction in the consumption of film and chemicals associated with the production process, and a reduction in waste streams.</li> <li>• Elimination of or significant reduction in the use of chemicals associated with plate processing.</li> <li>• Significant reduction in errors in plate processing, leading to a reduction in the amount of waste generated as a result.</li> </ul> <p>In 2006, taking into account the need to adapt the production system to market reality, a larger investment was made, substituting the Roland 704 with the new Roland 705*LV. This change made it possible to go from four to five colours as well as use in-line varnishing, which saved the company from externalizing some of the activities. In addition, the new equipment performs better environmentally, which has led to the following improvements:</p>

	<ul style="list-style-type: none"> <li>Reduction in the generation of solvents in the ink waste stream, as the clearing process for the new machine requires less solvent.</li> <li>Reduction of paper spoilage due to remote ink control, which also saves energy as the optimal ink level is achieved with less machine start-ups.</li> <li>Reduction in the amount of chemicals used, since the new equipment has a more precise dosage system. Thus, the chemical waste stream has been reduced.</li> <li>Use of an ecological acrylic mineral-oil-free varnish that can be cleaned with water. This technology has replaced the plastic lamination previously needed for certain applications, which generated non-recyclable waste (which was externalized).</li> </ul>																																											
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Balances	<table border="1"> <thead> <tr> <th colspan="2">INVESTMENT</th> </tr> </thead> <tbody> <tr> <td>New equipment cost</td> <td>€1.5M</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="5">SAVINGS</th> </tr> <tr> <th>Aspect</th> <th>2007</th> <th>2008</th> <th>2009</th> <th>Change</th> </tr> </thead> <tbody> <tr> <td>Electricity consumption (kWh)</td> <td>170,906</td> <td>157,985</td> <td>117,801</td> <td>-31.07%</td> </tr> <tr> <td>Water consumption (m³)</td> <td>276</td> <td>233</td> <td>179</td> <td>-35.15%</td> </tr> <tr> <td>Paper waste (kg)</td> <td>46,110</td> <td>47,770</td> <td>35,985</td> <td>-21.96%</td> </tr> <tr> <td>Solvent waste (kg)</td> <td>-</td> <td>535.2</td> <td>180</td> <td>-66.37%</td> </tr> <tr> <td>Oil waste (kg)</td> <td>400</td> <td>-</td> <td>162</td> <td>-59.5%</td> </tr> </tbody> </table> <p>The data provided are absolute values that do not take into account production changes. However, in 2008/2009, production fell by 15%, and a larger reduction percentage can be observed for all aspects.</p> <table border="1"> <thead> <tr> <th colspan="2">RETURN ON INVESTMENT</th> </tr> </thead> <tbody> <tr> <td colspan="2"> <p>There are several factors affecting the return-on-investment period of the new equipment, such as savings in consumption and waste management (as shown in the table), savings in finishing—which before had to be externalized (30-40%), and the overall improvement of the production process. According to all these factors, the <b>return-on-investment period has been calculated as 7-10 years</b>.</p> </td> </tr> </tbody> </table>	INVESTMENT		New equipment cost	€1.5M	SAVINGS					Aspect	2007	2008	2009	Change	Electricity consumption (kWh)	170,906	157,985	117,801	-31.07%	Water consumption (m³)	276	233	179	-35.15%	Paper waste (kg)	46,110	47,770	35,985	-21.96%	Solvent waste (kg)	-	535.2	180	-66.37%	Oil waste (kg)	400	-	162	-59.5%	RETURN ON INVESTMENT		<p>There are several factors affecting the return-on-investment period of the new equipment, such as savings in consumption and waste management (as shown in the table), savings in finishing—which before had to be externalized (30-40%), and the overall improvement of the production process. According to all these factors, the <b>return-on-investment period has been calculated as 7-10 years</b>.</p>	
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Conclusions	<p>Investing in new equipment radically improved the company's productivity and lead to a remarkable improvement in environmental performance. This case demonstrates that, in most cases, proper environmental management can be done not only without imposing additional costs on the company but also by bringing about economic benefits.</p>																																											

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