

# MedClean Propre Limpio


**No. 42**
**Pollution prevention case studies**

## Process modification to consume less water in cleaning operations

**Company background** MANIPULADOS DEL TER, S.A. (Sarrià de Ter, Spain) is a company that produces adhesive and pasted papers and films.

**Industrial sector** Paper and cardboard

**Environmental considerations** Two different processes are carried out depending on the final product to be obtained:

- Adhesive products: formed by two sheets (generally of paper) bonded with a synthetic adhesive agent. The sheets can later be detached, one of them being a stick-on label and the other, base paper.
- Pasted products: formed by two sheets (of paper/paper and aluminium or similar) that are bonded with synthetic glue. The sheets are not intended to be detached later on (they are used in stationery for gift bags, cardboard for wrapping and packaging, etc.).

The glues used allow adhesive paper to stick on the surfaces for which it has been conceived. In pasted products, glues ensure the permanence and the stability of the complex formed by two paper sheets. Each kind of paper and application requires a specific type of glue; up to seven different types of glue are used depending on the product to be produced. The process performed required cleaning the pipe that introduces the glue into the process each time a different product was to be produced, in order to prevent glues of different compositions from mixing, since this would lead to changes in the quality of the final product.

This operation generated wastewater containing residues of glue and adhesive agents, representing 90% of the total volume of wastewater produced by the company. Wastewater was externally treated by an authorised firm.

**Background** Given the amount of water consumed for cleaning the pipes and the cost for treating the wastewater generated in those cleaning operations, the company considered improving the design of the line introducing glue into the process. Furthermore, the modification carried out allowed for faster change of product production since it eliminated the time spent on the cleaning operations.

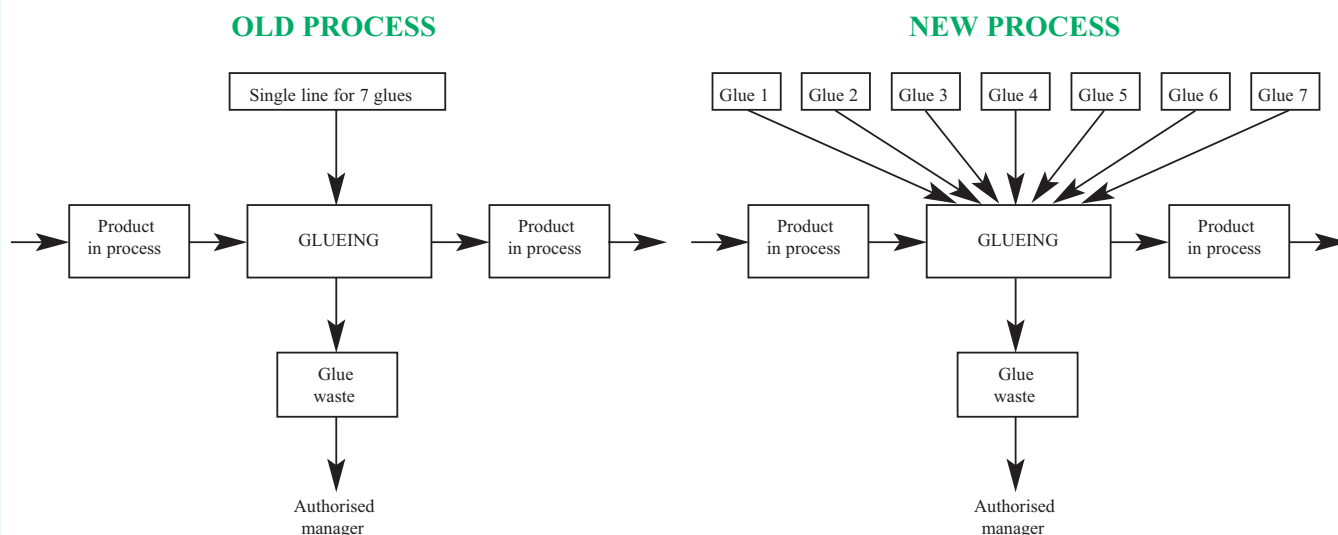
The concern of the company in minimising the risk of environmental incidents led to placing waste collecting points and wastewater emitters near the installations, as far as possible from the riverbed. The company has also established as a target implementing an environmental management system.

**Summary of actions** The composition of the adhesives and glues used is very different and depends on the use of the final product. Waste from adhesives and glues has a double source: residues of glue from the glueing process, and wastewater from cleaning tanks and glue lines, carrying a

certain amount of glue. Those cleaning operations had to be carried out every time there was a change in product production, since all types of glue were introduced into the process by the same line.

The company decided to launch an alternative that would minimise the waste flow of glues consisting of replacing the single line introducing all types of glue into the process with seven parallel lines (one for each type of glue). Thus, intermediate cleaning operations, required each time the type of glue was changed, were eliminated. By applying this alternative, it is estimated that there will be a reduction in the generation of glue waste of approximately 45%.

## Diagrams



## Balances

	Old process	New process
<b>Balance of materials</b>		
Annual generation of glue waste (kg)	860,000	473,000
<b>Economic balance</b>		
Waste management costs (€ /year)	65,570.42	36,060.73
<b>Savings</b>		
Savings in waste management (€ /year)		29,509.69
Savings in water consumption (€ /year)		7,212.15
<b>Investment in installations (€)</b>		3,005.06
<b>Payback period</b>		Immediate

## Conclusions

The process modification implemented enables waste sorting at the source, which entails an optimisation of the productive process. Notably, by increasing the flexibility to carry out changes of product production and reducing the amount of waste to be managed; therefore, there are savings in the cost of external wastewater management. The payback period is immediate and thus, apart from environmental benefits, economic benefits are also obtained.

**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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