

# Med *Clean* *Propre* *Limpio* *Mediterranean*


**No. 21**
**Pollution prevention case studies**

## CP implementation in the textile sector

|                                     |   |
|-------------------------------------|---|
| <b>Company background</b>           | Pisa Tekstil ve Boya A.S. (Y. Bosna-Istanbul, Turkey).  |
| <b>Industrial sector</b>            | Textile sector, cotton sub-sector.  |
| <b>Environmental considerations</b> | Although, on the one hand, the area where the facility is located is very convenient for its customers from the point of view of transportation (this is also convenient for the company, which works on commission), on the other hand, in addition to the fact that water consumption is very high in the textile sector, there is a water shortage problem in the area where the textile facility is located.  |
| <b>Background</b>                   | <p>The environmental assessment carried out in the company evaluated the general water consumption of the plant and identified pollution prevention and energy and water conservation opportunities without high capital investment requirements. These opportunities can be summarised as follows:</p> <ul style="list-style-type: none"> <li>• Heat recovery by vapour-liquid heat exchangers</li> <li>• Reduction in liquor ratio of dyeing baths</li> <li>• Reuse of treated wastewater</li> <li>• Possibilities of energy recovery from fabrics</li> <li>• Water conservation in the regeneration operation of the resins of water process preparation</li> </ul>  |
| <b>Summary of actions</b>           | <p>After carrying out a feasibility study concerning technical, environmental and economic aspects, the following opportunities were found to be worth implementing:</p> <ol style="list-style-type: none"> <li>1. Reduction of the liquor ratio of dyeing baths from 1:7 to 1:4</li> <li>2. Reuse of treated wastewater for the pre-washing of screens</li> <li>3. Optimisation of the regeneration process of resins by controlling the hardness of the water. The company carries out a resins regeneration process that lasts 62 minutes although after 43 minutes the hardness of the water is almost zero. If the regeneration process is carried out in 43 minutes, not only a time reduction of 19 minutes can be achieved, but also savings of 3 m<sup>3</sup> of water to regenerate the resins. If two regeneration processes are applied every day, 6 m<sup>3</sup> of water are saved and money can be spared, since the cost of 1 m<sup>3</sup> of process water including the cost of raw water, process water treatment, wastewater treatment and cost of discharge is 0.64 €/m<sup>3</sup>.</li> </ol> |

## Balances

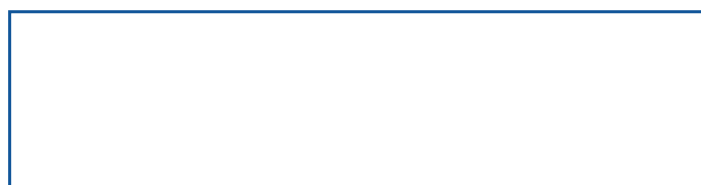
|                        |                                       | Old process  | New process | Savings |
|------------------------|---------------------------------------|--|-------------|---------|
| Inputs                 | Energy consumption (kWh/d)            | 880.2  | 877.2       | 3       |
|                        | Consumption of chemicals (kg/d)       | 1,924  | 1,916       | 8       |
|                        | Consumption of chemicals (€/d)        | 149  | 143.3       | 5.7     |
|                        | Water consumption (m <sup>3</sup> /d) | 1,800  | 1,794       | 6       |
|                        | Water consumption (€/d)               | 929.6  | 925.5       | 4.1     |
| Output                 | Chemicals (kg/d)                      | 1,163  | 1,156       | 7       |
|                        | Chemicals (€/d)                       | 82.3   | 81.3        | 1       |
|                        | Wastewater generation (€/d)           | 602.2  | 599.1       | 3.1     |
| Environmental Benefits |                                       | <ul style="list-style-type: none"> <li>• Energy conservation</li> <li>• Water conservation</li> <li>• Reduction of chemicals in wastewater treatment</li> <li>• Reduction in wastewater</li> </ul> |             |         |
| Cost                   |                                       | Neither capital nor running investment is necessary  |             |         |
| Total Annual Saving    |                                       | €2,007.5   |             |         |
| Payback period         |                                       | Immediate  |             |         |

## Conclusions

By means of the application of the presented options, savings in water, energy and raw materials have been achieved and, in addition, a labour reduction of 0.36 €/d has also been possible. The steady tightening of environmental regulations and the successful application of CP options in the textile sector encourage the application of opportunities that, as this example shows, sometimes need no initial or running investment and generate economic savings.

**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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