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Regional Activity Centre
for Cleaner Production



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

No. 13

Pollution prevention case studies

Cleaner production in a textile industry

Company background

First Textile (Corlu - Turkey). First Textile produces knitted textile, yarn, fabric-dyed textile (cotton, PES and cotton/PES) and printed textile. Its production capacity is approximately 1600 t/year of knitted cotton, 4500 t/year of dyed textile, 800 t/year of yarn and fiber dyeing and 940 t/year of printed textile. The company is EKO-TEX-100 certified.

Industrial Sector

Textile industry.

Environmental considerations

The biggest problem in textile processes is the large quantity of water used. Water consumption can be up to 90 m³/kg of product. This situation increases the pollutant load of wastewater effluents. In addition to this, high losses of energy are observed and considerable amounts of emissions have to be managed.

Background

The company studied their processes and identified different cleaner production options. Some of the identified options are as follows:

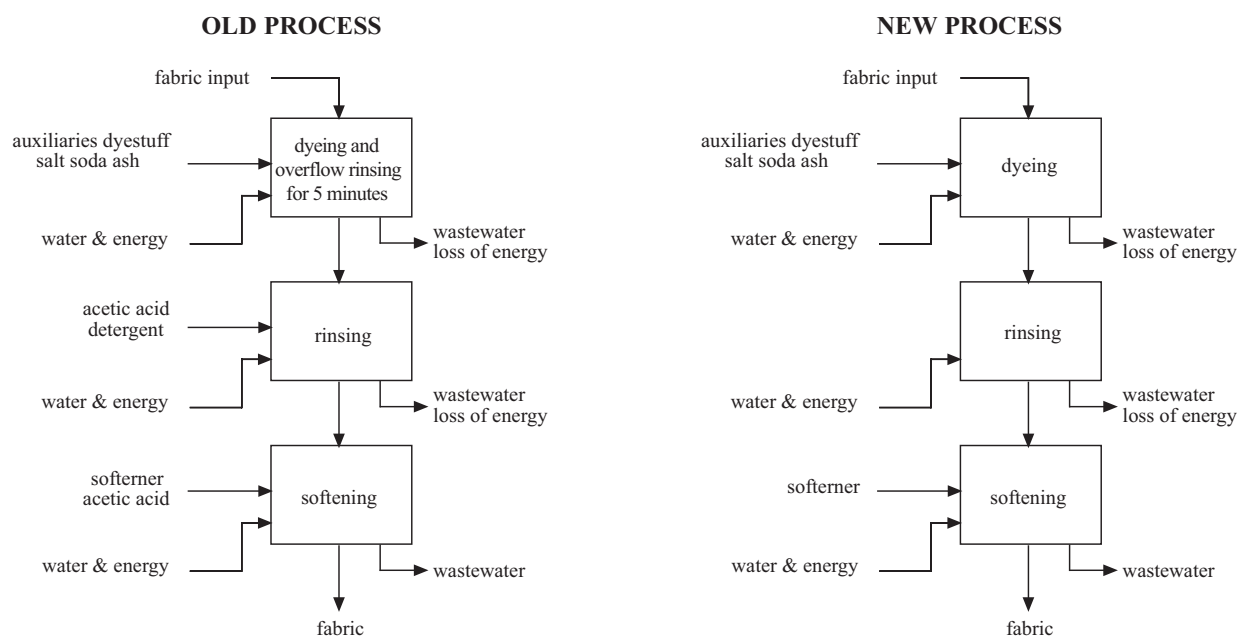
1. Heat recovery from stenters and wastewater.
2. Liquor ratio in bleaching and dyeing processes was 1:10. After the feasibility study, the ratio was reduced to 1:8.
3. Water savings and removal of some chemicals from bleaching and dyeing processes of cotton fabrics.
4. Water savings in the regeneration process of resins of process water preparation.

Summary of actions

After the feasibility study, some identified options were implemented. Specifically:

1. The company changed the recipe for cotton bleaching and dyeing processes by omitting overflow rinsing, as well as neutralisation stages and detergent usage.
2. The regeneration process of resins for the softening of raw process water was also optimised.
3. First Textile company established air-water heat exchangers at the end of the stenters to supply hot process water for certain dyeing recipes.

Diagrams



Balances

Option	Environmental Benefits	Cost (Investment+Operational)	Annual saving	Payback period
1	<ul style="list-style-type: none"> Reduction of water, energy and chemical consumption 	USD0	USD58,340-32,370	immediate
2	<ul style="list-style-type: none"> Reduction of water and salt consumption 	USD20,000	USD57,680	3 months
3	<ul style="list-style-type: none"> Reduction of steam and energy consumption Air pollution control 	USD328,820	USD513,000	1 year

Conclusions

The implemented cleaner production options, resulting from a previous diagnosis and feasibility study, led the company to a significant water conservation and also to the reduction of the pollutant load of wastewater that has to be treated. In addition to that, energy conservation is achieved by heat recovery from water of process. Also a significant reduction of the consumption of chemicals used in the process was achieved.

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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