MED TEST II Case Study

switchmed

As part of the SwitchMed programme, UNIDO supports industries in the Southern Mediterranean through the transfer of environmental sound technologies (MED TEST II) to become more resource efficient and to generate savings for improved competitiveness and environmental performance.

Tunisia

Mégisserie El FEJJA II Tannery

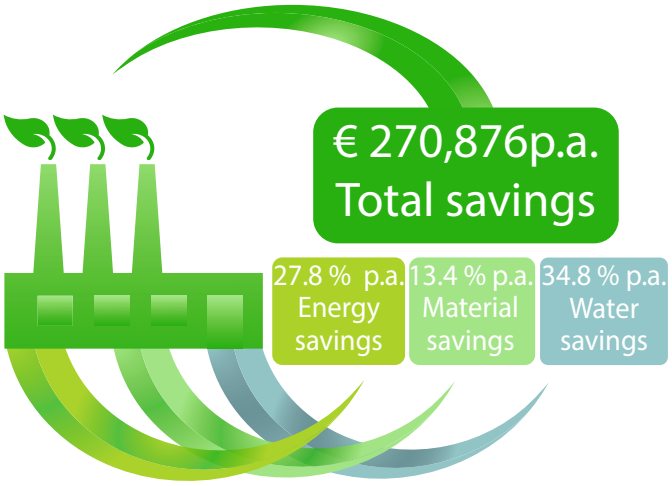
Leather sector

Context

Number of employees: 35

Key products: Tanned leather, Wet blue

Main markets: Export



Graphic: UNIDO

The Mégisserie El FEJJA II tannery is a Tunisian business which is entirely focused on exports, established in 1993 in the Elfejja Industrial Zone, in the Manouba Governorate. It operates in the leather manufacturing sector, and has a daily production capacity of 6 t of cowhide and 2,000 sheep and goat skins.

The company wanted to participate in the Med Test project in order to identify ways to improve as well as to reduce the pollution associated with their activities, to introduce the best available technologies (BAT) and to establish best environmental practices (BEP) in their manufacturing process.

Benefits

The MED TEST II project has identified total annual water, energy and raw materials savings of EUR 270,876, against an estimated investment of EUR 186,400. The return on investment term varies between 0 months (immediate) and 5 years. 64% of the identified projects have been implemented by the company between 2015 and 2017, or are still being implemented. Other projects, individual production options, are still under study.

The MED TEST II project has allowed the company to draft an organisation plan for the various workshops, "Layout of the Factory", for a coherent manufacturing circuit and better implementation of the new machines, which has helped to reduce handling of the leathers. Water quantities have been reduced by 34.8%, while energy costs have been reduced by 27.8%.

Other environmental benefits have been achieved, such as a reduction in the pollution of the used water , by modifying the chrome tanning process and introducing the bath drainage system and reducing the quantity of used chrome , as well as by adopting "Wet-White" tanning, which will result in approximate reductions in BOD_5 and COD of 35% and 34% respectively.

The company has also benefited from a training initiative on the environmental accounting system. The company has been able to identify and implement a number of initiatives enabling a reduction in material losses within the tanning workshop. Significant efforts have been made in terms of health and safety, with the implementation of a system for the treatment of toxic gases (H_2S) generated by the fullers during the pickling process. Similarly, accident risks have been reduced by 10% following the installation of safety pushbuttons on the machines.

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Saving opportunities[1]

Action	Economic key figures			Resource savings & Environmental impacts per year		
	Investment euro	Savings euro / Yr.	PBP Yr.	Water & Materials	Energy MWh	Pollution reduction
Production process optimisation	39,000	150,406	0.3	5,800 m^3 water 166.4 t chemical materials	-	Total: 31 t CO_2 26.3 t BOD_5 68.5 t COD 203.2 t solid waste
Solid waste minimisation and water consumption optimisation	132,000	89,322	1.5	4,650 m^3 water 20 t chemical materials	-	
Acquisition of new technologies and improvements to existing processes	12,000	26,676	0.5	-	-	
Energy consumption optimisation	3,400	4,472	0.7	-	53.6	
TOTAL	**€ 186,400**	**€ 270,876**	**0.7**	**186.4 t raw materials 10,450 m^3 water**	**53.6 MWh**	

1 Numbers based on production value from 2015

Production process optimisation

The tannery has been developed in several stages without any master plan. This initiative consisted of drafting a coherent manufacturing circuit taking into account the equipment to be purchased. Gutter tiling has enabled the forklifts to move around more effectively. The setup of a clean room for the acceptance and sorting of raw skins has enabled a gain in productivity of 15%. Splitting the skins into strips allows the flower and the crust to be treated separately as required. The manufacture of trays to retrieve the skins under the fullers and for unloading will help to prevent defects on the leathers. The strict control of the production parameters in the fullers has allowed significant savings in terms of chromium and chemicals, and an improvement in the quality of the finished leather.

Solid waste minimisation and water consumption optimisation

Chlorides in effluent have been minimised by acquiring a cage fuller; this has led to a 10% reduction in total chloride salt deposited on the skins. The installation of meters at the well has enabled water savings. The fleshing treatment project allows this waste to be recovered in order to obtain fats and proteins, as well as to reduce waste disposal costs. The project to implement the purification station is currently in the study phase while the various available facilities are being renovated and new equipment is being acquired, which will prevent any legal non-compliance.

Acquisition of new technologies and improvements to existing processes

The adoption of new cleaning technologies for the treatment of the leather has involved the elimination of chrome in the tanning processing through the adoption of the Wet White system, as well as the introduction of salt-less pickling and modifications to the physical and chemical parameters. Another project involves the liming and hair recovery process; this project has enabled a reduction in sulphur and lime consumption, as well as to reduce the COD content of wastewater by 20%. These hairs will be put to good use in the production of fertilisers for agricultural applications.

Energy consumption optimisation

The main measures include the lagging of steam supply and condensate and hot water return lines, and a reduction in the power required, which will result in a reduction in consumption of 9%. The rehabilitation of the electrical setup in the production workshops has helped to prevent frequent production stoppages, a factor affecting poor quality, and to reduce electricity costs by 5%.

"Thanks to the MED TEST II project, we have been able to more effectively control our production costs, particularly in energy, water and chemicals, while adopting environmentally-friendly production techniques, which has allowed us to improve our competitiveness."

Ouertani Karim
Manager

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