TCPP
TUNISIAN CLEANER PRODUCTION PROJECT

The Tunisian Cleaner Production Project (TCPP) is an initiative based on an approach laid by the United Nations Industrial Development Organization (UNIDO) with technical and financial support from Switzerland. The TCPP is co-financed by Switzerland's State Secretariat for Economic Affairs (SECO) and Tunis International Center for Environmental Technologies (CITET). CITET is in charge of its implementation with help from the Swiss environmental consulting firm, SOFIES.

With a budget of approximately 2.5 million €, the project is set to last 5 years (2010-2015). The TCPP's objective is to build national capacities in terms of environmental engineering tools, methods and technologies while strengthening the competitiveness of Tunisian companies.

FUBA

El Azib, Bizerte

Case Study **Surface Finishing Sector**

Company Overview

FUBA, part of the group OneTech, is a Tunisian printed circuit boards manufacturer with clients primarily in the telecommunications and automotive industries. The company employs 723 workers and has annual revenues of approximately 33 million €.

The enterprise is currently certified ISO 9001, ISO/TS 16949, ISO 14001 and OHSAS 18001 and considers cleaner production to be an invaluable part of its image. The company's management is highly concerned with pollution, health and safety and has already put in place several cleaner production measures.

FUBA is part of a group of 20 enterprises that integrated the first phase of the Project in order to improve environmental performance and productivity.

Source : F. Sciacca - Sofies

Benefits :
environment, competitiveness and capacity building

Experts have proposed several levels of action that will greatly reduce the use of resources and the production of waste. Potential savings are estimated at € 1.2 million per year, with payback periods between 1 and 3.5 years.

The first level deals with the production process itself. The optimization of cascade rinsing can reduce water consumption by more than 90% and concentrate effluents thus facilitating the recycling of heavy metal sediments. The second level of intervention regards the establishment of appropriately dimensioned recycling facilities to reuse processing solutions in production and recover copper. Finally, the third level involves a quick and specific action to treat the large quantities of effluents stored on site.

Overall, the suggested actions have the potential to not only positively impact the company environmentally and economically, but also in terms of green image and employee know-how regarding cleaner production practices. This will enhance the company's environmental performance and improve its competitiveness in the market.

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Saving opportunities and environmental impacts

	Action	Savings (€/year)	Investment (€)	Payback Period	Resource savings and environmental impacts
1	Treatment of etching solutions for copper recuperation	~87,000	~20,000	< 1 year	Recovery of 65.5 t of copper (Cu)
2	Optimization of the SIGMA station	~30,000	~5,000	< 1 an year	Reduction in chemical consumption Reduction in anode consumption: 30% Increased recycling of waste solutions
3	Reduction in rinse water consumption	~1,300	~4,400	~3.5 years	Reduction in water use by 2,590 m^3/year
4	Establish a recycling system by means of electrolytic membrane	~950,000	~2,500,000	~2.5 years	Reduction in consumption: Chemicals (Replenisher): 80% Water: ~10% Reduction in waste production
5	Establish recycling of acid etching solutions	~102,000	To be determined	To be determined	Reduction in chemical and metal consumption: HCl (170,000 kg/year), H_2O_2 (44,000 kg/year), Cu (240 kg/day) Reduction in liquid waste production (~ 170 m^3/year)

Action 1

The company is currently storing up to 200 m^3 of alkaline etching solution and 300 m^3 of acid etching solution. The idea here is to treat those solutions internally in order to extract metal waste and eliminate environmental pollution risks linked to their storage. By using complexing agents to precipitate 99% of heavy metal sediments present in the wastewater, the company stands to valorize 65.5 t of metal waste.

Action 2

To raise the efficiency of the effluent treatment station, thus reducing anode replacement rate by 30% and decreasing chemical consumption, the following improvement procedures are proposed: enhanced cathode maintenance, ensuring uniform bath parameters, installing water circulation mechanisms to prevent dendrite formation, and regulating.

Action 3

On alkaline and acid etching lines, the rinsing stations' flow rates can be diminished by installing an automated water dispensing system and by adding 2 basins to the new line (each additional basin decreases flow rate by 40%).

Action 4

The idea here is to establish an electrolytic membrane treatment plant, which will allow for the recuperation of certain waste products from alkaline solutions. The station will have account for a new alkaline etching line and a 68% increase in alkaline solution production in the next 5 years. It is expected to recover copper, electrolytes, gases (NH_3 released during etching) and a portion of rinsing waters.

Action 5

The production of effluents via the acid etching line is expected to increase by 300% over the next 5 years. The addition of a recycling system equipped with a rotating circular cathode lined with an electrolytic membrane will allow for the extraction of electrolytes (HCl, H_2O_2) and copper in the form of dust form solutions.

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