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.

Foundry JF

Ben Arous, Ben Arous

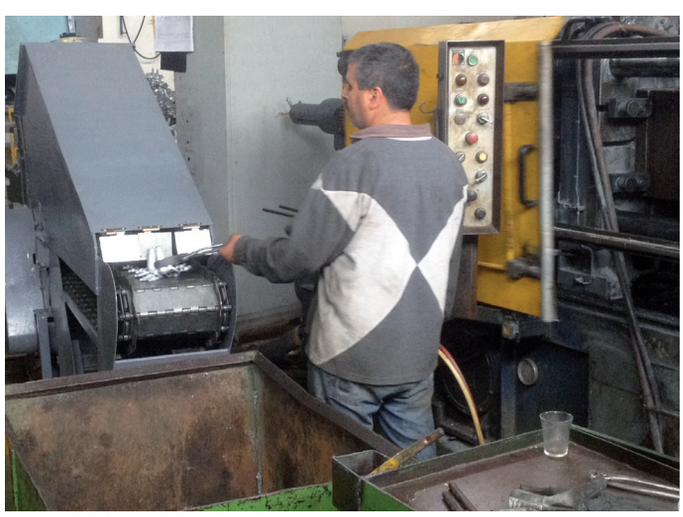
Case Study **Surface Finishing Sector**

Company Overview

The Foundry JF (FJF) was created in 1978 and focuses on the production and surface treatment of zamak-based hardware, bathroom accessories, faucets, and automobile parts. The company employs around 150 workers and reports annual sales of 2.75 million €.

The company has implemented an internal policy, which seeks to guarantee respect for the environment and the quality of life in the foundry's surrounding area. To ensure control over its environmental impact, FJF has initiated the establishment of an environmental management system according to ISO 14001 standards.

FJF 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 identified several steps to increase the factory's overall performance, ensure higher quality products, save resources, and increase workplace safety. These measures have the potential to save the company over 80,000 € per year and have short payback periods of a year or less.

Chemicals represent nearly 55% of the company's spending in terms of its total revenue. By replacing the ultrasound system, installing probes to monitor thickness of nickel-plate coats and generally having better control over quality, the company stands to make severe cuts in its chemical consumption and waste, including a drop in the number of faulty products.

Drastically reducing the chemical degreasing bath renewal rate by optimizing the ultrasound system can have a significant impact on water consumption and save 170 m^3 of water per year.

The optimization of production processes doesn't only lead to severe cuts in resource consumption, but also higher quality standards for a more satisfied clientele, and a greener company image. Lastly, reducing the risk of fires by improving monitoring of heating vats can help increase workplace safety and overall efficiency.

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Saving opportunities and environmental impacts

	Action	Savings (€/year)	Investment (€)	Payback Period	Resource savings and environmental impacts
1	Optimization of ultrasounds performance in chemical degreasing baths**	28,000	30,000	1 year	Degreasing chemicals: ~ 80% reduction in consumption Reduction in water consumption and wastewater: 170 m^3/year
2	Set up of more rigorous quality control before the galvanoplastia process*	50,000	10,000	< 1 year	Scrap reduction: 50% Water, energy, chemicals: not quantifiable
3	Installation of monitoring equipment for heating and nickel-plating process***	> 5,000****	6,000	1 year	Reduction in nickel consumption: 5-10% Scrap reduction: 20% Fire risk reduction

* Fully implemented ** Implementation initiated *** Implementation planned **** Not including reduction in risk of fires and increased productivity

Action 1

Currently, polishing pastes enter into end-of-stream treatment baths due to poor ultrasound performance during the pre-treatment stages. This causes issues in terms of finished product quality and reduces overall bath lifetime and, as a consequence, an excessive consumption of chemicals. Replacing the current system with a more efficient tube ultrasound system can increase bath lifetime 6 fold, leading to 80% decrease in the use of some degreasing chemicals. This measure can reduce water consumption by 171 m^3 per year and decrease the overall amount of defective parts produced.

Action 2

As a result of outdated machinery and improper handling of parts while they are being moved between production processes, 15-40% of the company's inventory does not conform to quality standards and are not detected early enough. Quality controls should be established at various levels of production in addition to appropriate handling procedures. Specific measures to be taken at the polishing stage and verification of semi-finished parts along each step of the production can half the number of non-conforming parts, and therefore decrease the amount of waste generated. Clients will also receive higher quality products delivered on time and overall employee stress level will drop due to a marked decrease of halts in production.

Action 3

At the moment, the factory lacks adequate oversight of its heating and nickel-plating process. Resistors overheat when the amount of liquid within the heated vats is insufficient, which can result in fires. To remedy this problem, experts advise the installation of 8 level probes placed 2 cm above the liquid within the factory's heated vats and several automated switches to turn off the resistors when they are not needed. This will significantly reduce the risk of fire while increasing workplace safety.

Regarding the nickel-plating process, probes to measure coating thickness will allow the technical manager to more closely monitor product quality and make adjustments as necessary. Such a measure has the potential to reduce nickel consumption by 10% thus saving the company 300 kg of nickel or the equivalent of 5,000 € per year. It can also lead to a 5-15% hike in productivity and a 20% decrease in the amount of faulty parts.

SOFIES solutions for industrial ecosystems
Sofies SA
Rue du Vuache 1, CP 2091
1211 Geneva 1, Switzerland
Telephone : +41 22 338 15 24
Email : contact@sofiesonline.com

Centre International des Technologies de l'Environnement de Tunis (CITET)
Bvd du Leader Yasser Arafat
1080 Tunis, Tunisia
Telephone : +216 71 206 482
Email : assistance@citet.nat.tn

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Federal Departement of Economic Affairs,
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