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.

Egypt
SESIC
Chemical sector

Context

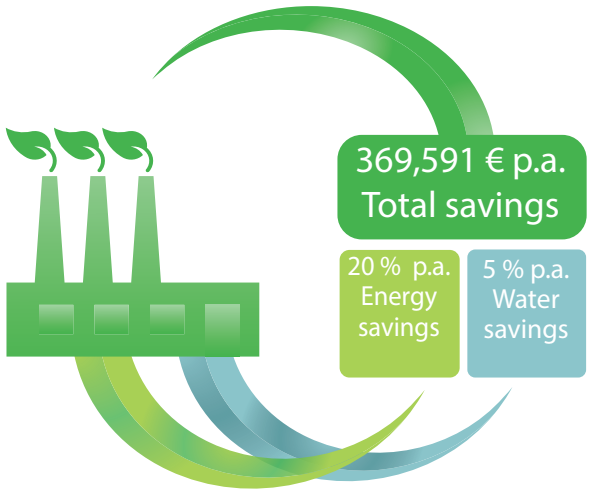
Number of employees:	250 full-time employees, 20-25 seasonal employees
Key products:	Different types of toothbrushes
Main markets:	Local and export (60 %)
Management standards:	ISO 9001, ISO 22716

Swiss Egyptian Company for Oral Care Products and Cosmetics (SESIC), founded in 1975, is medium-sized enterprise specializing in the production of oral care products including toothbrushes, tooth pastes, shaving pastes, shampoos etc. The company comprises two plants; its toothbrush plant was the focus of the MED TEST II project for applying TEST procedures. SESIC joined MED TEST II project to identify opportunities for increasing resource efficiency and productivity.

"As we are expanding our company, we participated in the MED TEST II project with the aim to learn a simple methodology to identify losses, namely energy, materials and water, as well as ways to reduce them."

Mostafa Abd El Hakim Heykal
Vice President

Benefits



Graphic: UNIDO

The MED TEST II project has identified annual total savings of 369,591 euros in water and electricity consumption with an estimated investment of 1,460,050 euros. The identified measures shall also provide 47% increase of productivity. Those savings were suggested through six measures and all of them were approved by the company for implementation. The average payback period is less than 4 years. Three of these resource efficiency measures have been implemented, two others are under implementation while one measure is retained for a study by the company.

Two of those measures with an investment cost of 79,156 euros were identified to improve the workplace environment. The first measure involves installing a centralized bag house filter on the trimming machines instead of the existing inefficient dust collectors to remove dust from work area, while the second measure is designed to improve ventilation in the workplace environment to reduce heat stress levels and improve the air circulation rate in the production area. By participating in the MED TEST II project the company benefited from adopting resource efficient and cleaner production (RECP) concept, updated its policy to integrate this concept while the employees learned about approaches and tools designed to reduce losses and protect the environment. Capitalizing on the experience gained, the company plans to implement RECP measures also in its other plant. Financing of investment needing projects was facilitated through connecting the company to the EBRD Green Economy Financing Facility (GEFF). That cooperation inspired the company management to implement all identified measures.

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Saving opportunities[1]

Action	Economic key figures			Resource savings & environmental impacts per year		
	Investment euros	Savings euros / yr.	PBP years	Water and raw materials	Energy MwH	Pollution reduction
Upgrade injection mould machinery	1,450,000	366,865	3.9	-	397	Total: 226 t of CO_2
Energy conservation measures	10,000	2,667	3.7	-	69	
Water monitoring measures	50	59	0.8	206 m^3 of water	-	
Total	**1,460,050 €**	**369,591 €**	**3.9**	**206 m^3 of water**	**466 MWh**	

1 Numbers based on production value from 2016

Upgrade injection mould machinery

The company has sixteen injection mould machines with 4-8 cavity cold runner moulds operated with low efficiency fixed speed motors. Replacing five old machines with four larger up-to-date ones equipped with 16-32 cavity hot runner moulds, and operated with variable speed servo motors shall reduce specific energy consumption of this process by 50.4% from 8.95 MWh/t to reach only 4.44 MWh/t of product.

Besides the energy savings; each machine's cycle productivity will be doubled leading to an additional yearly production of 292 t. Also the hot runner system will eliminate much of the plastic waste formed during cold runner injection moulding, eliminating the actual re-grinding and re-processing costs.

Energy conservation measures

These measures involve improving the cooling efficiency of injection moulds and injection machines through installing a cooling tower for cooling the injection machines cooling water, instead of having it cooled by the existing chiller. The chiller will cool only the water of injection moulds, which need lower temperature. A second identified energy conservation measure addressed reducing the leaks from compressed air.

Applying these measures will save about 69 MWh/year of electricity, which will reduce CO_2 emissions by about 33 t/year.

Water Monitoring measure

The installation of water metering devices will allow good monitoring and control of water consumption and wastewater discharge. The implementation of this measure will save about 5% of the total water consumption as a result of implementing principles of water use efficiency in the production processes.

"After participating in the MED TEST II project, we realized the importance of saving our resources. We are currently in the process of introducing solar panels as a sustainable energy source."

Mostafa Abd El Hakim Heykal
Vice President

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