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.

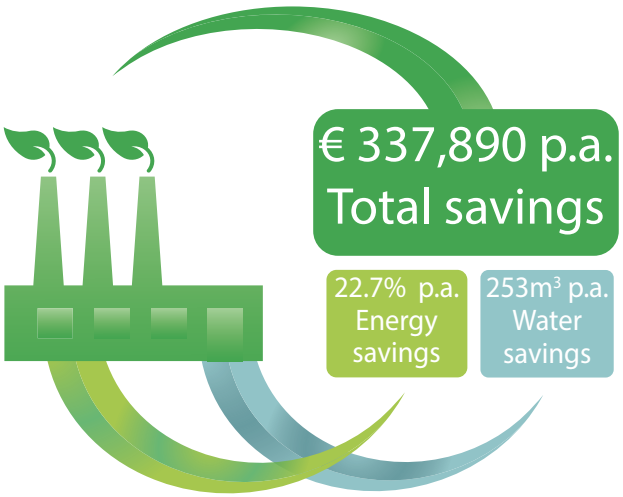
Jordan

Saudi Jordanian Industrial Development Company
Food and beverage sector

Context

Number of employees:	500
Key products:	Croissants, molded cake and puff pastries
Main markets:	Local and regional (50%)
Management standards:	FSSC 22000, HACCP

Benefits



Graphic: UNIDO

The Saudi Jordanian Industrial Development Company was established in 1999 and since then its domestic market share has been constantly growing, having now a well-known "Jordina" brand. Thanks to the continuous development of its product's quality, the company opened new markets in EU countries such as Germany, Italy, England, Denmark, and the Netherlands.

"As energy is a challenging factor in our sector, we were convinced to participate in the MED TEST II project in order to improve our energy consumption, and also reduce our material usage. We also consider the project to be a good chance for our employees to become more aware of non-product output costs."

General Manager

The MED TEST II project identified total annual savings of 337,890 euros mainly in energy use with an estimated investment of 104,060 euros. The average pay back period is 0.3 year. Twelve saving measures have been identified during the project with the active support of the internal company team. All identified measures were accepted by the top management for implementation and were already implemented or under implementation. The company uses its financial and technical internal resources for the implementation of identified energy saving options.

The energy consumption will be reduced by 22.7%, water by 253 m^3/a, and a total of 1,495 tons/a of CO_2 emissions will be eliminated.

During the course of the project, the company realized the importance of monitoring water and energy in a systematic way and has decided to install meters for energy and water. Finally, the company has received support within the process for preparedness to introduce the ISO14001 standard.

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SwitchMed is funded by the European Union

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
Lighting system	€41,650	€34,730	1.2	-	227.1	
Compressed air system	€8,670	€135,080	0.1	-	1,077.8	Total: 1,495 tons CO_2
Cooling system	€20,400	€98,340	0.2	-	784.6	
Steam system	€33,340	€69,740	0.5	253m^3 Water	1,233.9	
TOTAL	**€104,060**	**€337,890**	**0.3**	**253m^3 Water**	**3,323.4 MwH**	

1 Numbers based on production value from 2015

Lighting system

Replacing a total of 965 florescent fixtures with LED fixtures and also replacing 34 MH flood lights with LED flood lights, and 6 HPS 300W with Highbay LED fixtures of 150W will significantly reduce the electricity consumption.

Compressed air system

Since there are a lot of leakages in the compressed air network and at the end users, arresting at least 90% of these leakages will reduce the operating time of the compressors, which will be reflected on its energy consumption.

"We think that the energy part of the project was very helpful to our company, but we also see good opportunities to improve our material usage. Our internal team will continue to study material usage and come up with alternatives. We believe that capacity building is the most important part of MED TEST II project as it fosters the ability of employees to continue with this process and gives companies the chance to progress with their teams."

General Manager

Cooling system

The factory uses two cooling stations consisting of 3 NH_3 compressors and one cooling tower to cool the water/glycol and pump it to different heat exchangers in the production lines. To improve the COP of the system and reduce electricity consumption, the following measures were identified:

- Insulating the plate heat exchangers and installing control system for partial loading
- Using the high pressure condensate ammonia for cooling the oil instead of the cooling tower
- Insulating the chilled water tanks, the chilled water header, and the cooling tunnel
- Upgrading the evaporator coils in the chilled water tank
- Cleaning the condenser fins and well insulating the coils
- Using a non-cycling air dryer instead of the conventional dryer to reduce its operating time
- Isolation of the suction air for 5 cooling units located in the hot zone for the cakes cooling tunnel

Steam system

It was noted that there is a huge amount of heat losses in the steam pipelines, and end-users, and steam leakages, which can be eliminated by insulation of the condensate tank, end users, and steam pipes, as well as arresting steam leakages. Fuel consumption could be reduced by installing heat recovery units in the burner's combustion gases chimneys of the baking lines for preheating the steam boilers' make-up water.

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