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

Al-Durra for General Trading and Investment. Food and beverage sector

Context

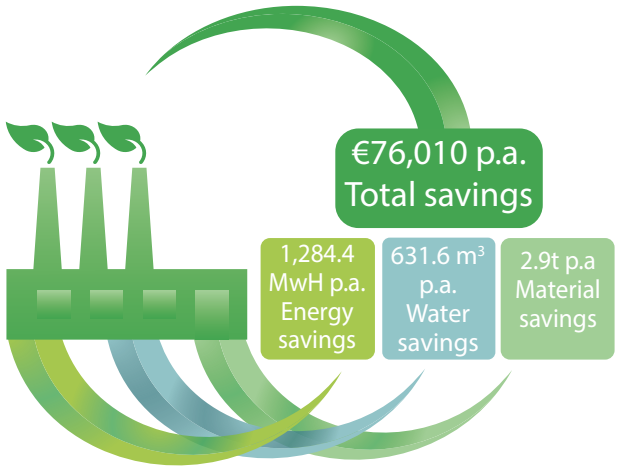
Number of employees:	500
Key products:	Jams, pickles, and canned foods.
Main markets:	Local (17 – 18%), regional (35%), and international (45%).
Management standards:	ISO 9001

Al-Durra for General Trading and Investment, located at Al-Hassan Industrial Estate – Irbid (North of Jordan), is active in the food processing industry. It was established in 1979 in Syria and started production in Jordan in 2012.

"We became interested in joining the MED TEST II project, because we have different environmental aspects which require the best environmental practices and savings, such as water consumption, wastewater generation and energy consumption."

Mohammad Kheir Al-Nen,
General Manager

Benefits



Absolute values 2016

Graphic: UNIDO

Through the MED TEST II project the company realized total annual savings of 76,010 euros in energy, water and raw materials with an estimated investment of 85,820 euros and an average pay back period of 1.1 years. 28 saving options were identified, out of which 24 were accepted for implementation by the top management and 17 were implemented or under implementation.

Energy consumption will be reduced by 1,284.4 MwH/a, water by 631.6 m^3/a, CO_2 emissions by 502.4 tons/a, and solid waste by 2.9 tons/a.

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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
Process optimization and production planning	€700	€5,520	0.1	596 m^3 water 2.9 tons raw materials	25	Total: 502.4 tons CO_2 2.9 tons solid waste
Replace pasteurization drums for jars by pasteurization tunnel	€33,330	TBD	-	TBD	TBD	
Lighting and cooling systems	€5,210	€4,280	1.2	-	36.1	
Compressed air system	€12,310	€10,850	1.1	-	91.4	
Steam system	€34,270	€55,360	0.6	35.6 m^3 water	1,131.9	
TOTAL	**€85,820**	**€76,010**	**1.1**	**631.6 m^3 water 2.9 tons raw materials**	**1,284.4 MwH**	

1 Numbers based on production value from 2016

Process optimization and production planning

Losses of raw materials and water could be reduced by implementing the following measures:

- Optimization of the CIP, proper closure of the cooker during production;
- Better production planning to maximize utilization of the equipment and operation of production at maximum capacity;
- A containment tray should be designed to collect any falling broad beans for use instead of disposal;
- Use high pressure water jets in washing process;
- Change to automatic filling system, to reduce the losses in glass jars;
- Reduce spillage of water from machine cleaning on to the floor.

Replace pasteurization drums for jars by pasteurization tunnel

After manual filling the jars are oily before they are pasteurized in drums, where there is an excessive demand for heating and cooling. The oil stays during pasteurization and is washed out manually with soapy water. Approximately 1,000 liters of water is constantly heated up and cooled down in the drums. The company has decided to change to a more efficient technology by using pasteurization tunnel instead, with a pre-washing step and dedicated cooling area with water sprayers. This action will generate 50% reduction in energy and water consumption in the pasteurization process in addition to the increase of productivity due to reduced pasteurization time.

Lighting and cooling systems

Electricity consumption will be reduced by replacing inefficient lighting units with more efficient LED units, decreasing lighting units in halls, and reducing the suction air temperature at the chiller fans.

Compressed air system

The existing compressed air system can be enhanced by:

- Replacing the air compressor with a more efficient one;
- Arresting at least 90% of the compressed air leakages;
- Using an air blower instead of compressed air in the fruit washer, since the fruit washing process doesn't need pressurized air at more than 1.5 bar;
- Using a non-cycling air dryer instead of the conventional dryer to reduce the operating time and the energy consumption of the drying process by 10%.

Steam system

Arresting the steam leakages, insulating the steam network, and installing a solar water heating system for the boiler's make-up water will reduce the fuel consumption.

"After our participation in the project, we now recognize that there are a lot of possible measures that could be implemented to reduce water and energy (electricity and fuel) consumption."

Mr. Mohammad Kheir Al-Nen,
General Manager

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