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

Gulf Food Products Co.

Food and beverage sector

Context

Number of employees:	55-61
Key products:	jam, tomato products, mayonnaise, ketchup, others (sauces, vinegar, etc.)
Main markets:	Local & International 50% export
Management standards:	ISO 22000, HACCP

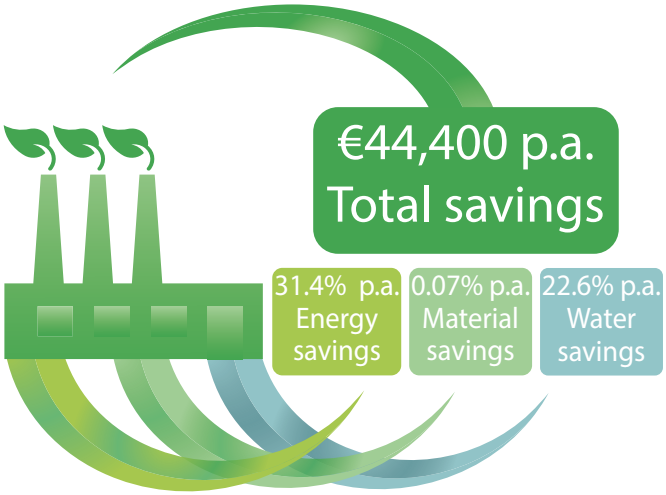
Gulf Food Products Co. is a medium-sized enterprise that was established in 1994 with a range of products including high quality jams & marmalades, fruit preserves, tomato products, ketchup, sauces for steak, pizza & spaghetti, vinegar and mayonnaise.

The products are sold on the local, regional and international markets. The company participated in MED TEST II project to improve the skills of its employees in resource efficient and cleaner production (RECP), and to identify opportunities for reducing water and energy consumption.

"Before participating in the MED TEST II project our awareness was inadequate about energy losses that were costing us a lot of money every year, productivity and material losses were also going unnoticed."

Eng. Mohammed Husamuldeen,
Maintenance Manager

Benefits



Graphic: UNIDO

The MED TEST II project identified total annual savings of 44,400 euros in energy, water and raw materials with an estimated investment of 48,330 euros. 28 saving options have been identified to reduce the consumption of energy (electricity and fuel), water and raw materials, over 71% of them were accepted by the top management for implementation.

The average pay back period is 1.1 years, and 36% of the measures have already been implemented.
Materials consumption will be reduced by 0.07%, energy consumption by approximately 31.4% and water by 22.6%. Additionally, CO_2 emissions will be reduced by 30.6% and solid waste by 2.8%.

The company has been ISO 22000 certified during the project implementation period. The company also issued its EMS policy statement and was provided with a guideline for establishing an RECP integrated EMS system. The company also changed its accounting system to achieve better tracking of materials and losses.

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Saving opportunities[1]

Action	Economic key figures			Resource savings & Environmental impacts per year		
	Investment euros	Savings euros / Yr.	PBP Yr.	Water & Materials	Energy MwH	Pollution reduction
Reduction of raw materials losses	€9,670	€2,160	4.5	187 m^3 Water 1.14 tons Raw materials	-	Total: 167.2 tons CO_2 1.14 tons Solid waste
Water conservation	€16,670	€17,480	1.0	1,984 m^3 Water	-	
Lighting and compressed air system	€10,580	€6,680	1.6	-	62	
Steam system	€9,140	€11,100	0.8	157 m^3 Water	315	
Pumping and cooling system	€ 2,270	€ 6,980	0.3	-	65	
TOTAL	**€48,330**	**€44,400**	**1.1**	**2,328 m^3 Water 1.14 tons Raw materials**	**442 MwH**	

1 Numbers based on production value from 2015

Reduction of raw materials losses

The reduction of raw materials losses will be achieved by 1) Improving capping quality and staff competence in operating and maintaining the capping machine to reduce product losses and also to reduce circulating water losses at the pasteurization tunnel. 2) Replacing the head of the sealing unit at the sachet filling machine to minimize rejects of incomplete sachets and related material losses.

Water conservation

Reduction of water use will be achieved by installing a new control system for the existing softeners, use of better quality salt and also implementing a calibration plan for the backwashing procedure, which consumes large volumes of water. Additional savings will be achieved by implementing employee training and monitoring during dry cleaning operations and also by eliminating the use of soft water for the COP (close the line) and by installing an on-site water meter for input water at the tanks.

Moreover, using higher quality labels at the labelling machine will reduce excessive water consumption needed for removing glue residues and low quality of labels. The installation of a closed system to seal in the water for pumps and the reuse of the final CIP rinse water for the pre-cleaning step will achieve significant savings.

Lighting and compressed air system

This action includes 4 measures to reduce electricity consumption. 1) Reducing the pressure at the inlet of the ejector of the sachet filling machine for directing the side-cut offs from the plastic roll to the waste bin. 2) Replacing the existing inefficient lamps with LED efficient lamps.

3) Eliminating 90% of the air leakages in the compressed air system. 4) Reducing the length of compressed air network pipes (pressure reduction by 1bar).

Steam system

This consists of several measures to reduce the consumption of fuel, such as: Improving the regulation of the boiler to increase efficiency from 85.6% to 94.5%; Eliminating the leakages in steam system; insulating the steam network; Collecting the return condensate; preheating the heavy oil with steam instead of electric heaters (installation of a solar heating system); and installing a 750 lit/day solar water heating system for pre-heated boiler makeup water.

Pumping and cooling systems

The consumption of electricity at pumping and cooling system will be reduced by resizing the circulating pumps from chillers to tanks; insulating the plate heat exchangers in the cooling system; installing water pumps 1.5 kW for the cooling tower cycle instead of the 18.5 kW pump; insulating the plate heat exchanger for the pasteurization process to improve the cold water cycle efficiency; and replacing the well pump (7.5 kW) with 5.5 kW pump with 60% reduction in operating hours.

"After participating in the MED TEST II project, the team learned how to study losses, solving the problems by determining the sources and identifying actions that would have a positive impact on waste reduction."

Eng. Mohammed Husamuldeen,
Maintenance Manager

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