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

Farm Dairy Company
Food and beverage sector

Context

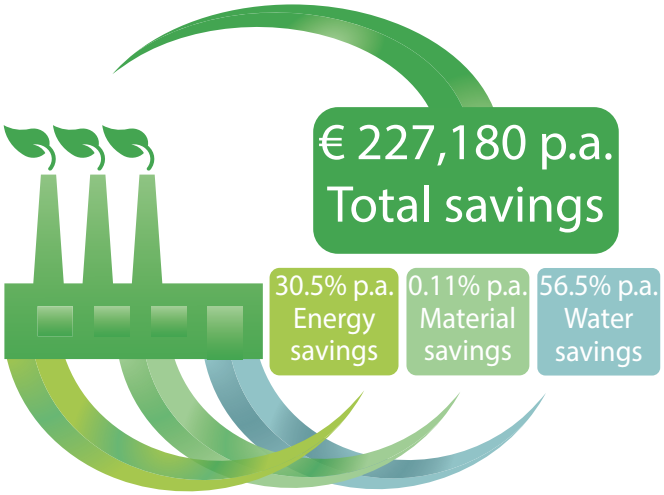
Number of employees:	130
Key products:	Different types of cheese, yoghurt and Labneh
Main markets:	Local and regional
Management standards:	ISO 22000, HACCP

The Farm Dairy Company is a medium-sized enterprise specializing in Artisanal Cheese Production. Founded in Amman in 1994, it produces different types of dairy products including mainly cheese, yoghurt, Labneh, and Shaninah for the local and regional markets. The company's motivation to participate in MED TEST II project is to seek a solution for losses and inefficiencies especially in the production of Labneh, and to reduce energy costs through looking for more efficient energy measures or by introducing renewable energy sources. The company is ISO 22000 and HACCP safety food systems certified.

"Our participation in the MED TEST II aimed at optimizing our resource use and reducing consumption of water and energy particularly in the Labneh process. Fostering our experience in generating CP options, we aimed at learning and adapting the new tools developed by MED TEST II such as the MFCA to link up financial and operational issues."

Eng. Fawaz Shaka'a,
Executive Manager

Benefits



Graphic: UNIDO

The MED TEST II project identified total annual savings of 227,180 euros in water, energy, and raw materials with an estimated investment of 1,048,120 euros and an average pay back period of 4.6 years. Nineteen (19) saving options were identified throughout the project, most of which were accepted by top management, and the company team has actively participated in modifying some options to facilitate top management approval. 37% of the measures were implemented and an additional 16% are under implementation.

The consumption of materials will be reduced by 0.11% and energy consumption by approximately 30.5%. Additionally, CO_2 emissions will be reduced by 209 t/year, water use by 56.5%, and solid waste by 2.4%.

The project facilitated access to financing for the high investment needed, supporting Farm Dairy in applying to the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF). The company also issued its EMS policy statement and was provided with a guide to integrate RECP in the EMS system.

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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
Reducing the losses of raw materials and water	€1,002,030	€196,220	5.1	7.1 t raw materials 7,505 m^3 water	205.2	Total : 209 t of CO_2 4.0 t of solid waste
Heat conservation and recovery	€13,730	€10,140	1.4	262 m^3 water	179.4	
Lighting and compressed air systems	€2,030	€2,610	0.8	-	24.2	
Cooling system	€30,330	€18,210	1.7	-	168.7	
TOTAL	**€1,048,120**	**€227,180**	**4.6**	**7.1 t raw materials 7,767 m^3 water**	**577.5 MWh**	

1 Numbers based on production value from 2015

Reducing the losses of raw materials and water

The current manual handling of material within the production process leads to considerable losses in raw and auxiliary materials. Adaptations and the installation of new technologies in the Labneh and cheese production lines will reduce losses of raw materials. Also shifting to closed CIP system and using more efficient water devices will considerably reduce losses in water and auxiliary materials. The option of using a washing machine for Labneh bags will bring additional improvement to the quality of cleaning which will consequently improve production quality.

Heat conservation and recovery

The consumption of fuel could be significantly reduced by insulating both end users and pipes in the steam system. Also the control of pressure setting at the boiler and the use of a solar energy system to support boiler operation will lead to reduction in energy consumption.

Lighting and compressed air systems

Electricity consumption could be reduced by replacing a number of inefficient florescent tube lamps by efficient LED tube lamp fixtures, fixing existing leakages in the compressed air system, and by reducing the pressure set point of the compressed air from 9.7 to 7 bar.

Cooling system

The COP of the chiller is 2.13, which is lower than the minimum acceptable value (3.5) according to the ANSI/ASHRAE/ IES Standard 90.1-2013 for air- cooled condenser water chillers. In addition, the COP for the cooling units were measured to be less than (2.0). Moreover, cold stores doors are opened daily for 90 minutes, which is causing a waste of energy in the cooling units. Upgrading and insulating the water chiller system will reduce energy consumption. For cold stores, control of doors, wall insulation, and upgrading of units will result in less energy consumption.

"The energy audit was of great value to the company and we are receiving a grant from JREEEF to implement energy saving measures. Additionally, the project has supported the company team, and consequently top management, in looking for alternative options in production to reduce manual handling and lead to more efficient and better quality production. The company intends to maintain its MED TEST II team as an internal committee of excellence and process optimization."

Eng. Fawaz Shaka'a,
Executive Manager

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