

MED TEST III Jordan

Transfer of Environmentally Sound Technologies

Food and beverages sector

Tareq & Zakaria Al Faqeeh Partners – Haritna Dairy Co.

Company overview

Number of employees:
67 Full-time employees

Key products:

Different types of dairy products, including yogurt, labneh, shanineh, white cheese, liquid jameed, cheddar sauce, and cream

Main markets:

Local and regional

Standards & certifications before MED TEST III:
ISO 9001:2015 and ISO 22000:2018

Established in 2002, Tareq & Zakaria Al Faqeeh Partners – Haritna Dairy Co. is a medium-sized company that produces a variety of dairy products for the local and regional markets. The company participated in MED TEST III project to reduce materials and energy losses and enhance its awareness of environmental issues.

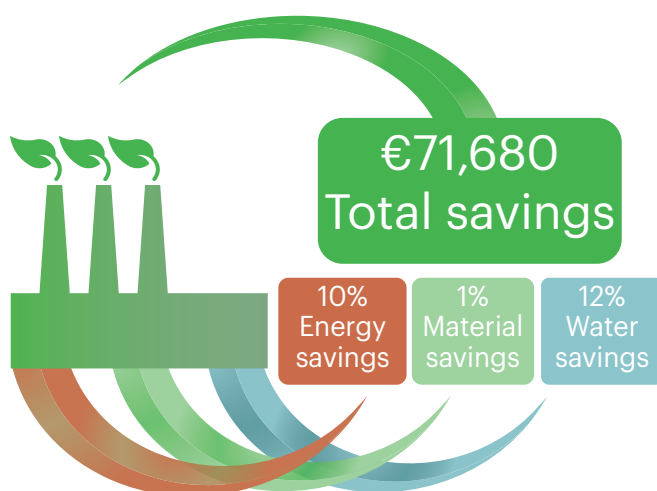
Benefits

The MED TEST III project identified total annual savings of 71,680 Euro* (53,760 JOD) in energy, water and raw materials with an estimated investment of 21,640 Euro* (16,230 JOD). The average pay back period is 0.3 year, and the “No-cost” measures are already implemented or under implementation. Low to medium-cost measures are under consideration with the top management.

Materials’ consumption will be reduced by 1%, water consumption by 12% and energy consumption by approximately 10%. Additionally, CO₂ emissions will be reduced by 9%.

Applying Material Flow Cost Accounting (MFCA) assessment already led to the identification of several shortcomings of the existing information system. As a result, the company is restructuring the accounting system to segregate each production input flow and to use the same units of measurements for comparisons and reconciliations.

Identified annual savings



“

Our main goal for participating in the MED TEST III project was to identify opportunities to help us reduce the consumption of materials, water and energy. This will improve our productivity and competitiveness while reducing the negative impacts on the surrounding environment and improving our community image.

Eng. Belal Al Hassan
Operations Manager

”



Visit SwitchMed.eu

As part of the EU-funded SwitchMed programme, UNIDO demonstrates in the MED TEST III project pathways for industries in the Southern Mediterranean to become more resource efficient and to generate savings for improved competitiveness and environmental performance.

This publication has been produced with the financial assistance of the European Union (EU) and SwitchMed co-funding partners. The contents of this publication are the sole responsibility of UNIDO and can in no way be taken to reflect the views of the EU.

SwitchMed is co-funded by:

Saving opportunities**

*Exchange rate 0.75 Jordanian Dinar (JOD) = 1 Euro ** Numbers based on production value from 2020

Actions	Economic key figures			Resource savings & Environmental impacts		
	Investment Euro*	Savings Euro* per year	Payback period years	Water & Materials per year	Energy MWh per year	Environmental impact per year
Material's recovery	10,000	62,310	0.2	54.3 tons products and raw materials	-	Total of 35 tons of CO ₂ emissions, 2.66 tons of Solid Waste
Water conservation and Clean-In-Place (CIP) optimization	1,110	1,145	1.0	0.2 tons of chemicals 374.4 m ³ water	-	
Process optimization	4,530	4,840	0.9	-	58	
Utility systems	6,000	3,385	1.8	36 m ³ water	54	
TOTAL	21,640	71,680	0.3	55 tons 410 m³ water	112	

Material's recovery

Non-Product-Output in materials represents 10.9% of the production volume. Raw milk losses could be reduced by about 14% by developing Standard Operating Procedures (SOP) to adjust processes, and installing level meters for the product filling system, the balance tank of the pasteurizer, raw milk tanks and inoculation tanks. Additional SOPs for handling the final products during loading and unloading at the storage facilities, and preparing a new market study to determine actual market demand and needs, will reduce final product losses by about 20%.

Water conservation and Clean-In-Place (CIP) optimization

Due to the absence of documented working instructions, excessive quantities of water and chemicals are consumed during the CIP of production lines. This situation mainly affects the time required for the CIP and increases the consumption of water, energy and cleaning materials. As a first step, the company shall develop SOP for the CIP cycle and investigate the installation of conductivity transmitters to further reduce the consumption of water and chemicals. The disinfection step can be done by applying steam only instead of the current sterilization procedure by rinsing with water at a temperature of 95-100 C followed by steam. These measures will yield a significant water reduction of 15% of the water needed for CIP and consequently reduce wastewater generation and substantially reduce pollution levels. This action will also reduce the amounts of CIP chemicals by 15%.

The cooling water homogenizer is in an open loop (once through cooling), where the water is thrown out without any recovery. With a DT (Differential Temperature) controller circuit, the required flow of cooling water could be controlled and transferred to a collection tank to be reused for cleaning activities.

Process optimization

Applying good operation and maintenance practices of the pasteurizer and homogenizer, such as effective preventive maintenance and clear SOPs, will significantly reduce energy consumption. Also, improving the process control

by installing a smart system, i.e., pressure, temperature and time, will reduce the energy consumption, sustain product quality and thus reduce defective products.

Conducting an effective preventive maintenance program to reduce the heat losses through defective doors, closely monitor the redundant opening of doors, close the stores during idle times when no goods are in, and replace the old inefficient cooling units with an advanced Variable Refrigerant Flow (VRF) system, will also reduce energy consumption.

Utility systems

Applying good practices in the operation and maintenance of the steam system, such as regular monitoring of the air/fuel ratio for the boiler, eliminating steam leakages, also fixing return pipes for all condensates and installing an automatic blow down based on Total Dissolved solid (TDS) instead of time-based, will reduce fuel consumption. In addition, installing a heat exchanger to recover the waste heat from the boilers' stack will also increase the overall combustion efficiency. Applying the same approach in the compressed air system, will also significantly reduce the energy consumption.

“

By applying a simple methodology we now can recognize a lot of simple, no/low-cost measures that can reduce our resource consumption. Through the TEST analysis, fluctuations in the pasteurization parameters were revealed and we now understand the reasons for variance in the taste and physical appearance of the product, and the importance of SOPs

Eng. Belal Al Hassan
Operations Manager

”

For more information contact:



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

United Nations Industrial Development Organization
Ms. Ulvinur Müge Dolun
Division of Circular Economy and Environmental Protection
Circular Economy and Resource Efficiency Unit
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
E-mail: u.dolun@unido.org Web: www.unido.org



الجمعيّة العلميّة الملكيّة
Royal Scientific Society

Royal Scientific Society
Ms. Jehan Haddad
Water, Environment and Climate Change Centre
Cleaner Production Unit
PO Box 1438, 11941 Amman-Jordan
E-mail: jehan.haddad@rss.jo Web: www.rss.jo