

# MED TEST III Lebanon

Transfer of Environmentally Sound Technologies

Food and beverage sector

*Tasty Dairy*

## Company overview

### Number of employees:

5 Full-time employees and 8 part-time employees

### Key products:

Dairy products under two brands, such as yogurt, Labneh (strained yoghurt), Ayr-an (yoghurt drink), white cheeses, yellow cheeses and spread cheeses

### Main markets: Local

### Standards & certifications before MED TEST III: ISO 22000

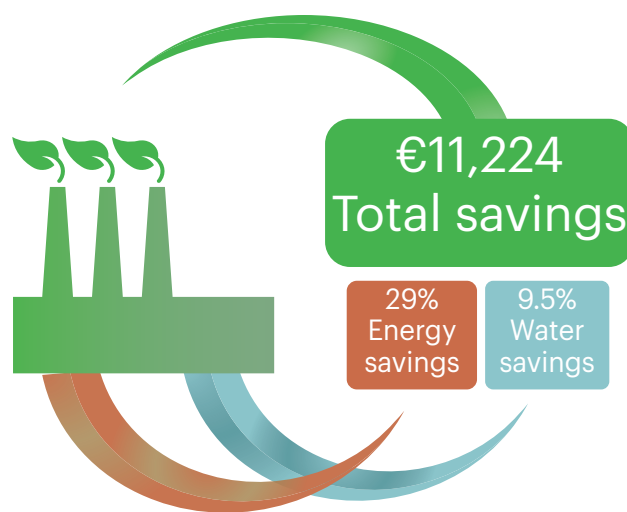
Tasty Dairy is a small family-owned business that was established in 2017. The company specializes in the production of dairy products such as yogurt, Labneh (strained yoghurt), Ayr-an (yoghurt drink), white cheeses, yellow cheeses and spread cheeses. In 2022, the company had an annual production of around 191 tons, which were sold on the local market. The company has a focus on product diversification, introducing a wide range of cheeses and is committed to deliver top-quality dairy products, evidenced by a ISO 22000 certification.

## Benefits

The MED TEST III project identified total annual savings of €11,224\* related to energy and water with an estimated investment of €22,640\*. The average payback period is about 2 years. The top management accepted to implement six of the 9 identified measures, which will be implemented gradually.

The identified measures have the potential to reduce the annual conventional electricity consumption by 22% and thermal energy consumption by 41% for a combined rate of 29% of total energy consumption. Additionally, the measures will result in an annual reduction of 9.5% in water consumption and will reduce the emission of Green House Gas by 32 tons of CO<sub>2</sub>-eq per year.

## Identified annual savings



In 2019, at the peak of the economic crisis of Lebanon, Tasty Dairy started operations. This has presented significant challenges which required very stringent streamlining of our operations. Joining the MEDTEST III program was our response to find solutions to optimize our resources and therefore sustain our presence in the market.

Mr. Adnan Mteirek  
Owner and General Manager, Tasty Dairy



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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.

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## Saving opportunities\*\*

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
Thermal insulation of the steam network	1,371	1,294	1.1	-	15	Total: 32 tons CO <sub>2</sub> -eq
Good Housekeeping Practices	373	698	0.5	-	3	
Upgrade the existing photovoltaic system	9,235	6,129	1.5	-	22	
Enhancing efficiency of pasteurizer	9,328	2,637	3.5	-	21	
Recover and reduce water consumption	2,332	466	5	877 m <sup>3</sup> water	-	
<b>TOTAL</b>	<b>22,640</b>	<b>11,224</b>	<b>2</b>	<b>877 m<sup>3</sup> water</b>	<b>61</b>	

\* Using average exchange rate October 2022-October 2023 1 USD=1,072 Euro

\*\*Numbers based on the production value: 2022

### Thermal insulation of the steam network

Various energy losses were identified in the steam system during the audit. The steam boiler, supports, accessory piping, steam pipes, valves, cheese vat and the condensate tank all require insulation measures. The added insulation would enable the company to save €5,506\* at an investment cost of €6,135\*, resulting in a payback period of 6 months.

### Good Housekeeping Practices

A good practice to improve the efficiency of utilities is to perform daily blowdowns of the steam boiler. This measure prevents scaling on the water side of the heat exchange surfaces, which can decrease the boiler efficiency by up to 2%. It also helps to prevent corrosion, which can shorten the lifespan of equipment.

In addition, the condenser coils will need to be cleaned, ensuring the correct handling to avoid creating resistance to the air flow. Furthermore, shading will be provided to the chiller machine for better efficiency as direct sunshine raises the condenser surface and refrigerant temperature, which is detrimental to the equipment's Coefficient of Performance (COP). These simple good housekeeping measures despite the modest savings of around €700 per year, will be essential for equipment maintenance.

### Upgrade the existing PV system

The proposed measure consists of upgrading the Photovoltaic (PV) system by expanding the batteries capacity to 100 kWh from the existing 40 kWh. Six additional lithium batteries' sets, with a storage capacity of 10 kWh per set, will be installed. This measure will enable the company to save €6,129 per year at an investment cost of €9,235, resulting in a payback period of 18 months.

### Enhancing efficiency of pasteurizer

This measure proposes to replace the existing heat exchanger with a heat recovery circuit to use the heat of the pasteurized milk outlet for preheating the milk inlet. This will eliminate the need to use chilled water for cooling the process outlet and reduce the heating demand of the pasteurizer by 50%. By implementing this measure, the company will save €2,637 per year, with a payback period of 3.5 years.

### Recover and reduce water consumption

The water use in cleaning is relatively high and accounts for around 18% of the total water consumption. To reduce water consumption, the final rinse water used in the Cleaning In Place (CIP) cycle can be collected and reused in the first flush of the following CIP cycle. Additionally, more water-efficient cleaning methods such as using brushes and high-pressure water guns should be adopted. Implementing these measures can result in saving approximately 877 m<sup>3</sup> of water per year.

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Our experience with the MED TEST III project was very positive. Thanks to the project, we were able to identify valuable energy and water saving measures that we can implement. The I project also highlighted the potential for additional savings if we apply better production practices and whey valorization. This would help us save materials and we are keen to work on such improvements in the future

Mr. Adnan Mteirek  
Owner and General Manager, Tasty Dairy

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### 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