switchmed

Financé par l'Union européenne

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

MED TEST III Lebanon

Transfer of Environmentally Sound Technologies

Food and beverage sector

Tanmia Agricultural Development Company

Company overview

Number of employees: 215 Full-time employees

Key products: Fresh and marinated chicken, chicken meat Luncheon and mortadella, processed whole broilers and chicken cut-ups, pre-cooked frozen chicken meat (nuggets, burgers, filets).

Main markets: Local (95%)

Standards & certifications before MED TEST III:

ISO 22,000: 2018

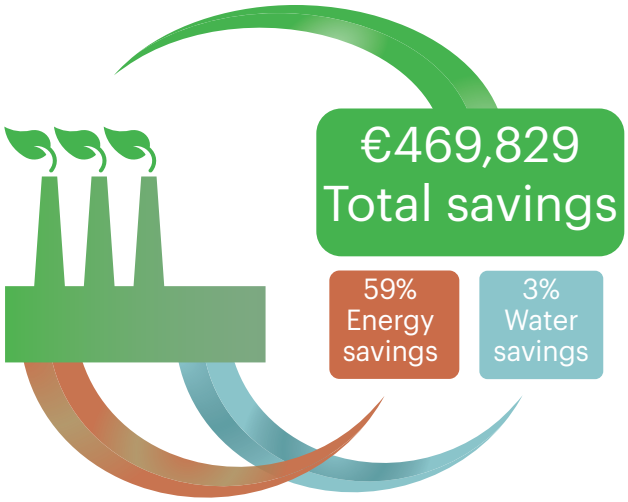
Established in 1972, Tanmia Agricultural Development Company is a leading chicken farming and processing company in Lebanon dedicated to providing consumers with a healthy variety of chicken products. The company aims to be a trusted chicken farming and processing company in Lebanon with consumer preferred brands and products through mastery and innovation of poultry production. Among its values, Tanmia recognizes the relevance of using resources efficiently and its environmental responsibility has been expressed through important investments in treatment facilities of its solid wastes and wastewater through which it exerts a sound management of these non-productive outputs.

Benefits

The MED TEST III project was able to identify measures with the potential to annual save 469,829 Euro* in energy and water consumption, with an estimated investment of 1,000,993 Euro*. The average pay back period for the identified measures accounts 2.1 years. The total resource saving potential from the identified measures would reduce the total energy consumption (electricity and thermal) by 25%, while the fuel consumption could be optimized up to 62% thanks additional measures for the better performance of the generators and incorporation of renewable sources to replace conventional fuel. Greenhouse gas related emissions would decrease by 1,496 tons of CO_2/year and water use by 1,718 m³/Year.

Out of the 18 identified RECP measures, 89% have been accepted by the top management for implementation and 6% have been retained for further study. Of the approved measures, 94% have already been implemented.

Identified annual savings



> “Our motivation to participate in the SwitchMed MED TEST III project stems from our sense of environmental responsibility and from our interest to further lower the environmental footprint of our company.”
>
> Musa Freiji
> Founding Shareholder and Director

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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
Increase water efficiency	957	1,248	0.8	1,718 m³ water	-	Total: 1,496 tons CO_2 1,718 m³ water
Good housekeeping measures	8,326	31,197	0.3	-	237	
Steam system performance and upgrading boilers	218,394	161,155	1.4	-	1,387	
Power generators performance	9,570	49,570	0.2	-	575	
Resizing rendering cooker	19,140	8,028	2.4	-	81	
Renewable energy technologies	744,605	218,630	3.4	-	1,217	
TOTAL	**1,000,993**	**469,829**	**2.1**	**1,718 m³ water**	**3,497**	

* Using average exchange rate February 2022-February 2023 1 USD=0.957 Euro
**Numbers based on the production value: December 2021-October 2022

Increased water efficiency

Through a better control of water use, especially in the slaughtering section, and through the reuse of the mortadella cooling water for non-critical applications, the company could save 1,718 m³ of water annually, achieved at almost no cost.

Good housekeeping measures

Several no cost, or low-cost energy saving measures were identified, saving annually 31,197 Euro* corresponding to 237 MWh/Year and with a payback period of 0.3 year. These comprise several best practices to optimize the compressed air and cooling systems such as the replacement of compressed air filters, fixing leaks in pipes and valves, cleaning the cooling tower and the cold storage condensers coils, combing the coils, and the potential installation of variable speed drives on the cooling tower fans.

Steam system performance and upgrading boilers

The steam generation and distribution system can be optimized by improving the insulation of key elements such as, the thermal and steam boilers, supports, pipes and accessory piping, valves, etc. Upgrading steam condensate lines and a better configuration of existing boilers to optimize loads will contribute to important thermal energy and fuel savings. On the other hand, the entire steam system can be improved by substituting an oversized boiler with a new biomass unit, a measure adopted by the company with improvement, through the gasification of chicken manure in a central gasification plant. In parallel, all the steam pipework in the boiler house needs to be replaced with new pipework of smaller sizes. Overall, the steam system optimization will contribute to annual savings of 161,155 Euro* and an annual reduction of 510 tons of CO_2-eq .

Power generators performance

The combustion efficiency in the generators can be improved by adjusting the air-fuel ratio to standards and implementing controls. On the other hand, the load factors of the generator are very low for a prolonged time, which is conducive to non-efficient performance resulting in high fuel consumption. The measures call for upgrading the synchronization board to reach load factors of at least 50-60%. These measures will lead to important cost savings with an exceptionally short payback period of less than three months.

Resizing the rendering cooker

The feedstock quantity entering the rendering cooker is nearly half of the cooker's capacity. Consequently, the existing rendering cooker implies excessive steam and electricity consumption, especially considering low efficiency and steam leakages in the area. It is therefore suggested to replace the rendering cooker with a new smaller unit which will require 15% less steam and 50% less electricity.

Renewable energy technologies

The earlier mentioned energy efficiency measures have been complemented by the installation of a 350 KWp Photo Voltaic (PV) plant. Further savings can be achieved if a 664 KWth peak concentrated solar thermal plant is insalled. These renewable energy technologies would allow the company to further reduce in its energy bill by 218,630 Euro* per year at a payback period of 3.4 years. Subsequently, the company's annual energy consumption will be lowered by 1,217 MWh, while reducing 691 tons of CO_2 emissions. The company decided to go further by installing a more extensive PV system of 465 KWp to cover the plant's future energy needs and to achieve more self-reliance, addressing the current energy situation in Lebanon.

> "Thanks to the SwitchMed MED TEST III project, we reduced our environmental impact by becoming more resource efficient, especially in our energy consumption. This has resulted in substantial savings for us, and the needed investments can be recovered within two years. As a result, our operations emit less CO_2, contributing to our efforts to improve our environmental performance."
>
> Musa Freiji
> Founding Shareholder and Director

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