

MED TEST III Jordan

Transfer of Environmentally Sound Technologies

Food sector

Anabtawi Sweets Co.

Company overview

Number of employees:

200 full-time employees
(increases in high season months)

Key products:

Arabic sweets and Kunafeh

Main markets:

Regional and local

Standards & certifications

before MED TEST III:

ISO 9001, ISO 22000

Established in 1983, Anabtawi Sweets is a renowned brand in Jordan and the Middle East region with a production focusing on various artisan Arabic bite sweets, cakes and the traditional kunafeh sweet.

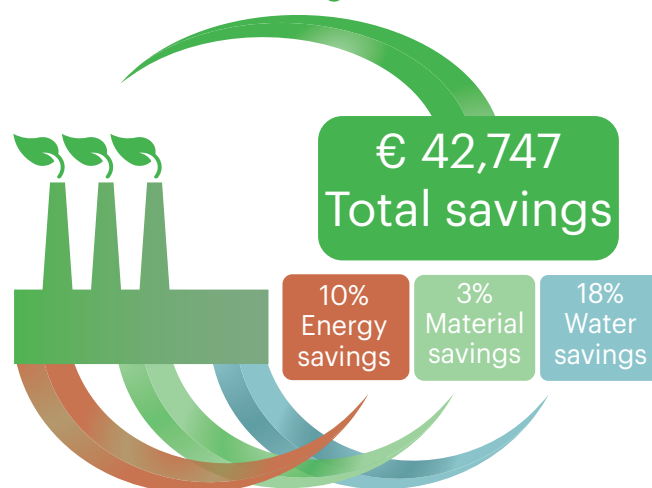
The production process is based mainly on vertical integration, starting with basic raw material receipt such as sugar, flour, water and eggs and ending with packaging and final product storage. The operation is mainly based on a single-shift operation. The production facility is organized into sections (halls), each designated for producing a specific product range, and the sections correspond to: White (Baqlaweh & Warbat), Miscellaneous (Brazeq & Graibeh), packaging, storage, loading bay, Ghee production, Cheese production, washing, ovens, and cakes.

Benefits

The MED TEST III project identified annual savings in energy, water, and raw materials with an expected value of 42,747 Euro* (32,060 JOD) and with an estimated investment of 75,467 Euro* (56,600 JOD). The top management accepted over 50% of the identified measures for implementation by executing the same proposed measures or better alternatives.

The average pay back period is 1.8 years, and 30% of the measures are already implemented or under implementation. Materials consumption will be reduced by 3% and energy consumption by approximately 10%, while water consumption will decrease by 18%. Additionally, CO₂ emissions will be reduced by 12%.

Identified annual savings



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Our interest in joining the MED TEST III project was motivated by our ambition to further develop the company and to engage with highly reputable and recognized bodies, such as UNIDO and RSS. As a women-empowered business, this approach is important to us as it anchors a service provider base and opens doors for future improvement projects in collaboration with donors and supporting entities.

Dr. Mai Anabtawi
M.I.S Manager

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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
Raw materials and product recovery	14,800	16,800	0.9	30 tons	-	Total 59 tons CO ₂ -eq
Ovens' process	46,667	20,110	2.3	-	211	
Cooling and steam systems	5,333	2,037	2.6	-	26	
Water savings	8,667	3,800	2.3	1,343 m ³ water	-	
TOTAL	75,467	42,747	1.8	1,343 m³ water 30 tons	237	

*Exchange rate January 2023
** Numbers based on production value from 2019

Raw materials and product recovery

It was clearly demonstrated that high-value items, and not just sheer volume, are critical parameters to focus on for the management. For instance, the consumption of nuts and cheese seems to form the highest value component of raw materials, with percentages of 31% and 19%, respectively. One clear and highly feasible recommendation was the tracing system for high-value nut material release into production and reconciliation of the post-batch output. Some measures would only require the addition of simple Standard Operating Procedures (SOPs), such as closely controlled cake dough recipes and additions to minimize overflow. Similarly, SOPs with the introduction of a basic dosing beaker for syrup allowed more consistent syrup additions and minimized syrup losses.

Furthermore, the tray-shape trimming losses were more related to simple studies and changes to the geometry of trays that optimized product nesting losses. Finally, a basic process and fixture/template adjustment to the Burma end cutting also saved valuable raw materials (nuts). Hence, there is a need to change the focus and internal culture within the company.

Oven's process

Fuel consumption can significantly be reduced by improving the insulation of external surfaces, fixing main and sub-meters to monitor and verify the amount of fuel received and consumed, as well as applying good practices in the operation and maintenance system such as monitoring heat losses, conducting regular monitoring of the air/fuel ratio, and establishing an SOP for the recommended operating procedures. In addition, to increase the oven's energy efficiency, a heat exchanger can be installed to recover the waste heat from the flue gas for heating the water used for cleaning and washing. It could also reduce the oven's operation cost, reduce CO₂ emissions and improve Occupational Health and Safety (OHS) conditions by replacing diesel fuel with LPG.

Cooling and steam systems

Reducing the energy consumption for the cooling system by replacing all the cooling units with an advanced Variable Refrigerant Flow (VRF) system and scheduling the door opening for the cold stores will significantly impact energy reduction.

Applying good practices in the steam system's operation and maintenance, such as regularly monitoring the air/fuel ratio, will significantly reduce fuel consumption. In addition, to increase the boiler energy efficiency, a heat exchanger can be installed to recover the waste heat from the flue gas for heating the water used for cleaning and washing.

Water savings

The use of mechanical effect of high-pressure washer, as well as the recycling of wastewater during the process, will lead to a reduction of water consumption at Anabtawi Sweets.

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Besides the realized material and energy savings, one of the primary outcomes from the MED TEST III project is the alignment towards the strategic goals of Anabtawi. The recommendations have set the foundation for Anabtawi's long-term strategy and KPIs, and the management seeks to collaborate with experts and donors to support and fund the MED TEST III recommendations.”

Dr. Mai Anabtawi
M.I.S Manager

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