

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.

Egypt

El Dawleya for modern food industries company

Food and beverage sector

Context

Number of employees:	220
Key products:	Juices with different flavors
Main markets:	Local and international (10% export)
Management standards:	ISO 14001 ISO 18001 ISO 22000 ISO 50001

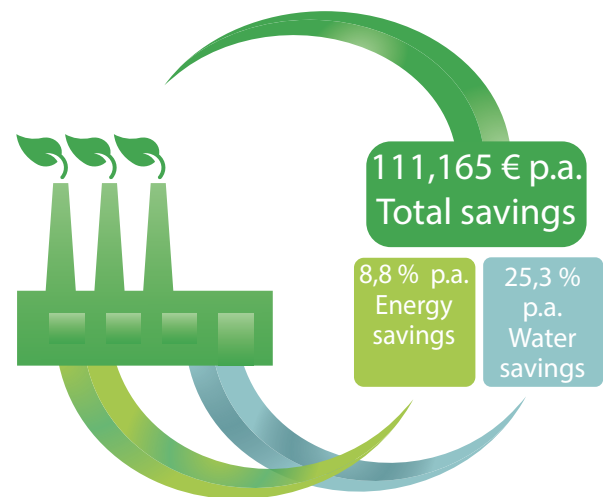
Juhayna Food Industries is a leading Egypt-based manufacturer specialized in the production, processing and packaging of dairy, juice, and cooking products. Since its foundation in 1983, it has secured a frontrunner position in the dairy and juice industries in Egypt and has expanded its presence in the Middle East, a feat made possible through its firm commitment to deliver a wide range of high-quality, healthy and safe products that have become trusted household names.

El Dawleya, a company of the Juhayna Group, is one of the largest industrial complexes in Egypt and the MENA region. Active since 2009, this flagship manufacturing facility is primarily used for the production and packaging of fresh juices and drinks, including Juhayna Classics, Pure, Bekhero, and Oriental beverages.

“Energy saving and responsible consumption has always been on our priority. Knowing that, we were very excited to hear about the project to exchange and transfer knowledge from local and international experts as well as gaining training, coaching and guidance for the team to improve manufacturing processes and gain experience in untapped areas for energy saving/usage”

Martin Lomas,
Manufacturing Director

Benefits



Graphic: UNIDO

The MED TEST II project identified measures to optimize the water use within the production facility of El Dawleya which would reduce water consumption by 25.3% and consequently eliminate the corresponding wastewater. Total anticipated reduction in the water consumption amounts to around 92,928 m³/year, equivalent to 26,484 euros annually.

Energy consumption would also be decreased by around 8.8% of the baseline consumption, with savings of 2,775 MWh/year, equivalent to 84,680 euros annually. The total investment for implementing the identified measures amounts to around 86,388 euros. CO₂ emissions will be reduced by 1,006 t/year.

The Material Flow Cost Accounting (MFCA) presented to the team a different approach to set priorities for improvement, based on the Non-Product Output share for each flow. The company's first priority in 2017 was energy consumption; in 2018, they are targeting their second priority: water consumption.

Following the improvements at El Dawleya company, the group is planning to utilize the knowledge gained by El Dawleya's TEST team to replicate the whole approach at their other sites. The company also decided to install water meters for key consumers to facilitate close monitoring of water use.

Saving opportunities¹

Action	Economic key figures			Resource savings & environmental impacts per year		
	Investment euros	Savings euros / yr.	PBP years	Water and raw materials	Energy MWh	Pollution reduction
Process optimization	0	66,258	Immediate	-	1,890	Total: 1,006 t of CO ₂
Steam system optimization	2,400	10,383	0.2	-	677	
Replacement of light fixtures	26,487	8,040	3.3	-	209	
Water conservation	57,500	26,484	2.2	92,928 m ³ of water	-	
Total	86,388 €	111,164 €	0.8	92,928 m³ of water	2,775 MWh	

¹ Numbers based on production value from 2016

Process optimization

Optimization of the process parameters was achieved through bypassing the homogenizers for clear juice, as well as reducing the pasteurization temperature by 2 or 3 degrees. This group of measures reduced the electricity consumption by 10% and resulted in savings in spare parts replacement due to reduced maintenance costs for the homogenizer.

Steam system optimization

Maintaining the malfunctioning steam traps reduces the boiler load and consequently also the thermal energy consumption. This measure has been already implemented and the payback period was less than 3 months.

Replacement of light fixtures

Replacing the light fixtures with LED lamps shall result in savings of up to 50% of the energy consumption for light. To facilitate the implementation of this measure, the company was linked to another project focusing on improving the energy efficiency of lighting.

Water conservation

The water conservation measures that were introduced included cooling water recovery from homogenizers and vacuum pumps to be used as gray water, installing a second RO unit to treat the permeate of the existing RO unit, and utilizing the permeate from the second RO unit for irrigation. Savings from these measures amount to around 25% of the company's water consumption. Advanced Clean in Place alternatives, including product push using pigging or ice-pigging, were discussed and are under investigation by the company team.

“The project offered us the possibility to look at our processes in a different way, being challenged on our standard procedure enabled us to reflect and find better ways to save resources and reduce costs. The learnings from Dawleya will now be replicated across the other plants, the biggest impact has been to open up dialogue about the potential opportunities and supporting with tools to take advantage of these opportunities”

Martin Lomas,
Manufacturing Director

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