

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

National Company for Maize Products

Food and beverage sector

Context

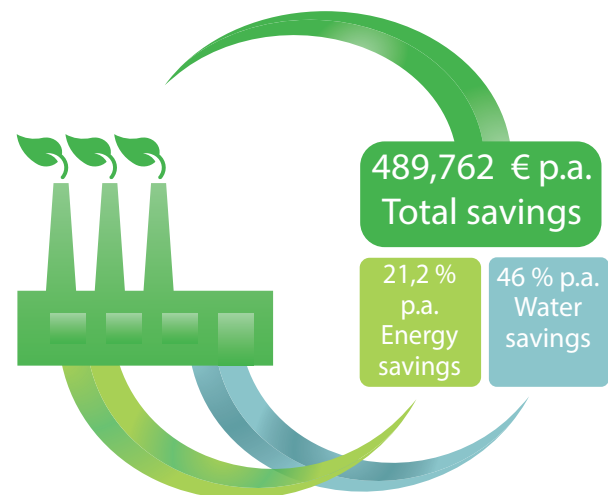
Number of employees:	836 full-time employees
Key products:	Starch, gluten meal, corn oil, gluten feed, fructose and glucose
Main markets:	Local
Management standards:	ISO 9001

The NCMP was founded under the Egyptian Law of Investment and Approvals from the Ministry of Trade and Industry. It is located in the 10th of Ramadan City industrial zone and has 836 full-time employees. It was established in 1981 and began production in 1990. The company's activities include corn milling and the production of fructose and glucose syrups, starch, gluten feed, sorbitol, and crude corn oil for pharmaceutical uses. Its premises occupy an area of 84,000 m² and incorporate several plants.

“Before the project, we faced problems of specific high consumption in the utilities (electricity – gas – water) of the starch building. Thanks to the project, we have been able to improve the consumption levels and to lower our costs.”

Mohamed El Demail
Board member

Benefits



Graphic: UNIDO

The MED TEST II project identified total annual savings of 489,762 euros mainly in connection with energy and water usage with an estimated investment of 221,500 euros. The average payback period is 6 months. Nine energy efficiency measures have been identified during the project with the active support of the internal company team. All identified measures were accepted by the top management for implementation.

Through the identified measures, energy consumption at the project boundary will be reduced by 21.2%, water consumption will be reduced by 46% of the baseline, saving a total of 5,402 t of CO₂ emissions.

The company ownership was changed after it joined the project and the new management appreciated the suggested methodologies. Analyzing non-product output flows revealed the real cost of company losses. Gaining awareness of its largest losses enabled the new company management to prioritize its efforts towards the reduction of production costs and consequently also towards an increase of profitability.

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
Compressed air system optimization	6,500	3,600	1.8	-	94	Total: 5,402 t of CO ₂
Improving the efficiency of the drying process	100,000	109,532	0.9	-	7,143	
Steam system optimization	15,000	46,692	0.4	3,315 m ³ of water	2,984	
Reusing the condensate water from the evaporator	0	78,375	Immediate	275,000 m ³ of water	--	
Treating the waste water in an UASB reactor	100,000	251,563	0.4	--	16,406	
Total	221,500 €	489,762 €	0.5	278,315 m³ of water	26,627 MWh	

¹ Numbers based on production value from 2016

Compressed air system optimization

The compressed air system in the factory consists of three compressors, two of which are running continuously due to a high level of air leakage in the system. Matching the supply and demand, reducing the leaks and increasing the storage volume will reduce the operating time of the compressors, which will be reflected in their electricity consumption.

Improving the efficiency of the drying process

Natural gas is mainly consumed in the drying process. Four measures have been developed to improve the efficiency of the drying process which will save around 13% of natural gas consumption. Those measures include rehabilitation of the dryers' insulation, preheating the combustion air for the dryers, operating the gluten feed dryer at near maximum capacity and adjusting the drying process of gluten feed.

Steam system optimization

The steam network suffered from a high level of leakage that was detected during field measurements. Fixing those leaks and continuously monitoring and fixing any new leaks helped the company save about 10% in steam consumption.

Reusing the condensate water from the evaporator

The company uses a Mechanical Vapor Recompression (MVR) evaporator to remove the water content from the steeping water. The removed water in the form of condensate can be reused in the steeping process as it contains protein. Implementing this measure shall reduce water consumption, decrease the hydraulic load on the wastewater treatment plant and improve the efficiency of the steeping process due to the introduced protein.

Treating the waste water in an UASB reactor

This measure involves pretreating the wastewater onsite in an Up-flow Anaerobic Sludge Blanket (UASB) reactor, thus reducing the organic load of the wastewater and generating biogas as a fuel for the boiler, resulting in a reduction of the energy demand.

“Thanks to the MED TEST II project, the production rate is now continuous, reaching the maximum output, and in line with global consumption benchmarks for production.”

Mohamed El Dewail
Board member

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