

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.

Tunisia

MAKLADA

Mechanical sector

Context

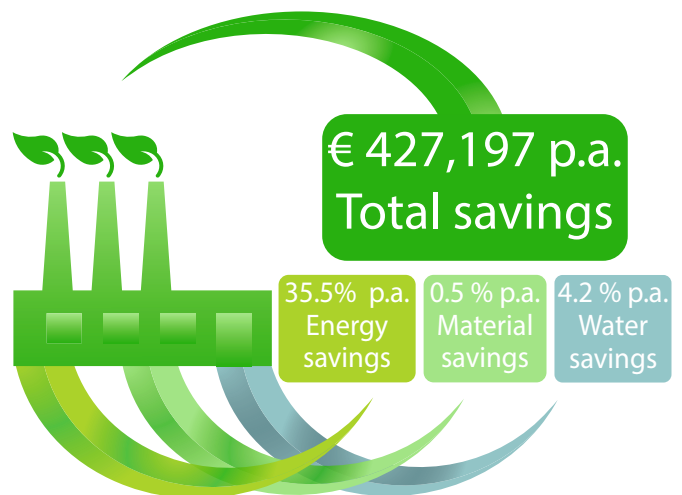
Number of employees:	200
Key products:	Wires and strands of soft and hardened steel and steel cables
Main markets:	International and local
Management standards:	ISO 9001

MAKLADA is a Tunisian wire drawing company, specialised in the manufacture of mild and hardened steel wires and strands as well as steel cables. MAKLADA is present on both the local and international markets. The company is located in the El Jem Industrial Zone, in the Governorate of Mehdiya, and has a production capacity of approximately 50,000 t/year.

“For our company, respect for the environment is both a moral commitment and an opportunity for improvement, and it is for this reason that we have participated in the MED TEST II project ”

Ammar Chaieb
Managing Director

Benefits



Graphic: UNIDO

The MED TEST II project has identified eight RECP measures which the company has opted to implement. These measures are expected to generate total annual savings of approximately EUR 427,197 in energy, water, raw materials and operating costs, against a total investment of EUR 234,286.

The average return on investment term is 0.6 years. Energy costs have been reduced by 35.5%. The economic benefits derived from raw material resource and operation savings are estimated at approximately 0.5%.

Water savings will reach 3,010 m³ per year. Other environmental benefits include a reduction in wastewater and contaminated sludge pollutants of 31 kg/year of BOD₅, 258 kg/year of COD, and 80 t of sludge/year, as well as a decrease of CO₂ by 3,762.5 t.

Saving opportunities¹

Action	Economic key figures			Resource savings & Environmental impacts per year		
	Investment euro	Savings euro / Yr.	PBP Yr.	Water & Materials	Energy MWh	Pollution reduction
Installation of an ionic retarder in the stripping bath	75,000	36,437	2	3,000 m ³ water 176.6 t sulphuric acid	-	Total: 3,762 t CO ₂
Installation of a filter press in the phosphating process	10,000	4,205	2.4	10 m ³ water 26 t phosphate	40	80 t sludge
Energy saving and efficiency measures	149,286	386,555	0.4	-	5,526	31 kg BOD ₅
TOTAL	€ 234,286	€ 427,197	0.6	202 t raw materials 3,010 m³ water	5,567 MWh	285 kg COD

¹ Numbers based on production value from 2015

Installation of an ionic retarder in the stripping bath

The installation of an ionic retarder in the stripping bath ensures continuous filtration without any production stoppages. In effect, a reduction in acids enables the separation of free acidity in metallic salts within a solution. In this technique, ion exchange resins are used as part of a discontinuous operation. The acid reduction process is based on the fact that in a highly concentrated salt/acid mixture, the acidic anions are capable of penetrating the residence of an ionic exchanger, while metallic cations are eliminated by electrostatic repulsion. This technique enables an 80% saving in acids and a reduction in sludge.

Installation of a filter press in the phosphating process

Steel wire requires a phosphate coating for wire drawing, but this treatment generates a lot of sludge which must be eliminated. Continuous filtration is required in order to remove this sludge, using a filter press; the advantage of this is the continuous elimination of the sludge, which leads to a decrease in phosphate and water quantities.

Energy saving and efficiency measures

The main energy efficiency measures identified were: The acquisition of an energy monitoring system and the installation of an ISO 50001-compliant energy management system, the optimisation of compressed air consumption, storage and demand (repair of leaks, personnel training, mode of use checks, relocation of the compressors, etc.), the installation of anti-harmonic filters on the circuit breakers, and the recovery and reuse of thermal energy from fumes emanating from the annealing furnaces during the drawing process.

“The benefits to our company in terms of environmental and economic savings once again demonstrate that the ecological approach which is incorporated into our production process constitutes a winning strategy that we will continue to consolidate on an ongoing basis”

Samir Braham
Deputy Managing Director

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