MED TEST II Case Study



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 Cotrel Mechanical sector

Context

Number of employees:	500
Key products:	Leaf spring suspension and stabiliser bars for industrial and commercial vehicles
Main markets:	100 % export to the European market
Management standards:	OHSAS 18001, ISO 14001, and ISO/TS 16949

COTREL was established in 1985 and is located in the BORJ CEDRIA Industrial area in the Governorate of Ben Arous. COTREL has a production capacity of 20,000 t per year, and its products are intended for major international automotive manufacturers, either for initial assembly or as spare parts.

"The MED TEST II project is in line with our strategy to control production costs and protect the environment, and in particular to lay the foundations for an of energy management system." Nabhan Bouchaala CEO

Benefits



Graphic: UNIDO

The MED TEST II project has identified ten RECPmeasures, which have all been implemented by the company. The project is expected to generate total annual savings of approximately EUR 530,731 in energy, water and raw materials and operating costs, against a total investment of EUR 629,100.

The average return on investment term is 1.2 years. The reduction in energy consumption is approximately 10% and resource savings in terms of raw materials and water usage are estimated at 1.1% and 1.4% respectively.

Further environmental advantages have been achieved with a reduction in the pollutant levels in waste water of 14.5 kg/ year for BOD⁵ and 130 kg/year for COD, a reduction of 1640 t of CO₂, and a 40% decrease of contaminated mud.

"The MED TEST II project has contributed to an increase in awareness of the importance of integrating environmental management at the production level and its positive effects in terms of resource savings and effectiveness." Mohamed Ali Oueslati

QSE Director

UNIDO

SwitchMed is funded by the European Union





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
Painting process substitution	500,000	251,380	2	93.5t paint 200 m³ water	130	Total:
Phosphating process substitution	0	35,020	Immedi- ate	150 m³ water	200	1,640 t
Installation of an iron/oil separator	12,500	11,370	1.1	3.5 t oil	-	66.7 t
Shot blasting optimisation	0	52,710	Immedi- ate	100 t steel	-	solid waste
Replacement of hook cleaning process	15,000	9,900	1.5	-	-	14.5 kg BOD ₅
Energy saving and efficiency measures	101,600	170,351	0.6	-	5,690	130 kg COD
TOTAL	€ 629,100	€ 530,731	1.2	196.2 t raw materials 350 m³ water	6,020 MWh	

Painting process substitution

Liquid paints are subject to significant losses due to overspraying. The portion of paint which is not applied to the pieces is lost, and constitutes between 30 and 40%. Switching to powder paints for coating the blades, where losses are lower than 8%, allows the use of solvents to be dispensed with, and the elimination of March, all while consuming much less materials, water and energy.

Phosphating process substitution

This task consists of replacing phosphating with nano-ceramic conversion, which provides an excellent opportunity for improvement. In effect, nano-ceramic layers have many advantages when compared to phosphates, namely lower product, energy and water consumption, with improved performance, shorter processing times, longer life spans and lower operating costs. In addition, no changes to the installation are required.

Installation of an iron/oil separator to recover contaminated iron

In fact, installing an iron/oil separator with centrifuge (continuous load) has the following advantages: reducing hazardous waste (iron contaminated with oil) from the oil baths used during the dipping operation, saving on manpower and shortening cleaning times, as well as adding value from recovered iron (sale of iron as scrap metal) and oil savings.

Shot blasting optimisation

The "Almen" control system enables improvements to conditions during shot blasting, a process which consists of projecting shot pellets onto a metal surface, and hence reduce the defective parts rate, the cost of reworking, and the cost of environmental management of scrap.

1 Numbers based on production value from 2015

Replacement of hook cleaning process

Using a cabinet-type pyrolysis furnace to clean the hooks allows the cleaning system to be replaced with chemical stripping. This process consists of placing the hooks inside a furnace for approximately 4 to 8 hours, progressively increasing the temperature to 350/450°C, and then allowing the cooling to room temperature. The advantage of the pyrolysis process is that it reduces hazardous waste, the consumption of chemical products, and also increases productivity while lowering waste management costs.

Energy saving and efficiency measures

The main measures identified in terms of energy efficiency include the repair of leaks in the compressed air circuit and on the various production machinery, the installation and alternating calibration of two gas correctors, the strengthening of the thermal insulation between the metallic blade conveyor belt and the vertical walls of each furnace, as well as the recovery of smoke thermal energy for use in the paint cabinet.

For more information, contact:



United Nations Industrial Development Organization

Department of Environment Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria Telephone: (+43-1) 26026-0, Fax: (+43-1) 26926-69 E-mail: C.GONZALEZ-MUELLER@unido.org Web: www.unido.org



Centre Technique des Industrie Mécaniques et Electriques (CETIME) GP 7 Z.I. Ksar Said - 2010, La Manouba, TUNISIA Telephone : +216 70 146 000 Fax : +216 70 146 071 Mail : contact@cetime.com.tn Web : www.cetime.ind.tn