



MED TEST Case Study

MECHANICAL and METALLURGICAL sector — MOROCCO

Aluminium industry — Aluminium du Maroc Company

Company overview

Aluminium du Maroc, founded in 1976, is the first Moroccan company specialized in the manufacture of aluminium alloy profiles. It is located in the industrial zone of Tangiers and employs 450 people.

Most of its production (85%) is intended for the construction market, the rest for other industrial sectors (mechanical, electrical, electronics, transportation, street furniture, air conditioning, telecommunications, etc.), while 25% is destined for exportation.

The company joined the MED TEST in order to identify opportunities to reduce energy and production costs, improve productivity, recycle solid waste and minimize wastewater pollution loads.

This project is perfectly in line with the environmental policy and the EMS of Aluminium du Maroc, established in 2002. The company was certified ISO 9001:2000, ISO 14001 and OHSAS 18001 in December 2004.

Benefits

The actions identified thanks to MED TEST will enable the company to achieve \$US 370,431 annual savings in energy (electricity and propane), water and raw material, against an estimated investment of \$US 262,164, resulting in an average payback period of 8 months. Over half of these actions were implemented in 2011 and the rest is planned for first-quarter 2012.

The energy saving potential amounts to 11% of the annual energy bill. Several actions have already been implemented: insulation of hot and cold surfaces, adjustment of furnaces burners, installation of an energy and production management software that allows continuous real-time monitoring of operating costs. The company is also planning to recover flue gases energy to heat water used in the process and in sanitary facilities.



“The MED TEST project falls within our environmental policy, and we are very pleased with the opportunities which it has revealed and enabled to implement.”

Nizar OUAFI, QSE Manager

Monitoring and optimizing consumption in terms of anodizing and painting processes, repairing leaks in various facilities, installing a management system for consumption monitoring represent a potential for reducing water consumption by 7%.

Economic and environmental gains will be generated by the recovery of waste such as coating, alumina powder and the caustic soda used for cleaning aluminium tools. Their valorization is being studied under the “Industrial Waste Exchange” framework launched by CMPP.

In addition to the identified saving opportunities, the company has established an EMS by integrating all the aspects (environmental policy, operational procedures, document control and recording, action plans with environmental goals).

MED TEST is a UNIDO green industry initiative to promote sustainability and competitiveness in the private sector in Egypt, Morocco and Tunisia. TEST integrated approach includes tools like resource efficiency and cleaner production, environmental management system and accounting, cleaner technology transfer and CSR.

Learn more about TEST approach at www.unido.org

MED TEST is sponsored by the Global Environment Facility, the Italian Government and the MedPartnership.

Saving opportunities

Measure	Economic key figures			Resource savings per year	
	Savings [USD/yr]	Investment [USD]	PBP [yr]	Water, Chemicals	Energy [MWh]
Preventive maintenance and production management	154 914	37,352	0.2		1 312
Process optimization: Anodizing and coating	41 658	6 250	0.2	Water : 2 140 m ³	320
Cleaning of tools for extrusion presses	75 000	93 750	1.3	Soda: 150 tons	
Waste valorization	TBD(*)	—	-	—	
Heat recovery	98 859	12 4375	1.3		695
TOTAL	370 431	262 164	0.7		2 327

(*) To Be Determined

Preventive maintenance and production management:

Several measures have been implemented: reduction of electrical power consumption by increasing power factor, optimization of air compressors, start-up of a software system for real-time management of electrical and thermal energy, adjustment of the chillers COP. Thermal energy will be reduced through the optimal setting of furnace burners, the optimization of coating and anodizing processes, the thermal insulation of pipes, as well as by sealing joints at doors level and improving extrusion presses productivity.

Process optimization of anodizing and coating:

Among optimization actions are: improvement of anodizing parameters (time of glazing, degreasing time), reduction of water losses, efficiency improvement at anodic oxidation, continuous pH measurement for a better monitoring of discharges baths. For the coating process, the optimization measures include: improvement of process parameters and of coating efficiency through electrostatic optimization conditions, reduction of the amount of dust recovered and elimination of openings in the vertical coating furnace thanks to removable insulation panels.

Cleaning of tools for extrusion presses:

The company plans to recover the caustic soda used to clean the aluminium residues in the extrusion tools (about 150 tons/year of soda). The project to regenerate caustic soda for multiple reuse will also engender a reduction in the liquid effluent pollution load.

Waste valorization:

The main solid waste generated by the company consists in painting powder from the thermo coating, aluminium powder and sludge from wastewater treatment plant, which contains heavy metals and alumina. CMPP is currently in contact with industrial manufacturers likely to use the resource waste as secondary raw material under the “Industrial Waste Exchange” framework: www.bourse-cmpp.ma.

Heat recovery:

The energy analysis showed that the billets furnace chimney is responsible for a consequent loss of energy. The project will consist in using this energy to heat glazing treatment baths and sanitary water. The company is also planning to install solar panels for hot water needs.



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