MED TEST Case Study

METAL sector — MOROCCO

Manufacturing of steel pipes — company INDUSTUBE

Company overview

Industube is a Moroccan company located in the industrial area of Moghora à Tanger, producing black, galvanized or surface treated welded steel pipes. The enterprise was established in 1979, employs 65 people, and has an average annual turnover of more than $US 13 millions.

The company joined the MED TEST project in order to identify opportunities to implement an efficient use of resources (water, energy and chemicals), reduce production costs and minimize waste, in particular liquid effluents.

Industube is certified ISO 9001, and has the medium term objective to establish an environmental system and put in place a wastewater treatment plant.

"Through our participation in the project, we have started an internal reflection on how to reduce production costs. This process resulted in the identification of measures to put in place in order to reach this objective."

M. FERNANDEZ, General Manager

Benefits

The opportunities identified through the MED TEST project will enable the company to achieve annual savings of around $US 327,357 in energy, raw materials, water and chemicals with an investment estimated at $US 85,800, corresponding to a return on investment of 4 months. Approximately half of the actions have been implemented in 2011, the rest are planned in 2012.

The economic gains in electricity and steam production and distribution system are estimated at 1,207 MWh/an, which represents approximately 12% reduction of the total energy bill. The most important project concerned heat recovery from flue gas at the galvanization's furnace, which is used for *(a)* drying zinc powder, instead of using a dedicated furnace; and *(b)* pre-heating steel pipes before their introduction in the galvanization furnace.

Savings in the water bill will be achieved through recycling of condensate and boiler blowdown and good housekeeping such as closing of cooldown valves of the machines when they are not in operation.

A reduction of chemicals usage is expected as a result of good housekeeping measures such as: quality control at product delivery, procedure for storage, handling and use of chemicals, regular monitoring and recording of the parameters in the surface treatments baths.

The company has put in place an action plan to optimize its processes to reduce scrap rate, which has decreased from 13% to 8%.

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	51 270	38 425	0.7		522
Water, chemicals and galvanization process	3 146	2 500	0.8	water: 100 m^3 HC: 2.6 tons Soda: 1 ton	
Compressors, lighting	32 808	24 875	0.8		341
Heat recovery	43 686	11 250	0.3		344
Process optimization, scrap rate	196 446	8 750	-	Steel scraps: 195 Pipes: 3000 ml	
TOTAL	**327 357**	**85 800**	**0.3**		**1 207**

Preventive maintenance: Several measures have been implemented: insulation of hot surfaces (furnace for zinc powder treatment, steam pipes, valves, etc.), elimination of leakages in the compressed air circuit, regulation of boiler efficiency. Other actions being conducted include the reduction of subscribed electric power, recovery of steam condensate, reduction of compressed air used for cleaning and the establishment of an energy management system. All these actions will bring about a reduction of approximately 522 MWh/year.

Water, chemicals and galvanization process: Water savings can be achieved by installing automatic closing of cooling down valves of machines when they are not in operation, installation of water meters at production units and good housekeeping at the company level. Chemicals consumption will decrease by better control of concentrations at reception, procedures for storage and handling, regular monitoring and recording of the parameters of the galvanization baths.

Compressors, lighting: A total saving of of 341 MWh/year will be achieved by installation of variable speed driver at one air compressor and the replacement of the existing lamps of 500 W with energy-efficient ones of 250 W.

Heat recovery: The energy audit revealed an important heat loss at the level of flue gas, which could be used as a source to reduce the head demand of the process, saving 344 MWh/year. It is planned that the recovered heat will be used within two processes:

* drying of the zinc powder, which is actually done using a secondary furnace of 232 KW. This will reduce gas consumption by approximately 8.1 tons/year.

* preheat pipes at the level of the galvanization furnace, which are currently heated with a dedicated furnace.

Process optimization, scrap rate: The company has put in place an action plan to optimize its production processes to reduce the scrap rate, resulting in a reduction by 5%. For instance, the installation of a cooling pump on the M2 cutting machine has allowed to considerably reduce its stopping, which was causing a loss of 12 ml of pipes at each stop.

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