



MED TEST Case Study

## PETROLEUM sector — EGYPT

# Lube oil blending plant — Misr Petroleum Company

### Company overview

Misr Petroleum is a major lubricant manufacturing and distributor company in Egypt, owned by the Egyptian General Authority for Petroleum and producing approximately 63,728 tons/year of a wide range of lubricants such as automotive and industrial greases for the local market and for international companies like BP and Castrol (20%).

The company joined the MED TEST project in order to improve its environmental performance and identify opportunities to increase resource efficiency by solving existing problems, mainly high water consumption and materials and energy losses.

At project start-up, the company was already certified ISO 9001 and the EMS Petroleum standard was in place. Within the course of the project, it initiated a process for upgrading its EMS according to the ISO 14001/2004 standard.

### Benefits

The MED TEST project has identified annual total savings of \$US 457,371 in electricity, fuel, water, raw materials and products with an estimated investment of \$US 100,934. Some options have excellent return on investment and immediate payback period. The identified measures have partially been implemented in 2011; the rest are scheduled for 2012.

Water costs will be reduced by 20% through implementing good housekeeping measures, a regular maintenance programme and a monitoring and controlling system for water consumption.

Electricity costs will decrease by 50% mainly by installing soft starters and variable speed drivers at the pumps, agitators and compressors. Thermal energy costs will be



**“It was a pleasure to cooperate with the distinguished MED TEST team. We have established together a system on how to convert environmental losses into a real gain at our plant.”**

Chemist Magdy Ahmed YAKOUT, General Manager

reduced by 4% through the insulation of steam lines, improvement of the boiler's efficiency and maintenance of the steam system.

Environmental benefits will be achieved mainly by reducing leakages of raw materials and products and consequently of wastewater pollution loads. The company plans to upgrade the existing WWTP and recycle 27% of treated wastewater for second-grade applications.

In parallel to the identification of saving opportunities, the site has updated its existing management system according to the ISO 14001 standard, fully integrating resource efficiency into company policy, action plans and internal procedures. This will ensure the sustainability of all identified actions at company level as well as the development of new projects.

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](http://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]
Good housekeeping, preventive maintenance	46 663	100	< 0.1	8,323 m <sup>3</sup> water, 186 tons product	
Variable speed drivers, electrical system	66 042	46 000	0.7		1 585
Raw materials unloading system	333 333	41 667	0.1	458 tons materials	
Steam system and boiler	11 333	13 167	1.2		1 397
<b>TOTAL</b>	<b>457 371</b>	<b>100 934</b>	<b>0.2</b>		<b>2 982</b>

**Good housekeeping, preventive maintenance:** The project has identified the following measures: regular maintenance programmes for pipes, equipments and compressors; operational control practices in the receiving, blending and filling sections to reduce materials and product losses; elimination of excessive floor washing and of all sources of spillage and leakages; and closing/sealing of running water taps. The site has reduced 11% of its total product losses, corresponding to 186 tons/year (77.5%) of losses in the filling section, by applying operation control best practices. The implementation of these measures will reduce water consumption by 15% and decrease the hydraulic load to the WWTP.

**Variable speed drivers, electrical system:** A reduction in electricity consumption will be achieved by installing soft starters and variable speed drivers for agitators at the oil blending unit, pumps and compressors, which will reduce their inrush current and achieve 50% savings (1,585 MWh/year) in total electricity consumption; measuring harmonics to check for distortions in the electrical feeder will protect the capacitors from damage.

**Raw materials unloading system:** The existing raw materials unloading system generates oil leakages upstream in the manufacturing process. These material losses are re-processed into low-grade final products that are sold at a lower price. Consequently, they represent an important economic loss for the company, due to energy and labor costs for reprocessing and due to reduced revenues from sales of mediocre products as opposed to first-grade ones. The implementation of a new automatic control system for raw materials unloading will detect leakages and, if any, will block the process. The implementation of this option would save 0.7% (458 tons/year) of raw materials losses that undergo downgrading to low quality products.

**Steam system and boiler:** Thermal energy inputs could be reduced through the proper insulation of the boiler's steam lines to prevent heat losses; the improvement of the boiler's efficiency by adjusting the air to fuel ratio and implementing an effective maintenance programme; and the installation of water meters on the source of the boiler's feeder with an effective monitoring plan. The implementation of these measures would save 4% of the site's thermal energy consumption (1,397 MWh/year).



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