



MED TEST Case Study

## CHEMICAL sector — EGYPT

# Detergent manufacturing — Extracted Oils and Derivatives Company

### Company overview

Extracted Oils and Derivatives is a large-size publicly owned enterprise that produces approximately 4,460 tons/year of high and low foam detergents and a range of products such as edible oils, sodium silicate, animal feed and glycerine for the local market and for export (14%).

The company has joined the MED TEST project to improve its environmental performance, identify opportunities for increasing resource efficiency by solving the existing problems: high water and electricity consumption, materials and energy losses. The project is focused on the detergent plant.

At project start-up, the company was already certified ISO 9001, ISO 14001 and ISO 18001. MED TEST has enabled it to integrate cleaner production and resource efficiency into the existing ISO 14001 management system.

### Benefits

MED TEST has identified annual total savings of \$US 127,803 in water, raw materials and fuel with an estimated investment of \$US 429,627 at the detergent plant. Some options have an excellent return on investment and an immediate payback period. The identified measures have been partially implemented by the company in 2011; the rest is planned for 2012.

Water costs will be reduced by 18% in the detergent plant by applying good housekeeping measures and implementing a monitoring and controlling system for water consumption.

Total electricity costs will be reduced by 23% through the implementation of an effective monitoring plan for electricity consumption, the improvement of the power factor by redistributing the capacitors and measuring harmonics, the installation of soft starters at air



**“The implementation of no/low cost options identified by MED TEST helped the company to achieve reductions in water, energy and raw materials consumption.”**

Mr. Ezz El Deen Abd Allah BADAWEY, Chairman

compressors and of variable speed drivers at agitators. In addition, the company has launched a new project for fuel switching to natural gas, which will reduce CO<sub>2</sub> emissions by 3,150 tons/year.

Environmental benefits will be achieved by reducing indoor air emissions through the installation of a powder dust collector for final product recovery, which will also improve working environment. Moreover, wastewater pollution loads will be reduced: the company plans to upgrade its common wastewater treatment plant and recycle wastewater for second-grade applications.

In parallel to the identification of saving opportunities, the company has updated the policy, actions plans and internal procedures related to the integration of cleaner production and resource efficiency into the existing ISO 14001 management system. This will ensure the sustainability of all identified actions at company level as well as the development of new cleaner production 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]
Electrical system, compressors and agitators	9 707	10 500	1		203
Powder dust collector, product recovery	76 667	283 794	3.7	230 tons product	
Good housekeeping, preventive maintenance and water conservation	9 429	2 000	0.2	316 tons materials, 5,500 m <sup>3</sup> water	
Wastewater recycling	32 000	133 333	4	80,000 m <sup>3</sup> water	
<b>TOTAL</b>	<b>127 803</b>	<b>429 627</b>	<b>3.4</b>		<b>203</b>

**Electrical system, compressors and agitators:** The project has identified several measures to reduce electricity consumption: installing an electricity meter for an effective monitoring plan; measuring harmonics to check for distortions in the electric feeder and protect capacitors from damage; installing a power factor correction panel. The power factor will reduce electricity consumption, extend the equipment's lifetime, reduce risks for power drops and eventually prevent the company from getting a penalty from the Electricity Distribution Company. The installation of variable speed drivers for the agitators and of 4 inverters (soft starters) for the dryers' air compressors will reduce their inrush current as well as the total electricity consumption (by 7%).

**Powder dust collector and product recovery:** This option will enable to recover product losses (powder dust) from the main production lines and convey them to the packaging station. The new collector (capacity: 55,000 m<sup>3</sup>/hr; efficiency: 99.9%) will be installed after the existing cyclone that currently works with low efficiency and product losses of approximately 4.5%. The implementation of this option will reduce product losses by 230 tons/year and dust emissions to the work and ambient environment by more than 85%.

**Good housekeeping, preventive maintenance and water conservation:** The project has identified several good housekeeping measures to save materials, improve work environment and reduce pollution loads: they consist of implementing regular maintenance programmes for pipes, equipments and compressors, eliminating excessive floor washing and all sources of leakages, closing/sealing running water taps, avoiding blockages of the wastewater channels thanks to screens that prevent dust impurities and solids from entering the drain. The site has reduced its water consumption by using pressurized water in the utilities department and installing water meters with an effective monitoring plan. The implementation of all these measures will reduce raw materials losses by 2%, water consumption by 18% and the hydraulic load to the WWTP by 8% of COD (2.7 tons/year) and 6% of TSS (1.458 tons/year).

**Wastewater recycling:** The site wastewater treatment plant will be upgraded by increasing the capacity and performance of the current physical-chemical process. The treated wastewater will be suitable for reuse (production processes, washing, cleaning of equipments). The implementation of this high investment project would save 70% of the overall water consumption.



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