



MED TEST Case Study

## FOOD sector — EGYPT

# Vegetable and fruit processing — Edfina Company for Preserved Food

### Company overview

Edfina is a large size food enterprise producing approximately 2,282 tons/year of frozen vegetables, juice, fruit nectar, canned food such as jam, tomato paste and legumes for the local market and for export (50%).

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

At project start-up, the company was already certified ISO 9001, ISO 18001 and HACCP for food safety. The company has plans to design an EMS according to ISO 14001 in the near future.

### Benefits

The MED TEST project has identified annual total savings of \$US 888,993 in water, raw materials and fuel against an estimated investment of \$US 257,518. The simple pay-back period is less than 4 months. Some of the planned measures have been implemented in 2011; the rest are scheduled for 2012.

Water costs will be reduced by 32% through good housekeeping measures, water reuse for raw materials washing and blanching, implementation of a monitoring and controlling system concerning water consumption, dry cleaning of floors in different units and improved technique for equipment washing.

Electricity costs will be reduced by 10% by retrofitting the electricity network and improving the power factor thanks to a redistribution of capacitors and measuring harmonics and the installation of soft starters for compressors. In addition, the company will implement heat recovery at the blancher and switch fuel to natural gas in order to reduce thermal energy consumption.



**“Through the MED TEST training programme, the company has increased its staff awareness and diffused the cleaner production concept among the workers.”**

Eng. Mohamed EMAD EL DEEN, Vice Chairman

The annual wastewater pollution loads will be reduced by 50% in BOD, 25% in COD and 15% in TSS through good housekeeping and mainly by upgrading the packaging unit, which will reduce product losses entering the drain system.

In parallel to the identification of saving opportunities, the site has plans to design an EMS system according to ISO 14001, 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]
Water conservation	19 542	12 267	0.6	93 798 m <sup>3</sup> water	
Electrical system, compressors	25 780	41 834	1.6		619
Process integration at blancher/cooler	1 413	3 417	2.4	4 680 m <sup>3</sup> water	31
Packaging	838 500	200 000	0.2	1 170 tons product	
Good housekeeping	3 758	-	-	18 038 m <sup>3</sup> water	
<b>TOTAL</b>	<b>888 993</b>	<b>257 518</b>	<b>0.3</b>		<b>650</b>

**Water conservation:** The following measures were identified: dry cleaning of floors, which could save 5% of water consumption; water reuse in raw materials washing; installation of water meters on the source of the feeder and set up of an effective monitoring plan; improvement of floors and equipments washing technique. The implementation of such measures will result in a reduction in water consumption (by 26%) and in BOD, COD and oil and grease pollution loads, by 32 tons/year (19%), 51 tons/year (15%) and 0.75 tons/year (7.5%), respectively.

**Electrical system, compressors:** A reduction in electricity consumption will be achieved by retrofitting and redistributing the electricity network to monitor and analyze specific energy consumption in different production lines; redistributing the existing capacitors to achieve a standard power factor in the 0.92-0.95 range. A standard power factor will reduce the electricity consumption by 4%, extend the equipment's lifetime, reduce risks for power drops in case of additional load and eventually prevent Edfina from getting a penalty from the Electricity Distribution Company. Installing soft starters and inverters at compressors will save 6% of their electrical consumption.

**Process integration at blancher/cooler:** the water discharged by the cooler is currently sent to drain, but could be reused to wash and preheat vegetables, saving water and reducing heat

demand at the blancher. Switching from direct to indirect steam injection at the blancher will enable the company to reuse steam condensate in raw materials washing and preheating. The implementation of this measure could save 1.3% of the water consumption and 31 MWh/year.

**Packaging:** Installing new automatic packaging machines for juice and legumes canning could save 20% of product losses and increase site productivity. The implementation of this investment project will reduce the discharge load of BOD by 42 tons/year (25%), of COD by 17 tons/year (5%) and of TSS by 32 tons/year (15%).

**Good housekeeping:** The project has identified several housekeeping measures: establishing regular maintenance programmes, eliminating all sources of spillage and leakages, closing/sealing running water taps, avoiding wastewater channels blockage by using screens to prevent solids from entering the drain system. They will result in a reduction of water consumption by 5%, of BOD, COD and oil and grease pollution loads by 10 tons/year (6%), 17 tons/year (5%) and 0.25 tons/year (2.5%), respectively.



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