



MED TEST Case Study

FOOD sector — EGYPT

Beverage industry — El-Nile Soft Drinks (Crush)

Company overview

Crush, a private Egyptian shareholding company founded in 1990, produces different types of soft drinks for the local market, Hi-Spot lemon, Crush orange and Sport cola, with a total production of 332,470 hl/year.

The company was motivated to join MED TEST to identify opportunities for increasing resource efficiency and productivity, reduce pollution loads so as to comply with environmental legislation and minimize investment/operational costs of the planned wastewater treatment plant.

At project start, Crush was already certified ISO 9001, OSHAS 18001, ISO 22000 and the Corporate EMS “Coca Cola” standard was already implemented. Within the course of MED TEST, the company initiated an EMS upgrading process according to the ISO 14001/2004 standard.

Benefits

The MED TEST project identified annual total savings of \$US 1,564,086 in water, raw materials, fuel and electricity, with an estimated investment of \$US 1,264,042. Some measures have excellent return on investment and immediate payback period. Most of the identified measures have been implemented in 2011.

Total energy costs will be reduced by 19% through implementation of several measures at the boiler house, RBG (Returnable Glass Bottle) line, lighting and the optimization of cleaning in place (CIP).

Water costs will decrease by more than 85% through the installation of a new CIP technology (ECA), good house-keeping and preventive maintenance measures and process water recycling. The new CIP unit uses Electro Chemical Activation (ECA) technology that dramatically reduces water, energy and chemicals consumptions,



“Through MED TEST, we have learned how to reduce production losses, save resources and increase productivity while complying with environmental regulations.”

Mr. I. Mahmoud MASSEKH, Chairman

besides increasing productivity due to a reduction of time for CIP.

Additional environmental benefits have been reached in terms of reductions of wastewater pollution loads, corresponding to 28% BOD₅ and 16% COD annual loads, mainly resulting from product recovery (19%).

These measures have cut down the investment and operational costs of the WWTP at design stage. MED TEST has assisted the company to fill in the required documentation for accessing EPAP II grants for funding both WWTP and ECA investment projects.

In parallel to the identification of saving opportunities, the site has updated the existing Coca Cola management system according to the ISO 14001 standard, fully integrating resource efficiency into company policy, action plans and internal procedures. This will ensure sustainability of all identified actions at company level as well as the development of new projects. New Environmental Management Accounting (EMA) protocols have also been introduced for tracking and monitoring the most important environmental costs, including those related to non product output costs.

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]
CIP using ECA technology	392 932	189 810	0.5	26 468 m ³ water	88
Water conservation and product recovery	253 086	51 433	0.2	122 320 m ³ water, 3 324 hl product	
Replacement of half-depth with new full depth plastic crates	193 939	750 000	4	3 324 hl product	
Good housekeeping and preventive maintenance	226 352	-	-	20 135 m ³ water, 10 306 hl product	
Boiler house	23 453	46 834	2		2 303
Optimization of RGB lines	474 324	225 965	0.5		64
TOTAL	1 564 086	1 264 042	0.8		2 455

CIP using ECA technology: Electro-Chemically Activated (ECA) water is a highly effective chemical substitute and a green alternative for cleaning and disinfection applicable to the beverage industries. This technology will enable savings of 88 MWh/year (3%) in electricity, 60% of CIP rinse water and 90% of chemicals used in the CIP. Accordingly, a reduction in TDS by about 634 tons/year (78%) has also been achieved. The new CIP reduces the duration of cleaning time to 1/3, thus increasing the site's productivity.

Water conservation and product recovery: The project identified several measures for optimizing water and product recovery: installation of water flow meters and monitoring plan; reuse of water discharged from washers I and II to save 54% of water consumption (this option has not been implemented because the company will reuse treated wastewater); installation of turbidity/refractive index transmitters to save 3,224 hl/year of product losses and reduce BOD₅ by 3% (2.4 tons/year) and COD by 1% (1.7 tons/year).

Boiler house: Insulating the large boiler, recovering heat from boiler exhaust and installing automatic blow-down system will save 21% of thermal energy consumption.

Good housekeeping and preventive maintenance: The project identified good housekeeping measures and maintenance programmes in order to eliminate excessive floor washing, close/seal running water taps; reroute forklifts pathways to avoid collision and prevent product damage and losses; avoid sending off-specs products to the drain through segregation and offsite recycling as animal feed. These measures resulted in reduction of product losses by 10,306 hl/year (3%), of raw materials losses by 8%, of BOD₅ by 12 tons/year and COD by 16 tons/year in wastewater.

Replacement of half-depth crates: The company manufactured and replaced its half-depth crates with full-depth ones to increase their lifetime and prevent glass bottles breaking due to accidents during transportation. This project resulted in increasing productivity due to reduced bottle-break incidents and pollution load (product to drain), BOD₅ by 5% (4 tons/year) and COD by 3% (5.3 tons/year).

Optimization of RGB lines: Two projects have been implemented for optimization of the RGB (Returnable Glass Bottle) line: replacing the glass walls with curtains to reduce heat stress; replacing the old forklifts with new models working with natural gas. The implementation of these two projects has reduced CO₂ emissions by 26 tons/year.



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Environmental Management Branch
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Telephone: (+43-1) 26026-0, Fax: (+43-1) 26926-69
E-mail: unido@unido.org, Internet: www.unido.org



EGYPT NATIONAL CLEANER PRODUCTION CENTER
26 A Sherif St., Downtown, Cairo, Egypt
Telephone: 02 23916154
02 23925984
Email: h_elhadary@link.net,
www.enpc.org



EWATEC CONSULTANTS
55 Adham St., # 5 Rassafa Tower,
Moharam Bay, Alexandria, Egypt
Telephone: (+203) 3930700
Fax: (+203) 3906191
E-mail: ewatecteam@gmail.com,
www.ewatec-eg.com

