

As part of the SwitchMed programme, UNIDO supports industries in the Southern Mediterranean through the transfer of environmental sound technologies (MED TEST II) to become more resource efficient and to generate savings for improved competitiveness and environmental performance.

Egypt

El-Abd Developed Chemical Industries (EDCI) Chemical sector

Context

Number of employees:	33 full-time employees
Key products:	Different types of printing inks, coatings, paints and varnishes
Main markets:	Local
Management standards:	-

El-Abd Developed Chemical Industries (EDCI) is a small enterprise established in 2015 as a private company specializing in the manufacturing of printing inks and varnish.

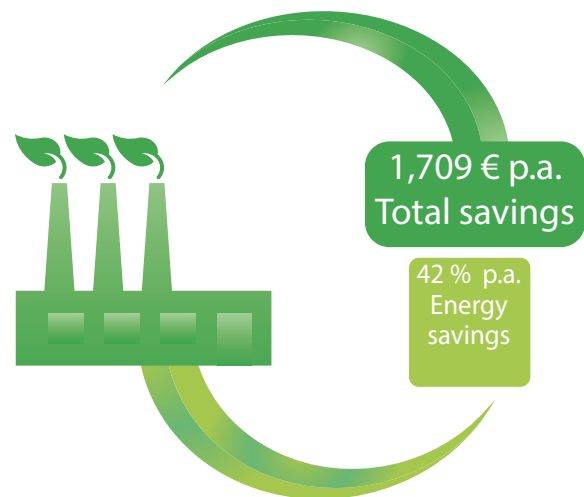
EDCI produces annually around 432 t of different types of printing inks, coatings, paints and varnishes such as offset sheet-fed inks, coldset and heatset web inks, gravure and flexographic, adhesive for lamination, varnishes and additives for local markets.

The company joined the MED TEST II Project to identify possible opportunities to increase resource efficiency, decrease waste generation and to train the company staff on RECP tools as a basis for continuous improvement.

“Our participation in the MED TEST II project aimed at optimizing our use of resources and finding solutions to minimize our production costs.”

Hossam El-Abd,
CEO & Co-founder

Benefits



Graphic: UNIDO

The MED TEST II project identified total annual savings of 1,709 euros, mainly in connection with electricity consumption, with an estimated investment of 1,975 euros. The average payback period is 1.1 years. Ten resource efficiency measures were identified, three of which are implemented, four are under implementation, two are planned and one was discarded.

Saving resources at EDCI is achieved by reducing electricity consumption by about 42%, which results in a 42% reduction in CO₂ emissions. Furthermore, a set of good housekeeping measures, some necessary safety procedures, as well as arrangements for the appropriate storage of hazardous chemicals were suggested, which do not directly translate into monetary savings but are very important to guarantee the safe operation and sustainability of the facility. One of these measures involved the installation of a ventilation system to reduce the concentration of VOCs in the production hall and providing the workers with the necessary masks and safety equipment.

One important benefit was the change in the company's culture as employees understood the importance of monitoring the production inputs and related costs. The implementation of RECP and the training of employees provided the company with the necessary procedures for continuous improvement of its use of natural resources.

Following its participation in the MED TEST II project, EDCI gained some knowledge on the ISO 9001 and ISO 14001 standards, and its staff members are currently investigating the procedures of the certification process.

SwitchMed is funded by
the European Union



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



Saving opportunities¹

Action	Economic key figures			Resource savings & environmental impacts per year		
	Investment euros	Savings euros / yr.	PBP years	Water and raw materials	Energy MWh	Pollution reduction
Optimizing the time for the mixing phase	0	191	Immediate	-	5	Total: 21.3 t of CO ₂
Setting standard operating procedures for the grinders	0	869	Immediate	-	22.58	
Adjusting chiller operating conditions	0	289	Immediate	-	7.5	
Introducing compressed air system optimization and maintenance	1,975	360	5.5	-	9.3	
Total	1,975 €	1,709 €	1.15	-	44 MWh	

¹ Numbers based on production value from 2016

Optimizing the time for the mixing phase

The operating time of the mixers was almost double the duration required for complete dispersion of the pigments. Reducing the mixing time while monitoring the pigments' binding properties resulted in a reduction of energy consumption without affecting the product quality. This measure provided more flexibility for the company to increase productivity with their existing equipment.

Setting standard operating procedures for the grinders

EDCI uses different grinders, each designated to an ink color, thus minimizing contamination between batches and reducing raw material losses. Setting standard operating procedures for the grinders regarding the flow rate of the pigment paste inside the grinder and by using the appropriate amount of dispersing agent, monitoring the viscosity of pigment paste, as well as using an optimum ratio of pearls to pigment paste inside the grinding machine shall reduce the grinding time, which will result in a reduction of about 21% in total electricity consumption and CO₂ emissions.

Adjusting chiller operating conditions

The ink in the grinding machine must be cooled to improve viscosity and the milling effect, and to reduce VOC emissions. To this end, EDCI uses chilled water that is delivered at 13 °C and operates with a temperature difference of only 3 °C. The same effect can be achieved via natural cooling, especially in winter.

Moreover, insulating the chilled water pipes and carrying out frequent inspections on the insulation reduces the load on the chillers. Implementing those measures reduced the total electricity consumption by 7%.

Introducing compressed air optimization and maintenance

Three measures were identified focusing on reducing compressed air losses by reducing the compressor operating pressure by 1 bar, using an automatic drain for storage tanks and installing a VSD on the air compressor. Savings from these measures add up to about 8.7% of the total electricity consumption.

"After joining the MED TEST II project, we created an information system as we believe that optimized monitoring is essential for an efficient production process. The MED TEST project set the base of our new information system and opened our eyes to the necessary safety measures that were overlooked."

Hossam El-Abd,
CEO & Co-founder

For more information, contact:



United Nations Industrial Development Organization
Department of Environment
Vienna International Centre, P.O. Box 300
1400 Vienna, Austria
Telephone: +43-1 26026-0, Fax: +43-1 26926-69
E-mail: c.gonzalez-mueller@unido.org
Web: www.unido.org



EWATEC Consultants
55 Adham St., #5 Rassafa Tower,
Moharam Bay district, Alexandria, Egypt
Tel: +203 3954703 Fax: +203 3954468
E-mail: ewatecteam@gmail.com
Web: www.ewatec-eg.com