

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.

Tunisia

Industries Chimiques du Fluor - ICF Chemical sector

Context

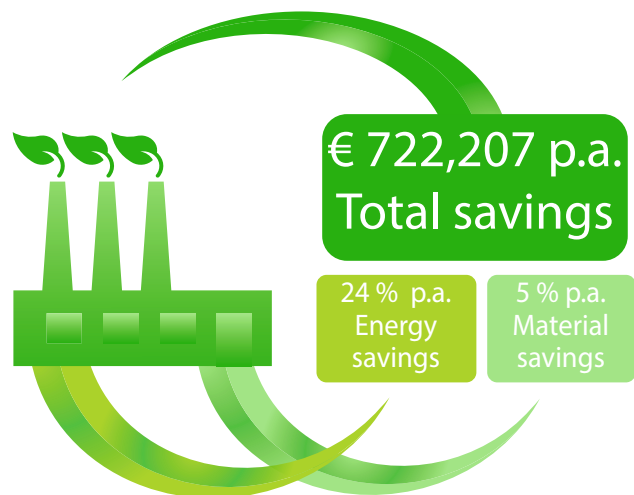
Number of employees:	286
Key products:	Aluminium fluoride (AlF_3)
Main markets:	100 % export
Management standards:	ISO 9001, ISO 14001

Société des Industries Chimiques du Fluor - ICF was established in August 1971, before being privatised and listed on the stock market in May 1993. It specialises in the production and marketing of aluminium fluoride (AlF_3). ICF operates an uninterrupted production plant at Gabès thanks to its use of manufacturing procedures designed and developed by licensors BUSS.AG and STAUFFER CHEMICAL based on the raw materials: fluorspar, aluminium trihydrate, sulphuric acid and oleum.

“ICF took part in the MED TEST II project in order to implement the tools of its ecologically rational technology transfer program. The aim was to anticipate the risks associated with pollution and to prevent these by minimising rejects, and by improving environmental and energy performance all while retaining the benefits.”

Ing. Ayachi Dhafer
Pilot, Med Test II- ICF

Benefits



Graphic: UNIDO

As part of the MED TEST II project, 14 RECP measures were identified, and 79% of these were retained for implementation by the company management, while 21% have been retained for further study. Expected annual gains total EUR 722,207 resulting from energy and material savings, against a total investment of EUR 1,033,800.

The average return on investment term is 1.5 years. Energy costs will be reduced by approximately 24 %. The economic benefits derived from raw material resource savings are estimated at approximately 5 %.

Saving opportunities¹

Action	Economic key figures			Resource savings & Environmental impacts per year		
	Investment euro	Savings euro / Yr.	PBP Yr.	Water & Materials	Energy MWh	Pollution reduction
Upgrade of fluorspar and hydrated alumina metering systems	120,000	60,000	2	442.3 t materials	1,162	Total: 3,914 t CO ₂
Fluorspar and hydrated alumina drying optimisation	4000	64,000	0.1	-	3,038	
Modernisation of installation command and control system	160,000	60,000	2.7	Impact on reduction in breakdowns within the process		
Modernisation of 'Big Bag' and bag filling facility	360,000	240,000	1.5	8,848 t materials	-	
Energy consumption optimisation	389,800	298,207	1.3	-	15,163	
TOTAL	€ 1,033,800	€ 722,207	1.4	9,288 t raw materials	19,363 MWh	

¹ Numbers based on production value from 2015

Upgrade fluorspar and hydrated alumina metering

These projects consist of replacing the fluorspar and hydrated alumina metering systems feeding the flash dryer in order to regularise flows and ensure homogeneous drying. The new system will include a new storage hopper, an extraction system underneath the hopper, and a new gravimetric belt dosage unit. Total savings include a reduction in natural gas consumption as well as in the costs of poor quality products.

Optimisation of fluorspar and hydrated alumina drying

It is recommended to work as close as possible to the maximum permissible temperature values for the equipment and the product in order to reduce the airflow, and as a result, to improve the thermal yield and reduce gas consumption. The potential savings are estimated at 15% for natural gas consumption for each position, without any equipment investment and an intangible investment of EUR 4,000.

Modernisation of the installation command and control system

This involves a priority project consisting of modernising the installations command and control system, because the current system is obsolete and badly designed, very heterogeneous and partly decentralised, which may pose a risk of breakdown and faulty installation operation. In addition to the expected operational gains estimated at EUR 60,000 per year, this project will also ensure the proper operation of the facilities.

For more information, contact:

Modernisation of 'Big Bag' and bag filling facility

This project involves the modernisation of the current 'Big Bag' and bag filling facilities through the acquisition of new, more reliable and more effective packaging equipment. This is expected to lead to an improvement in productivity and a reduction in material losses. Operational gains are estimated to be EUR 120,000 per year for each filling facility.

Energy consumption optimisation

The energy efficiency measures relating to public utilities services involve tasks relating to the modification of the S4211 chimney heat exchanger (incorporation of combustion air washing and filtering), the renovation of the thermal insulation on the F4203 reactions furnace, the introduction of an electronic energy management system, the installation of flow meters and a compressed air tank, and reactive energy compensation by adding a capacitor bank and the installation of an ISO 50001 energy management system.

"Thanks to the MED TEST II project, we have been able to improve our existing cost accounting by determining hidden environmental costs. The TEST approach has also allowed us to ensure resource Savings and to refine our "Power Management IC" system"

Ing. Ayachi Dhafer
Pilot, Med Test II- ICF



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



Centre technique de la chimie (CTC)
4, Rue de l'Artisanat, Charguia 2 - 2035,
Tunis, TUNISIA
Telephone : +216 71 940 755 - +216 71 940 772
Fax : +216 71 941 241
Mail : ctc@ctc.tn
Web : www.ctc.ind.tn