

Industrial Energy Efficiency Project

The Egyptian Salts and Minerals Co. (EMISAL) has joined hands with the GEF funded project, Industrial Energy Efficiency in Egypt. This project is implemented by the UNIDO in partnership with the Egyptian Environmental Affairs Agency, Ministry of Industry, Trade and SMEs and the Federation of Egyptian Industries. The project has helped EMISAL Company to implement an Energy Management System (EnMS) in alignment with ISO 50001 for an overall improvement in energy efficiency and improve environmental impact.

EGYPT

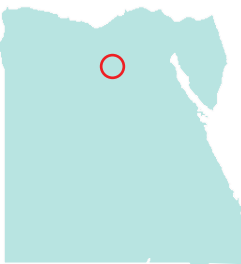
A Case Study of The Egyptian Salts and Minerals Co. (EMISAL)

EMISAL Snapshot

Industry: Chemicals

Location: Faiyum, Egypt

Product: Anhydrous Sodium Sulphate, Sodium Chloride and Magnesium Sulphate



Implementation cost: 1,650,000 EGP

EnMS scope: Electricity & Natural Gas

Annual energy savings: ~5.6 GWh

Financial savings: ~2 million EGP/year

GHG reduction: ~26 ktCO₂eq / year

Overall payback: ~10 months

Objectives period: 2015 - 2020

Time to implement EnMS: 14 months

EMISAL's products are Anhydrous sodium sulphate, Refining Sodium Chloride, Vacuum Sodium Chloride and Magnesium Sulphate with production capacities of 120,000 T/Y, 150,000 T/Y, 90,000 T/Y and 27,000 T/Y respectively.



Implementing EnMS in EMISAL Company

EMISAL were keen on improving their competitiveness through the adoption of more sustainable approaches to production. Environmental Compliance Office of the Federation of Egyptian Industries introduced EMISAL to the concepts of energy management system (EnMS) and linked them with the IEE project. The company's top management has shown a strong commitment in adopting EnMS in compliance with ISO 50001.

EMISAL ambitious EnMS objectives

EMISAL assigned its EnMS objectives with an approach of applying Energy Efficiency (EE) measures in order to improve facility-wide energy performance. In this context, EMISAL assigned the following objectives to be achieved by 2020:

- Improve Electrical Consumption performance by 6%
- Improve Thermal Energy Consumption performance by 20%

EMISAL has also identified an objective to improve their electrical energy performance by 1.5% and thermal energy performance by 2% during the first year of implementation.

UNIDO, a key player in the plant's success

By following a systematic methodology and approach for improving their energy performance, EMISAL staff have benefited from going through the whole process from planning to the preparation for a third party audit.



Saving opportunities achieved

Implemented Energy Saving Opportunities				
Measure	Savings MWh	Savings EGP	Investment EGP	Payback
Loading all refrigeration units on the old C.T	2,040	836,400	50,000	<1 month
Change the cooling tower filler	1,200	492,000	250,000	6 months
Installing Automatic Voltage Regulator (AVR)	750	300,000	1,000,000	3 YEAR
Replace the cooling water pump	1,600	656,000	350,000	6 months
Totals	5,590	2,284,400	1,650,000	<1 year
Identified Energy Saving Opportunities*				
Measure	Savings MWh	Savings EGP	Investment EGP	Payback
Replacement of the refrigerators from one stage compressor to two stage compressor(expected to be implemented in 2020, kWh price = 0.87 LE)	4,000	3,480,000	20,000,000	5-6 years
Change the cooling water lines to polyethylene	800	328,000	600,000	2 years
Replacement of street lights with solar powered ones	350	143,000	500,000	3 YEARS
Installing new boiler	7,750	3,177,500	5,000,000	2 years
Totals	12,900	7,128,500	26,100,000	3-4 years
<i>* To be implemented through the five years objective period</i>				

Barriers

Although the implementation of EnMS at EMISAL was smooth due to the strong management commitment, the company's energy team has faced some challenges and barriers related to the following:

- Some of the data needed to establish the company's baseline and EnPIs were not readily available and lack of an adequate sub-metering system
- Membership of the energy team changed during the implementation of the EnMS which has affected the implementation time schedule
- Lack of adequate in-house technical capacity in the beginning of the process

These were overcome through:

- A thorough energy review was carried out relying on all available sources of data to ensure that the baseline is as accurate as possible.
- Mentoring and capacity building activities to EMISAL staff that were involved in the process of implementing the EnMS

Lessons Learned

The implementation of the EnMS at EMISAL has proven that even in cases where the company is challenged by the lack of readily available data, inadequate in-house technical capacity and other challenges, it is still possible to establish a well-defined systematic energy management systems and deliver significant savings in energy consumption as long as the top management is showing a strong commitment.

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