

Industrial Energy Efficiency Project

In order to introduce a structured approach to energy management in operations, ESTYRENICS Company 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 ESTYRENICS to implement an Energy Management System in alignment with ISO 50001 for an overall improvement in energy efficiency and improve environmental impact.

EGYPT

A Case Study of ESTYRENICS Company

ESTYRENICS EnMS Snapshot

Industry:

Petrochemicals
Industries

Location: :

El-Dekhilah,
Alexandria, Egypt

Product: General Purpose and High
Impact Polystyrenes

Implementation cost: ~ 0.360 MEGP

EnMS Scope: electric and thermal energy
and watery

Annual Energy savings: ~ 20.03 GWh

Annual water savings: ~160,000 m³

Financial savings: ~ 13.875 MEGP

GHG reduction: ~ 12,019 tons CO₂eq

Overall payback: less than 1 year

Objectives period: undefined

Project Status: planning mid-way

Time to implement EnMS: seven months

ESTYRENICS Company, a part of the Egyptian petrochemical integrated plan, is the only company, in Egypt, producing General Purpose and High Impact Polystyrenes with a capacity of 200,000 ton/ year based on 8000 operating hours. The plant consists of 2 production lines, common area, utilities and storage area.

The main raw material for Polystyrene is imported styrene monomer. The plant has started production in the 4th quarter of 2012.

The quality management system at ESTYRENICS is ISO-9001 certified.



Implementing EnMS in ESTYRENICS is the way out

AS the energy represents 30 % of polystyrenes production cost and as the company management is looking for improving competitiveness in the market place, ESTYRENICS has made the decision that adopting EnMS shall provide the company staff with a systematic approach to manage the energy consumption and utilization; furthermore, it will help to improve the energy performance of the company. Additionally, as a petrochemical producer, the management is also looking to mitigate the environmental impact of its activities which will also be one of the results applying EnMS.

ESTYRENICS EnMS objectives

Some of the identified opportunities have been implemented; while the rest are still under study and planning; when calculation is finished and approved; then action plan shall be drafted. Some of these opportunities need approval from the plant supplier as it is still in the guarantee period.

Later, when the action plan is released, the objectives and targets will be set.

UNIDO, a key player in the plant's success

With UNIDO support, the company, own experts, trained by UNIDO, have started planning phase of EnMS implementation. The following have been achieved:

- establishing energy policy
- carry out awareness campaign in energy efficiency and EnMS
- conducting an energy review
- setting scope and boundaries
- defining the SEU for electricity, natural gas and water

- identifying drivers and developing baseline for each SEU
- identifying energy indicators EnPI
- Identifying opportunities for energy saving

Some of the identified opportunities and measures for saving energy need approval from the plant supplier, as it is still in the guarantee period; which delays the the action plan and setting objectives and targets.

Energy Saving Opportunities

Implemented Opportunities							
S	Implemented Opportunities	Elect Savings MWh	Fuel Saving MWh	Water Saving M ³	Savings MEGP	Investment MEGP	Payback Year
1	Fixing Steam traps and re-routing condensate	-	-	159,920	1.017	-	-
2	Decrease fuel usage through using Oligomers (Side product) in the oil heater	-	7,891	-	1.937	-	-
3	<ul style="list-style-type: none"> • Stopping un-necessary equipment during shutdown to decrease electricity and fuel • Buildings HVAC automatic startup and shutdown during work hours • Adjust automatic operation of outdoor lighting system 	12,141	-	-	10.921	-	-
Total		12,141	7,891	159,920	13.875	-	-

Barriers

Major barriers encountered during the implementation of the EnMS:

- The plant is new and still in the guarantee period, which limits modifications.
- Instability of plant operations, which limits producing at the design capacity for a long period; therefore; troubleshooting of operation preceds efficiency.
- Company's financial problems limit ability to finance medium and high cost projects.
- Lack of awareness of the importance of energy saving during the early periods of the project.



Lessons Learned

Experience of implementing EnMS resulted in the following lessons:

- Relying on own trained energy experts is good to start and implement the system; however, external consultants would be more effective in convincing the management; therefore, could get them involved and committed.
- If a plant is still in guarantee period, either avoid opportunities interfering with the supplied process and technology or involve the supplier if possible. Alternatively, wait until the final acceptance of the plant.
- Instability in operation usually results in delayed and unfinished implementation.

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