UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

gef

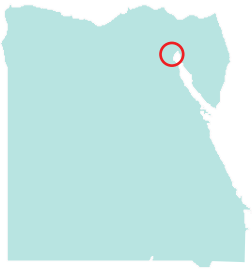
Industrial Energy Efficiency Project

In order to introduce a structured approach to energy management in operation, Lafarge Egypt Cement Company "LECC" 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 Lafarge Egypt Cement Company to implement Energy Management System in alignment with ISO 50001 for an overall improvement in energy efficiency and improve environmental impact.

EGYPT

A Case Study of Lafarge Egypt Cement Company "LECC"

LECC Snapshot



Industry: cement industries
Location: AlAin AlSokhna, Suez Governorate, Egypt
Product: cements

Implementation cost: ~ 0.50 MEGP
EnMS Scope: Electric and Thermal Energy (HFO, AF, RDF and Pet-coke)
Annual Energy savings: : ~11 GWh (in cement grinding department)
Financial savings: ~ 8.2MEGP
GHG reduction: ~ 8,275 Metric Tons CO_2eq.
Overall payback: ~ 26 years
Objectives period: 4 years
Time to implement EnMS: 1.25 years

Lafarge Egypt Cement Company member of LafargeHolcim group, is considered one of the leading cement producers in Egypt; with a production capacity of 10.6 Million metric tons of cement per year, which makes it the biggest cement factory in Egypt and the second biggest cement factory in the world.

The company is currently applying ISO 9001, 14001:2015 and OHSAS 18001:2007 management systems

Implementing EnMS in LECC is the way out

Lafarge Egypt Cement Company is one the first companies to take the initiative to diversify the thermal energy sources, instead of natural gas only, and to adopt energy efficient practices in production. Furthermore, as a subsidiary of Lafargeholicm, the company is committed to sustainable development and resource conservation. The decision to implement EnMS came in line with the company management directives to ensure result oriented performance and efficient utilization of resources. EnMS added additional tool for the company management to improve competitiveness. The company started applying EnMS in Cement Grinding as a pilot sub-plant.

LECC ambitious EnMS objectives

The overall objective of cement grinding sub-plant has been set for 5% reduction in electric energy consumption. The objective then is subdivided into targets per product and per main equipment. Energy team has worked out the identified opportunities into well scrutinized action plan and came out confirming the objectives challenged by the company management.

UNIDO, a key player in the plant's success

To implement EnMS in one the world largest cement plants, IEE project has provided training and support to compile the efforts and different measures into one systematic approach that links data recording, analysis and energy saving opportunities to energy objectives and targets.

During introduction of the system and building staff awareness of energy efficiency, the energyteam dealt with all company 5 sub-plants. Later upon energy saving opportunity identification, Cement Grinding sub-plant was selected to be the pilot.

Energy Saving Opportunities

Implementatied/ In-progress Opportunities						
S	implemented Energy Saving Opportunities	Elect Savings MWh	Fuel Savings MWh	Savings MEGP	Investment MEGP	Payback Year
1	Bag filters operation in auto mode only	1,400	-	0.400	0	
2	Optimize compressed air consumption by reducing air leakage	3,500	-	1.750		
3	Interlock between all bag filters (above silo) with Drives of Mills & packing machines)	10	-	0.005	0	
4	Replace mill 1 fans of fixed speed with variable speed	640	-	0.320	0	
5	False air leaks	584	-	0.300	0	
Total		**6,134**	**-**	**2.780**	**0**	

Identified and planned Opportunities						
S	Planned Energy Saving Opportunities	Elect Savings MWh	Fuel Savings MWh	Savings MEGP	Investment MEGP	Payback Year
1	updating energy monitoring & metering system	0	-	3.00	5.00	-
2	Replace all air lift system with Bucket elevator system (Mill 5 OR 6)	5,000	-	2.50	5.00	20
Total		**5,000**	**-**	**5.50**	**10.00**	

Although no provision has been made as direct energy saving form updating of metering system, it has been considered as energy saving opportunity as it would definitely help the overall energy performance; hence a considerable saving would be realized.

Barriers

- The energy team was too large due to the plant size
- The level of enthusiasm and cooperation of the energy team members is different among the sub-plants in the company.
- Resistance of some members to add new ENPI to the current indicators.

In order to overcome these issues, Cement Grinding sub-plant, the most ready sub-plant was selected to be the pilot for implementation.

Lessons Learned

The company had a clear understanding of its energy consumption patterns and costs; with a very strong reporting system on energy consumption in each production line and workshop known as the LARP system. However, the adoption of new energy performance indicators added more dimensions to understanding of the losses in the base loads which are converted into saving opportunities.

Availability of energy measuring and recording, the case at LECC, proved to be the most essential basis for quick adoption and implementation of EnMS.

When well managed with competent energy manager and energy team, the size of a plant should not represent an obstacle to EnMS.

For more information:

UNIDO Project Management Unit in Egypt:
Email: iee-egypt@unido.org
Phone: +20 (2) 27943477
+20 (2) 27941993

UNIDO Headquarters:

Rana Ghoneim: r.ghoneim@unido.org
Phone: +43 (1) 26026 4356
or visit: ieeegypt.org