

Industrial Energy Efficiency Project

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

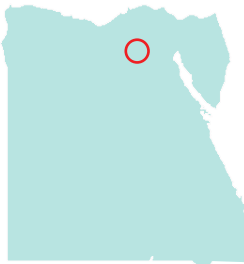
EGYPT

A Case Study of Misr International Ceramics Company "MIC"

MIC EnMS Snapshot

Industry: ceramic tiles industries

Location: industrial zone of Monofya, Egypt



Product: ceramic tiles

Implementation cost: ~0.160 MEGP

EnMS Scope: Electricity and natural gas

Annual Energy savings: ~111 GWh

Financial savings: ~50 MEGP

GHG reduction: ~ 24,000 ton CO₂eq.

Overall payback: ~3 years

Objectives period: 2 years for NG and 3 years for electricity

Time to implement EnMS: 3 years

Misr International Ceramics Company is one of the deeply rooted names in the field of ceramic tiles industry. It has been operating for more than 25 years. MIC engages 1200 employees and it produces 14 million square meters of wall and floor ceramics per year.

MIC Company targets both local and international markets; with 35% of total production to export. The company is ISO 9001 certificate.



Implementing EnMS in MIC is the way out

Recently, ceramic industry faces severe challenges; mainly due to severe competition between too many producers, slowing demand and the successive jumps in electrical and natural gas prices. Survival shall greatly depend on efficient use of resources. EnMS provides the framework required to control and manage the most important resource which is energy. In addition to improving energy performance, EnMS provides the framework to align operation and maintenance towards operation optimization leading to cost effective practices and better competitiveness in the marketplace.

MIC Cement Company EnMS objectives

The company top management has set the objectives as follows:

- To reduce electrical consumption 20% by 2017
- To reduce natural gas consumption 10 by 2018

Those objectives were set by the company management based on experience and available benchmarking figures. The energy team has identified energy saving opportunities that will exceed the set objectives. Some of these opportunities are in progress.

UNIDO, a key player in EnMS success at MIC

With UNIDO's support, implementing the EnMS had provided a link between equipment maintenance and energy consumption. More importantly the company started to record and monitor operation parameters. The EnMS process also provided the following to the company:

- Commitment of top management
- Training of energy team
- Raising energy efficiency Company-wide awareness level
- Energy review (collection and analysis of energy data)

- Identification of SEU and developing of baseline for each user
- Identification of opportunity list for saving energy
- Confirming possibility of achieving the set objectives based on the identified opportunities
- Setting action plan and measurement plan to achieve and verify the required savings

Saving opportunities

Implemented Saving Opportunities						
S	Implemented Energy Saving Opportunities	Elect Savings MWh	Fuel Savings MWh	Savings MEGP	Investment MEGP	Payback Year
1	Replace non-continuous mills by continuous mills (10 %)	3,321	-	1.49	14	3
2	Insure 100% kiln loading (3%)	-	13,575	6.11	-	-
3	After replace non-continuous mills to continuous mills, stop one compressor (1%)	332	-	0.15	-	-
Total		3,653	13,575	7.75	14	

Planned Saving Opportunities						
S	Planned Energy Saving Opportunities	Elect Savings MWh	Fuel Savings MWh	Savings MEGP	Investment MEGP	Payback Year
1	Improve kiln insulation (5 %)	-	22,625	10.8	0.70	-
2	Heat recover from Kiln and use it in the spray dryer or preheating air (10%)	-	45,249	20.36	0.03	-
3	Train Kiln operators (5 %)	-	22,625	10.18	0.10	-
4	Reduce compressor leaks (5%)	1,660	-	0.75	-	-
5	Changing distribution piping system of compressor of the old factory (5%)	1,660	-	0.75	-	-
6	Switch off the rolling mill converter when there is no production (0.5%)	17	-	0.01	-	-
Total		3,338	90,499	42.23	0.83	

Barriers

Although it was made clear by IEE Project that support only entails technical support and training, the company was still waiting for financial support to implement some measures. It took a while to realize that implementing EnMS does not necessarily need investment. Additionally other difficulties were also faced by the team: such as:

- Difficulties in collecting accurate data.
- Lack of sub-meters and relying on estimation using rated power for electricity and assumed specific consumption for natural gas!
- Lack of awareness plan (covered by UNIDO)
- Lack of training plan for key persons (partially covered by UNIDO)
- The company does not follow written and announced procedure for operation parameter recording.
- Maintenance program includes only oil and filters replacement.
- Lack of finance for the implementation of energy saving projects.

Lessons Learned

1. The set values for operation parameters by equipment supplier must be re-discussed and re-evaluated in the light of many changes: raw materials, equipment part replacement, etc.
2. Maintenance members in energy team are indispensable for the success of EnMS. As almost half of zero cost energy saving opportunities lie within the proper maintenance practices.
3. Operational control aims at: energy performance, quality consistency and production continuity.

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