

Industrial Energy Efficiency Project

In order to introduce a structured approach to energy management in their operations, Fresh Electric company for home appliances – gas cookers company (Fresh) 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 Fresh 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 Fresh Electric Company for Home Appliances – Gas Cookers Company

Fresh Snapshot

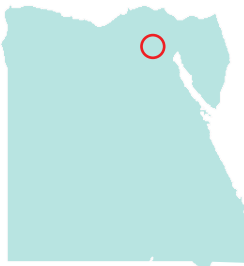
Industry:

Manufacturing

Location: Sharkiya,

Egypt

Product: Gas cookers



Implementation cost: No cost

EnMS scope: Electricity & Natural Gas

Annual energy savings: ~10.4 GWh

Financial savings: ~3.8 million EGP

GHG reduction: ~51.7 kCO₂eq (10 y)

Overall payback: Immediate

Objectives period: 5 years

Time to implement EnMS: 1 year

Fresh the gas cooker factory produces more than 200 models of gas cookers. The production capacity is 420,000 units of different models in 2014. 50% of Fresh gas cooker is sold in the local market while the other 50 % is exported to 55 countries.



Implementing EnMS in Fresh is the way out

Fresh is a group of 10 companies covering wide range of home appliances. The gas cooker factory is located in 10th of Ramadan city and occupies an area of 17,000 m². It produces more than 200 models of gas cookers. The production went up to 420,000 units of different models in 2014. Fresh gas cooker supplies 20 to 22 % of the gas cooker local market in Egypt representing 50% of production. The other 50 % is exported to 55 countries.

Fresh ambitious EnMS objectives

Fresh assigned its EnMS objectives with an approach of applying energy efficiency measures in order to improve facility-wide energy performance. In this context, Fresh’s objective is to reduce 10% of their electrical consumption by EOY 2019.

UNIDO, a key player in the plant’s success

With UNIDO’s support, Fresh staff were engaged in a thorough process to review and analyse the company’s historic energy consumption and performance. Throughout the process, Fresh have developed their energy policy, defined EnMS scope, boundaries and carried out a thorough energy review. Fresh have focused on their energy meters maintenance and adding new metering points. Furthermore, Fresh introduced a daily energy recording and reporting framework. The daily monitoring of performance has allowed fresh to tightly control their energy performance compared to their existing monthly reporting.



Saving opportunities achieved

Description	Energy Savings (kWh)	Financial Savings (EGP)
Compressors area ventilation	85,200	34,080
Fixing air network leakage	657,000	262,800
Installation of an LED Lighting system	2,300	920
Automatic shut off for production equipment	7,000	2,800
Replacement/maintenance of furnace insulation	382,500	51,680
Installation of an air curtain before the furnace firing zone	933,750	126,160
Decrease working hours of panel painting oven	42,210	16,884
Total	2,067,750	495,324

Compressors Area Ventilation

Improve ventilation of compressors area in order to increase efficiency of compressors to reach the required pressure quickly and increase no load time for compressors

Fixing Air Network leakage

Save energy consumed in operating compressors by saving waste of leaked air to reach required pressure and to increase no load time

Installation of LED Lighting system and optimization of lighting distribution

Replace high consumption lighting source (metal halide, cfl) with low consumption lighting source (LED)

Automatic Shut Off for Production Equipment

Decrease energy consumption during idle time of the machine using timer to turn off the machine in case of being idle for 5 minutes

Barriers

The implementation of an EnMS at Fresh faced some barriers and obstacles. Most of the barriers and challenges were of minor nature such as the change in the energy team members several times which have merely resulted in some delays in implementation. The main obstacle however was the low cost of energy in comparison to the total production costs, which has resulted in the absence of any detailed assessment of energy consumption in the company's old records. In addition, the energy team was not able to confirm that the consumptions extracted from the energy bills coincide with the production recorded in the same months. This has resulted in a complex energy review process but was

overcome through an iterative process relying on estimates made by the technical teams, which were verified later by existing and new sub-meters.

Lessons Learned

The implementation of the EnMS at Fresh has proven that even in cases where the company's energy costs are minor compared to the total production costs there is still a room to achieve significant savings. It has also shown that one of the major additional benefits of an EnMS is improved maintenance and overall operation reliability. In addition, in cases of lack of historic reliable data, it was proven that through accurate estimations and assumptions that are based on sound technical experience a company is able to identify their energy baseline and develop accurate performance indicators.



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