

# Industrial Energy Efficiency Project

In order to introduce a structured approach to energy management in their operations, Al Ezz Dekheila Steel Company (EZDK) 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 EZDK 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 EZDK Company

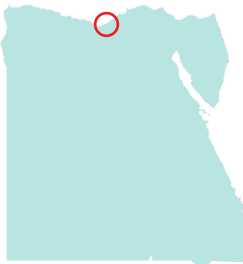
### EZDK Snapshot

**Industry:** Iron and steel

**Location:**

Alexandria, Egypt

**Product:** long steel and flat steel



**Implementation cost:** ~43 million EGP

EnMS scope: Electricity and N. gas

**Annual energy savings:** ~814 GWh

**Financial savings:** ~128 million EGP

**GHG reduction:** ~2.19 mtCO<sub>2</sub>eq (10 y)

**Overall payback:** 4 months

**Objectives period:** 3 years

**Time to implement EnMS:** 6 months

Ezz Steel has 4 facilities with total production capacity of 5.8 million tons per year.

EZDK (Alexandria plant) is an integrated steel plant. Its combined output of the flat and long steel plants is 3 million tons per year.



### Implementing EnMS in EZDK

EZDK main goal was to set the conditions for controlling energy consumption through organizational and technical measures and achieving continual improvement in energy performance. EZDK staff joined the UNIDO EnMS Capacity Building Programs where support was provided to the company to implement an EnMS in compliance with ISO 50001.

### EZDK ambitious EnMS objectives

EZDK has set its EnMS objectives with an approach of ensuring full commitment of all organizational staff from top management to supervisors and operators on all levels of the organization. EZDK assigned the following long-term objectives to be achieved by the end of 2017:

- Reduce Electrical Consumption by 3.9 %
- Reduce Natural Gas Consumption by 4.0 %

### UNIDO, a key player in the plant's success

EZDK's top management has adopted a systematic approach to ensure that energy improvement is institutionalized and continual. The implementation of a structured EnMS started by mid-2014 and by the end of the year the company was already ISO-50001 certified.



## Saving opportunities achieved

Measure	Savings MWh	Savings EGP	Investment EGP	Payback
<b>Thermal</b>				
Carbon content optimization in DRI Plant and EAF	645,000	68,000,000	No/low Cost	immediate
Installation of new recuperators	419	745,820	No/low Cost	immediate
Enhancing thermal insulation	300	534,000	No/low Cost	immediate
Calibration of gas & air valves and flowmeters	50	89,000	No/low Cost	immediate
Installation of oxygen detector	100	178,000	No/low Cost	immediate
Substituting raw material	1,300	2,313,189	No/low Cost	immediate
Modification of tundish system	700	1,246,000	2,200,000	20 mons
Reformer box and recuperator sealing improvement	3,500	6,230,000	No/low Cost	immediate
<b>Totals</b>	<b>651,369</b>	<b>79,336,009</b>	<b>2,200,000</b>	<b>&gt;1 months</b>
<b>Electrical</b>				
New SVC # 1 project	127,235	38,556,000	41,000,000	10 mons
Installation of gas leak detectors	96	29,067	53,200	16 mons
Modify aux. air blower & burners shutdown procedures	1,677	508,336	No/low Cost	immediate
Standard procedures for mill line motors shut-down	2,400	727,273	No/low Cost	immediate
Optimizing fume extraction system	578	173,645	No/low Cost	immediate
Use of raw material with high calcination tendency	956	289,712	No/low Cost	immediate
Reduce burnt lime specific consumption	12,520	3,793,939	No/low Cost	immediate
Installation of a tundish cover	15,650	4,742,424	70,000	5 days
<b>Totals</b>	<b>161,112</b>	<b>48,820,396</b>	<b>41,123,200</b>	<b>10 months</b>
<b>Grand Total</b>	<b>814,481</b>	<b>128,156,405</b>	<b>43,323,200</b>	<b>4 months</b>

## Barriers

Although the implementation of EnMS at EZDK was fast and efficient as well as backed up by strong management commitment, the company's energy team has faced some challenges and barriers along the way. Barriers faced during implementation of the EnMS were mainly related to:

- Resistance to change
- Large energy team which has affected internal communication at the early stages

These were overcome through:

- Conducting awareness sessions
- Strong involvement from the management representative through continuous follow up and strict instructions.
- Having two energy managers; one responsible for technical and engineering aspects and another focusing on managerial issues.

## Lessons Learned

The implementation of the EnMS at EZDK has proven that building the case for improving energy efficiency as a cost effective approach results in strong management commitment to adopt a formal and structured EnMS. The experience has also proven that if there is a strong will and a dedicated energy team, the time for implementation could be significantly short while remaining effective.



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