

ENERGY MANAGEMENT SYSTEM

ISO 50001 COMPLIANT

CASE STUDY



INDUSTRIAL ENERGY ACCELERATOR



Al Ezz Dekheila Steel Company (EZDK) Alexandria, Egypt

Sector
Steel manufacturing

Intervention
Implementation of Energy Management System (EnMS) to decrease energy consumption

EnMS implementation period
2015 to 2019

Company profile

EZDK was established in 1982 in Alexandria, Egypt. With 3,756 employees, EZDK is the largest independent producer of steel in the Middle East and Africa region and is the market leader in Egypt. The company produces long and flat products and sells them to customers around the world.

EZDK's long products consist primarily of rebars and wire rods, which are used for strengthening concrete in building and other construction applications. Its flat products consist of hot rolled coil, which are thin gauge sheets manufactured to precise specification for makers of consumer goods and industrial products.

Across four facilities, the company's total production capacity is 5.8 million tons of finished steel per year.

The efficiency solution and UNIDO'S role

In mid 2014, EZDK pioneered the implementation of a structured Energy Management System (EnMS) to reduce the consumption of electricity and natural gas. In early 2015 the company was already ISO-50001 certified by TUV Nord in Germany.

This came at the height of Egypt's energy crisis and after the reforms to energy subsidies were introduced. At this point, energy intense industries such as EZDK started to seek alternative solutions to maintain reliable production and profit margins.

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. Additionally, the company attended two UNIDO specialized courses in Compressed Air System Optimization and Electric Motor System Optimization.

Establishing the EnMS entailed the following first steps:

- Securing the commitment of the company's top management towards the EnMS

Investment \$	USD 6,852,916
Financial savings (electricity & gas combined)	USD 16 million
Natural gas saved	3,851,248 GJ
Electricity saved	241,363 MWh
CO ₂ emissions reduction	490,714 ton CO ₂
CO ₂ emissions improvement	2.68 %
Payback time	1.5 years

*Data is from 2015 to 2019

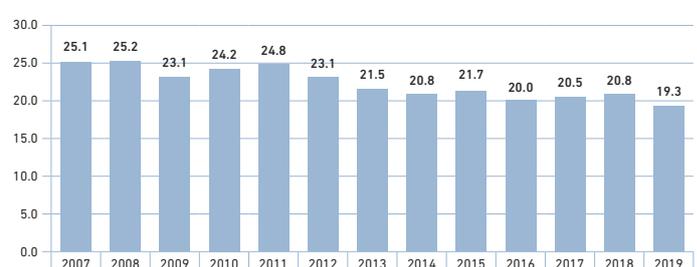
- Raising awareness about energy efficiency and EnMS amongst all employees
- Establishing clear roles and responsibilities towards the new EnMS and an energy policy
- Specifying the relevant production processes affecting energy consumption

It also meant establishing an energy team composed of 52 members and with representation of each production plant.

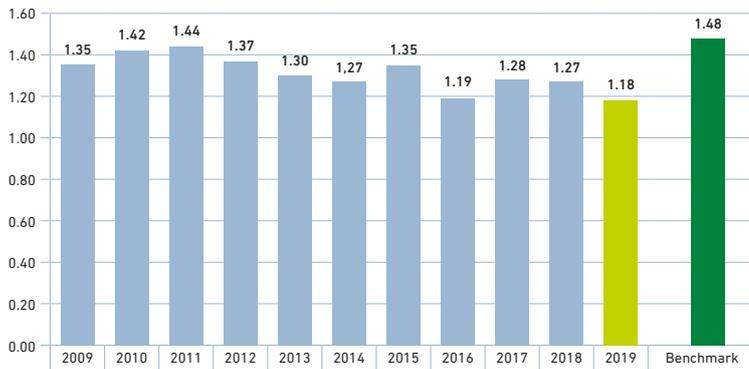
Achievements

The company was able to see its consumption of electricity and natural gas decrease by 868,908 GJ and 3,851,248 GJ respectively making savings of more than USD \$16 million during the five-year period. Also, as shown in the graphs 1 and 2, EZDK's energy consumption dropped during the last four years and the CO₂ intensity emitted per ton of molten steel production is also lower the average in the industry.

Energy intensity GJ/TMS



CO₂ intensity Ton CO₂/TMS



“The most important result that we have achieved thanks to our steady efforts to monitor and manage our energy resources has been to get all our employees thinking about energy and committing to saving it.”

Saad Abdel-Naby, Quality Assurance Executive Manager & Energy Manager at EZDK and Energy Expert in UNIDO.

For EZDK establishing the EnMS and demonstrating critical results and corporate commitment towards the environment, also delivered reputational benefits and increased clients' trust in the company.

Saving opportunities achieved

In addition to a number of no cost or low cost investments, during the five-year period EZDK also made the following “high or medium cost” energy saving measures:

Measures Implemented	Investment [\$]	Savings [\$-year]	Payback [year]	Energy savings [kWh/year]	Emission Reduction [tco2/year]
New SVC # 1 project	5,122,318	4,284,000	1.20	127,234,800	64,126
Gases Leak Detector for compressed air lines	3,325	1,817	1.83	95,922	48
Manufacture of Tundish cover	4,375	296,402	0.01	15,650,000	7,888
Electronic Drain Separator for air compressors	8,750	1,515	5.78	80,000	40
Carbon and Oxygen injection control module at EAFs	1,264,148	344,549	3.67	18,375,924	9,261
Changing from Tundish wet coating system to dry ramming system	137,500	77,875	1.77	7,283,771	1,411
Installation of new Dry Rollers	312,500	111,250	2.81	10,405,387	2,105

Challenges and lessons learned

Involving the thousands of employees across plants and departments was at first challenging. Also, changing the company's culture around energy conservation and efficiency was one of the biggest barriers EZDK's energy management team had overcome. By organizing regular trainings and awareness sessions for staff and securing the support from the top management team, they were able to overcome the barriers.

An important lesson learned was the instrumental role that management plays from the outset as they have to determine the scope of the EnMS, adopt an energy policy, enable internal communications, determine strategic targets and provide the necessary financial and human resources.

About the energy efficiency solutions series

Throughout 2020, the Accelerator is drawing on its collective wealth of experience and expertise to produce a series of knowledge kits on industrial energy efficiency. These cover five key energy efficiency solutions: Energy Management System; efficiency solutions for Motor-driven Systems; for Industrial Heat; for Industrial Cooling; as well as Energy Metrics and Performance Indicators. Find out more: [LINK TO KKNOWLEDGE HUB](#).

Ready to take the next step in your EnMS journey?

For more information, contact Eng. Saad Abdel Naby: sanaby@ezzsteel.com.eg

Download the full UNIDO EnMS Efficiency Solution kit [here](#).

Visit www.industrialenergyaccelerator.org or contact R.GHONEIM@unido.org



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