

Industrial Energy Efficiency Project

Islamic Republic of Iran

Imam Khomeini Oil Refining Company (IKORC) has joined hands with the United Nations Industrial Development Organization (UNIDO) and Iranian Fuel Conservation Company (IFCO) to implement a structured approach to energy management in their CDU/VDU operations, under the Global Environment Facility (GEF) funded project, "Industrial Energy Efficiency in Key Sectors".

Through this cooperation, the IKORC has already targeted energy and utility savings through the implementation of an Energy Management System (EnMS) in alignment with ISO 50001:2011.

A Case Study of Imam Khomeini Oil Refining Company

EnMS background in IKORC

Before starting EnMS in IKORC, they had energy management department and also they have done some activities on energy efficiency. However the activities of the energy management department was not based on UNIDO's systematic approach.

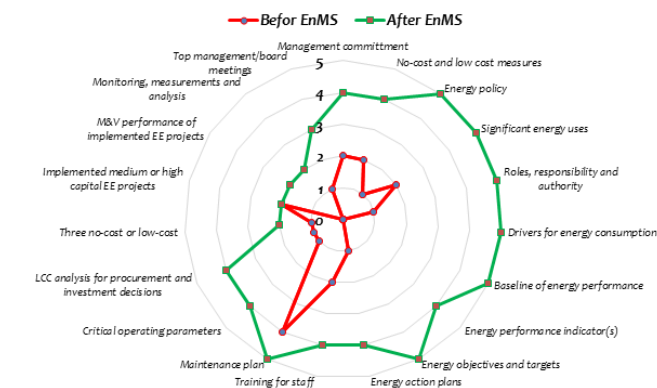
After implementing EnMS within CDU/VDU units, energy analysis becomes a day to day practice and because of the change in operation behavior as well as proper level of personnel motivation, they are targeting for energy saving.



Imam Khomeini oil refinery co. established in 1993 with the nominal processing capacity of 150,000 barrels per day of crude oil refined into more useful products such as petroleum naphtha, gasoline, diesel fuel, asphalt based oil, heating oil, kerosene and liquefied petroleum gas (LPG).

The expansion plan of the refinery aims to increasing its processing capacity to 250,000 barrels per day, increasing gasoline and reducing fuel oil as well as meeting the product specifications in compliance with Euro VI standards.

In terms of management systems, IKORC is certified based on ISO 9001, ISO 14001, OHSAS 18001 and ISO 27001 and working on achieving EnMS certificate based on ISO 50001:2011.

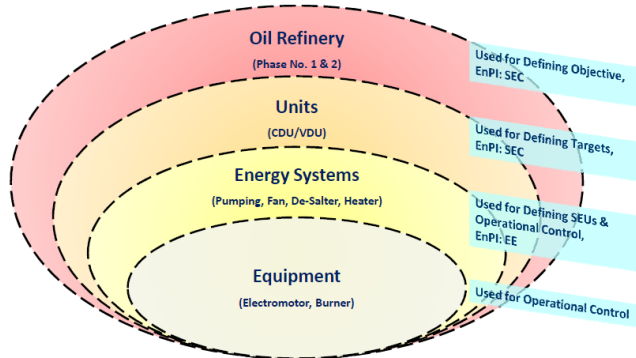


UNIDO program and development of the methodology within IKORC

UNIDO's developed methodology within IKORC consists of getting management commitment, planning, implementing and checking.

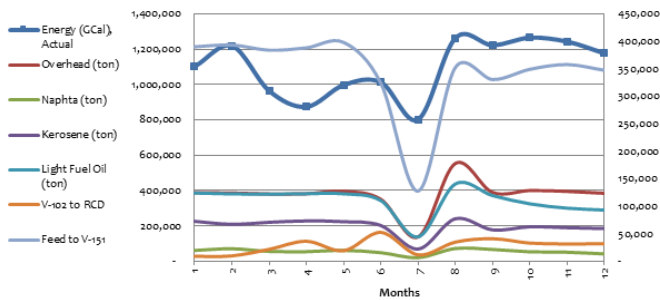
Defining energy performance indicators

The main concept which was considered within the plant is how to define the boundary and select the energy performance indicators. To cover this subject, the below model has been proposed by national consultants and is implemented by IKORC's energy management department.



Establishing a baseline and setting energy saving targets

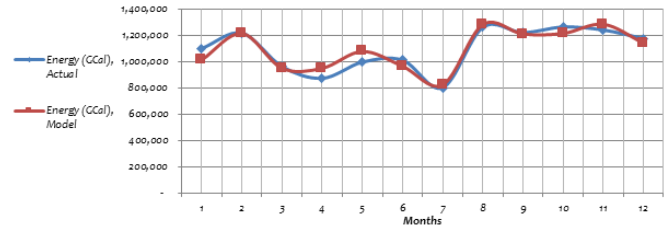
As can be seen in the below graph, total energy consumption of the CDU/VDU units is influenced by different variables.



Based on analysis, the energy baseline of CDU/VDU units has been defined using the following formula:

$$\text{Total Energy} = (5.7 * \text{Overhead}) + (57.6 * \text{Naphtha}) - (0.06 * \text{Kerosene}) - (15.6 * \text{LFO}) + (2.2 * \text{V102toRCD}) + (0.89 * \text{FeedtoV151}) + 730612.9$$

According to the analysis for base year, the following trends have drawn using actual and model data. It has been understood that the developed model is highly conformed by actual data.



For CDU/VDU units, the following targets have been defined according to analytical approach as well as identified opportunities for improvement which shall be achieved up to end of the year 1394:

- 2.2% reduction of fuel gas consumption;
- 2% reduction of fuel oil consumption;
- 4.3% reduction of high pressure steam consumption;
- 2% reduction of medium pressure steam consumption.



Main achievements

- Changing the culture of operation;
- Raising personnel awareness;
- Implementing new systematic approach to management;
- Preparing IKORC for ISO 50001 certificate;
- Training energy team members;
- Improving plant CDU/VDU units operation due to proper maintenance linked to energy management processes.

For more information

UNIDO Project Management Unit in Iran:

E-mail: m.shakouri@unido.org

n.shehari@unido.org

Phone: +98 21 22 79 37 00

UNIDO Headquarters:

E-mail: r.ghoneim@unido.org

Phone: +43 1 260 26 3456