

Pilot project

"Introduction to Energy Efficiency and Energy Management Systems in SMEs in Mexico"

Example of energy efficiency improvement

Reciclagua Ambiental: Reconfiguration of blown air distribution system

Background information

The implementation of the pilot project began with the introductory workshop to ISO 50001 in October 2015. The companies then conducted energy audits to identify and prioritize various opportunities for improvement, with the guidance of Mexican consultants with expertise in energy efficiency.

Reciclagua Ambiental, S.A. C.V. is a company located in the Toluca-Lerma corridor, known for being the country's second largest industrial zone. Currently, it is responsible for providing industrial wastewater treatment services for that area and, in return, must show evidence of compliance with regard to the quality of the wastewater treated, according to the Mexican standard: NOM-001-SEMARNAT-1996.

Description of the improvement

Previously, Reciclagua had already implemented several initiatives to improve energy efficiency, such as changing blower motors and installing two variable speed drives for regulating demand. However, during the energy audit conducted in February 2016 as part of the pilot project, it was found that the six blowers (one of the main energy uses for the company) were connected through a head unit in parallel and that three blowers were connected to the first variable speed drive and three to the second. Thus the opportunity for improvement identified was split into two points:

1. The blower flows entered the head unit at different distances, but at the same pressure, which caused the flow of the first blower to create a pressure barrier against the other two flows.
2. The variable speed drives were badly programmed, which resulted in the maintenance area deciding to activate them manually.

As an improvement measure, during the audit the variable speed drives were adjusted to function automatically, thus improving the operation of the blowers. With regard to the blowers, by redesigning the air supply to biological reactor No.3, it was possible to separate the flows and prevent the collision that was generating backpressure and temperature increases and, consequently, high energy consumption, which was reflected in the electricity bill. In order to replicate the changes, a modification is also being made in the distribution network in reactor No.1. These energy saving data are for the No. 3 reactor, which is already operating, and similar benefits are expected with the implementation in the No.1 reactor.

It should be noted that the analysis conducted during the course of the energy audit and the conclusions reached serve as the basis for the review and subsequent redesign of an existing system as well as the improvement of its energy performance.

Savings achieved, results and additional benefits

Key indicators	
Total energy saving for the plant	6%
Annual economic saving	MXN \$ 940 236
Annual energy saving	775 008 kWh
Investment needed	MXN \$ 263 004
Payback period	4 months
Greenhouse gas reduction	0.38 t CO ₂ eq.



The Mexican National Commission for the Efficient Use of Energy (CONUEE) and the German Metrology Institute (PTB) make the aforementioned project available to small and medium enterprises (SMEs) in order for them to implement an energy management system (EnMS) according to ISO 50001, by strengthening the skills of technical staff within each company.

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