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

Example of energy efficiency improvement action
Maxipet: Continuous improvement in processes

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.

The director of **MAXIPET S.A. DE C.V**. became interested in joining the pilot project due to the need to manage the energy sources used mainly in their production processes. In January 2016, the company began the implementation of the EnMS (ISO 50001: 2011), in which they identified and prioritized improvement opportunities, under the guidance of consultants with expertise in energy efficiency.

The MAXIPET plant is located in Tecámac, State of Mexico. It is a Mexican company dedicated to the manufacture of PET bottles, polyethylene (PE) containers, caps and injection items to serve the needs of the pharmaceutical, cosmetic, food, industrial chemical and health food industries with a presence in Mexico and Latin America.

Description of the improvement

One of the production processes with the highest energy consumption is blow injection, which consumes a large amount of compressed air and thus accounted for 70% of the plant's total energy consumption. Another process with considerable energy consumption is that of injection, which constituted 10% of the total energy consumption.

With regard to the consumption of compressed air, poor operating practices were employed in the compressor department, where the bigger capacity compressors were used for operations with lower consumption. Most of the time the equipment was consuming electricity without it being put to any use.

Thanks to the training of the operating staff that began in May, better use was able to be made of this machinery. The training was validated by tests taken by the staff. It was possible to determine the compressed air supply capacity by trial and error alone, since the necessary equipment is not yet available to make a more precise measurement of processes that use this resource. This was done to avoid under-utilizing the equipment and using unnecessary energy.

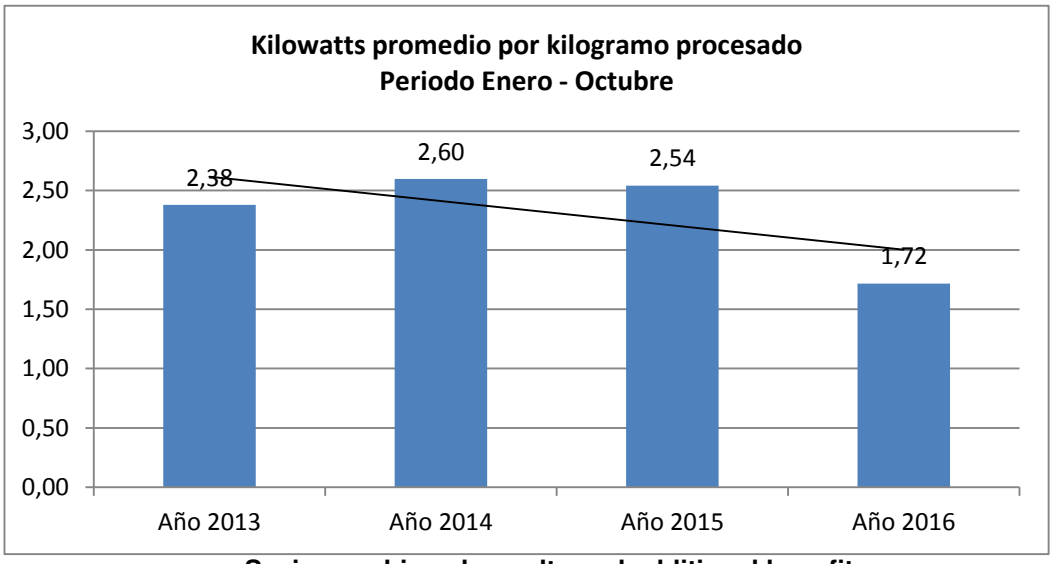
The cap injection process previously employed very poor operating practices. The staff did not know how to operate the machine correctly as the chambers got blocked and its work cycle was too high. A big increase in production was obtained in this process by using 100% of the moulding production capacity and the production cycle was reduced by more than 10 seconds. This translates into using the same energy, but greatly increasing the monthly production.

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.

For more information on the pilot project, contact Lissette Mendoza Barrón, Tel. 3000 1000 ext. 1318, lissette.mendoza@conuee.gob.mx or Susanne Wendt, susanne.wendt@ptb.de

They have also begun working with the CFE rates in order to only operate using base and intermediate rates. A number of operating controls have been implemented for the proper use of equipment directly related to energy consumption.
In general, in all cases the improvement plan began with the assessment and training of the staff directly involved in the production processes of Maxipet S.A de C.V.

Thanks to staff training and certain changes in the practices of operators and the use of equipment, it was possible to reduce the cost of the average kWh per kilogram processed. A detailed measurement and verification system is not yet being implemented, which means that it is not yet possible to quantify exactly how much of the saving corresponds to which of the actions implemented.



Savings achieved, results and additional benefits

Key indicators	
Total energy saving for the plant	32%
Annual economic saving	MXN $ 155 974
Annual energy saving	155 263 kWh
Investment needed	0
Payback period	0

These advances are the first step towards performing measurements and deepening the analysis of the production process in the search for improvement opportunities.

Good operational control not only helps to optimize energy use, by making it possible to stop using a 100HP compressor, but also improves product quality, since it results in better utilization of machines, providing higher performance at lower cost!

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