Energy Management Systems in Refineries

The Mexican-Danish Climate Change Mitigation and Energy Program (CCMEP) supports Mexico in implementation of its climate policy and energy reform. Under the Energy Efficiency (EE) component of the Program, Denmark co-operates with CONUEE under the PRONASGEn (Programa Nacional para Sistemas de Gestión de la Energía) to improve Energy Management Systems (EMS) and supportive measures for selected mainly larger industries.

In 2015, the PEMEX, SENER, CONUEE, Danish Energy Agency, and the Danish Ministry of Foreign Affairs signed a Letter of Intent with the aim of Implementing EMS based on ISO-50001 at PEMEX refineries. Two refineries, Tula and Minatitlán, were chosen as pilots. In Tula it was decided that sector 5 (the thermo electrical plant) was going to be pioneer for the implementation of EMS. It consists of the steam and electricity production for the rest of the sectors and is the heaviest energy user of all the sectors. In Minatitlán they chose the plant named "Combinada Maya" (atmospheric and vacuum distillation units) where the first refining of the crude oil Maya type is done (sector 2).

Furthermore, the CCMEP has supported the replication of experiences from Tula and Minatitlán to the other four refineries (Cadereyta, Madero, Salamanca and Salina Cruz).

OUTPUTS:

- Development of EMS Manual for refineries based on ISO-50001 which has been incorporated in PEMEX own internal guidelines for EMS;
- 8 visits and workshops followed by regular skype meetings by Danish experts on the different EMS steps: Management support, energy mapping, screening lists, anchoring, and evaluation;
- Visit to Denmark;
- Gap-analyses and pre-audits according to ISO-50001 at 3 refineries.

OUTCOMES:

- Specific energy saving projects;
- Operational KPIs;
- Improved maintenance;
- Replication to refineries and readiness for ISO-50001 certification at 2 refineries.

Energy Savings:

- Actual saving measured and verified in Minatitlan 2016: 150,530 GJ/year = 500,000 USD/year. Additional potential 2017: 131,810 GJ/year
- Potential in other refineries estimated at 2.37 PJ/year before 2020

The Danish support helps us to with an outside view and guidance for improving our internal procedures and capacity in implementing ISO-50001.

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