**Industrial Energy Efficiency Project**

**INDONESIA**

To change a company’s approach to cost and energy conservation in a comprehensive manner, PT. Unitex has joined hands with the United Nations Industrial Development Organization (UNIDO), the Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry (MOI) and National Standardization Agency of Indonesia (BSN). The Global Environment Facility (GEF) funded project, “Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards in Indonesia” has helped PT. Unitex to implement an Energy Management System in alignment with ISO 50001 for an overall improvement in energy efficiency and a reduction in energy consumption.

**Management Systems**

PT. Unitex is very familiar with management systems and is already certified to ISO 9001, Quality Management System, to maintain and continuously improve the quality of their products. This familiarity with standards and the systems approach allowed the company to easily engage with UNIDO in the implementation of the Energy Management System (EnMS), which was integrated into the existing management system structure.

**Energy History**

PT. Unitex has been an advocate of energy efficiency initiatives since the company’s energy costs began to sharply increase, which led top management to promote energy saving programmes in all areas of the plant.

The company already uses specific energy ratios to monitor plant performance, and some energy efficiency initiatives were already in place prior to the EnMS pilot project implementation:

- Replacement the existing boilers with energy efficient boilers
- Installed of more energy efficient weaving machines

The project above has successfully reduce the energy cost. However, this ad-hoc approach will not sustain without a proper energy management system in place.

**SEUs in Production**

As a first step for introducing an EnMS, a comprehensive survey of significant energy users (SEUs) was conducted. The identified SEUs were spinning, dyeing, and weaving.

**Opportunities**

Based on the SEUs, the identification of energy saving opportunities was undertaken, with the most beneficial opportunities promoted into action plans. The opportunities equivalent to 6% in energy reduction.
The low-cost opportunities identified with an average payback time of 1.5 years were:

* Replacement of 40 watt lightbulbs in all production line with 18 watt LEDs
* Turn off the chiller system and replaced with water sprayer to maintain the humidity in the spinning process
* Improved setting criteria for cooling tower operating hours, with alternative operational schedules rather than simultaneous
* Optimization of chiller temperature by determining actual demand
* Replacement of two transfer pumps (3000 Watt) with one transfer pump (120 Watt)
* Installed inverter on the pump

The total savings resulting from these low-cost interventions were approximately 4,000,000 kWh/year (equivalent to 3,612 ton CO2 reduction/year and cost reduction $400,000/year) equivalent to 14% of total electricity usage and 6% of total energy usage (see below graph).

Barriers to Implementing EnMS
In the initial stages of EnMS implementation, PT. Unitex had number of barriers to overcome, such as:

* Lack of willingness to implement energy efficiency project
* Limited resources, including budget and competent personnel

With the support of UNIDO trained national and international experts, as well as ongoing trainings for management and staff, PT. Unitex was able to overcome these barriers and implement the EnMS with significant success.

Benefits of EnMS Implementation
For the factory, the key benefits of EnMS implementation are:

* The Energy Efficiency Program through the EnMS is not a temporary project, but rather a continuous management activity capable of changing a company’s approach to cost and energy conservation in a comprehensive manner.
* Commitment and consistency are the core of key success factor of EnMS programs implemented by PT. Unitex.
* Recognition that energy-related issues are not only the responsibility of the government or management, but also the responsibility of every individual throughout the facility.

Overall Improvement of The System
The improvements to the plant and its operations as part of the EnMS implementation are clear, in terms of cost and energy savings, as well as management awareness and improved capacity. The below graph indicates a significant improvement across all 19 parameters of energy management practices since the EnMS implementation.