Cleaner Production Case Study

Electrical Efficiency

This series provides examples of PaCT's advisory work with clients to implement Cleaner Production solutions in the Bangladesh textile wet processing sector.

Energy Supply Versus Demand

Many textile factories in Bangladesh use a combination of electricity sourced from the national grid and electricity produced by on-site generators. Daily load shedding of 4-6 hours results in an energy shortage. As a result, most textile factories rely heavily on natural gas-fired generators for at least a portion of their energy requirement and to overcome the increasing gap between the demand and power supply. Besides, this gap increases the cost of energy, with the cost of electrycity typically ranging between BDT 6.55-11.85/kWh for commercial purposes.

The Hidden Costs of Electricity

Textile factories that improve their electrical efficiency are able to

- conserve resources,
- save energy, and
- increase profitability

Cost savings will be particularly high for factories that rely on expensive CNG/diesel to generate a portion of their electricity. However, improvement in electrical efficiency can possibly result in resource and cost savings.

Find the Right Solutions, Lower Your Costs

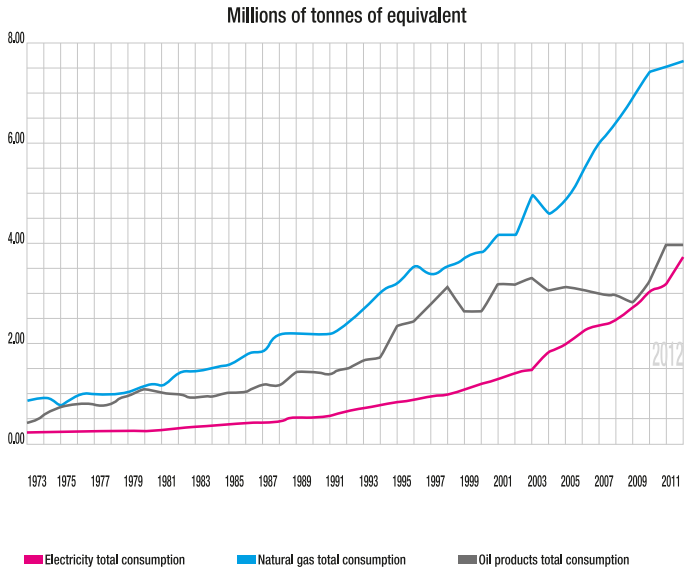
- Install gas flow meters at individual generators to measure efficiency
- Upgrade T8 tube lights to more energy efficient T5 tube lights, with electronic ballasts, or LED lights
- Find and repair compressed air and vacuum leaks
- Carry out proactive electrical maintenance
- Install Power Factor Improvement panels
- Mount energy meters in different areas
- Install VFDs in variable load areas
- Install energy efficient motors
- Install air trigger nozzles

Cleaner Production (CP) is an integrated strategy to maximize profits by making more efficient use of inputs (such as energy, water, raw materials), while maintaining or increasing production and minimizing waste and pollution at source.

PaCT Partnership for Cleaner Textile

The Bangladesh PaCT: Partnership for Cleaner Textile is a holistic program that supports textile wet processing factories in adopting cleaner production, and that engages with brands, government, communities, financial institutions, and other stakeholders to bring about systemic, positive environmental change for the Bangladesh textile wet processing sector, its workers, and surrounding communities, and to contribute to the sector's long-term competitiveness.

Growth of energy demand by fuel source in Bangladesh



Source: International Energy Agency (IEA)

Small changes can save a factory resources and money.

See how Apex Holdings Ltd. managed to reduce energy consumption

Client Spotlight: Apex Holdings Ltd.

Spinning & Knitting Mills Ltd. and Apex Yarn Dyeing Ltd., sister concerns of Apex Holdings Ltd. produce an average of 35.5 tons of finished fabric per day. The factory's energy requirements are supported by seven on-site generators, as well as power from the Rural Electrification Board.

Challenge

AHL worked with PaCT project experts to identify resource efficiency measures that would make the factories more efficient and save money. Highest savings resulted from energy efficiency measures.

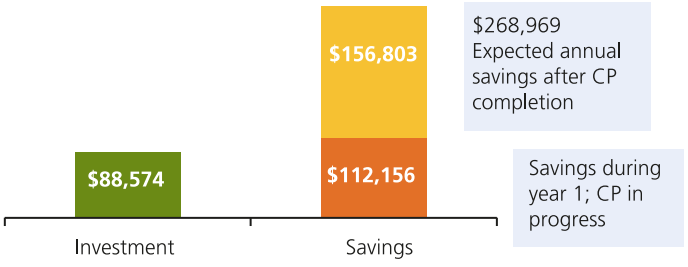
Cleaner Production Lets You Save More

Energy meters were installed within all distribution boards to measure AHL's power consumption. Gas flow meters were also installed to measure the efficiency of individual gas generators. Power consumption was found to be 1.96 kWh per kilogram of finished fabric. It was estimated that by lowering the energy requirements per kilogram of finished fabric, AHL could save US $269,000 per year.

Saving Resources, Seeing Results

AHL implemented several energy efficiency measures recommended by PacT project experts. In total, AHL invested only US $89,000. Savings of approximately 40%, or US $45,681 were achieved from electrically efficient lights and motors, alone. The payback period was only eight months.

Apex's investment versus savings from CP



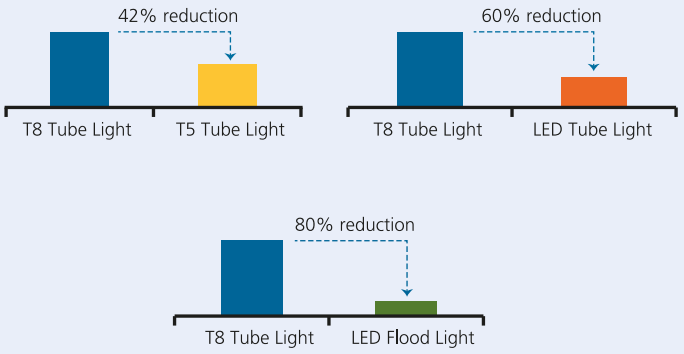
A Mindset for Success

Commitment is an important prerequisite for successful implementation of a cleaner production program. This commitment was reflected in AHL's investments in improving electrical efficiency.

Key Efficiency Measures

- Replaced T8 tube lights with 6500 pcs T5 lights
- Replaced T8 tube lights with 3000 pcs LED tube lights
- Replaced metal halide and T8 tube lights with 100 pcs LED flood lights

Annual electricity consumption of Apex Holdings Ltd. for old versus new lights



Client Results

- Payback period of only 8 months
- Savings of US $269,000 annually for an estimated period of 10 years
- Savings of 14,23,344 kWh in energy

Director
Apex Holdings Ltd.

"Being part of the PaCT project has been very valuable in raising awareness on the importance of energy and water conservation. We have been able to identify and improve key areas in our production to reduce our water and energy footprint. The PaCT project has allowed to realize important financial savings but more importantly it has given us the opportunity to work on building a sustainable enterprise."

'Green Lighting Options' Help AHL Save

T8 tube lights use inefficient magnetic ballasts and cause uneven lighting. On the other hand, the T5 lights use efficient electronic ballast that does not cause flickering. New generation T5 lights use shaped reflectors and provide more natural light, exhibiting true colours of dyes on the factory floor. Hyper efficient LED lights are now available; however they are still too expensive for most factories.