case study

ENERGY MANAGEMENT SYSTEMS (EnMS)

Mpact Limited

Agro-processing –2015

BACKGROUND

Mpact Limited, formerly Mondi Packaging South Africa, is one of the largest paper and plastic packaging companies in southern Africa, with 31 operating sites, 24 of which are manufacturing operations, based in South Africa, Namibia, Mozambique and Zimbabwe. Mpact is listed on the JSE and has the leading market position in southern Africa in corrugated packaging, recycled-based carton board and containerboard, recovered paper collection, polyethylene terephthalate (PET) preforms, styrene trays and plastic jumbo bins.

The corrugated packaging division has nine corrugated box plants, each with corrugator and converting facilities, producing corrugated board and boxes. Eight plants are located in South Africa. These are in Gauteng, KwaZulu-Natal, Western Cape, Eastern Cape and Mpumalanga. One plant is located in Namibia. Corrugated customers include producers of agricultural, fast moving consumer goods (FMCG) and other durable and non-durable goods that use packaging primarily for the protection of products in transit and for point-of-sale display.

Mpact is an extensive user of electrical and steam energy. With the costs of fuel increasing significantly over the past 10 years, Mpact has placed concerted effort to reduce the consumption to reduce costs. This prompted Mpact to adopt an Energy Management System (EnMS) through the National Cleaner Production Centre (NCPC)'s Industrial Energy Efficiency (IEE) Project. Focus was given to the corrugated division.

KEY FINDINGS

Over the 2014-15 period, 3 projects were implemented, resulting in a total energy saving of 108 561 kWh, valued at R58 647. With a total investment of R16 000, the estimated average payback period in years was 0,27. A reduction of 72.6 tonnes CO_2e was achieved.

IMPLEMENTATION OF AN ENERGY MANAGEMENT SYSTEM

Mpact corrugated have implemented the following changes:

1. Steam leaks have been repaired and actively managed.
2. Air leaks are now logged into the Supervisory Control and Data Acquisition (SCADA) system.
3. Daylight switches installed on outside lights, compressor house lights and paper stall lights.
4. Established an energy saving awareness campaign for switching off lights that are not in use.

IMPLEMENTATION CHALLENGES

Financial constraints and the lack of specialised resources (i.e. cherry pickers, specially trained personnel, etc.) inhibited Mpact's progress in implementing lighting saving measures. Mpact has since developed a replacement policy that advocates for the gradual phasing out of older and less efficient technologies for energy efficient lighting.

Mpact plans to replace all current steam lines/valves by end of March 2016. It was not feasible to insulate the current lines/valves and then re-insulate the new lines/valves. Therefore, Mpact opted to insulate the lines/vales after the installation as this will save costs associated with installations, labour, etc.

SUMMARY OF INTERVENTIONS

System	Intervention	Capital Cost (ZAR)	Energy saving (KWh / annum)	Savings ZAR	Estimated Payback period (months)	GHG Emission Reduction (Ton CO_2e /year)
Steam	Established a formalised steam leak management system.	None	37 037	20 024	Immediate	2.6
Compressed Air	Introduced a formalised system for detecting compressed air leaks for repair.	None	57 821	31 229	Immediate	57
Lighting	Installed daylight sensors on all external lighting.	16 000	13 703	7 400	0.6	13
Totals		**16 000**	**108 561**	**58 653**	**0.6**	**72.6**

LESSONS LEARNED

- The **ECO process** greatly facilitated the calculation of savings by introducing efficiency measures.
- **Regular follow-ups** are required to ensure that recommendations from the In-Plant Assessment are implemented.
- Regular reinforcement of the **benefits of RECP techniques** reminds companies of the necessity thereof.

FUTURE PLANS

- Mpact is currently in the process of repairing and installing clear sheeting on the production roof. It is anticipated that the company will benefit as a result of the reduced lighting requirements.
- Mpact will use specialised resources, such as cherry pickers, during shut down periods to avoid any unnecessary production stoppages.
- Project teams have been developed to roll out new energy efficiency projects.