ENERGY MANAGEMENT SYSTEM (EnMS)

DISTELL ADAM TAS

Wine and Spirit Manufacture and Bottling – EnMS Expert level candidate plant 2013

BACKGROUND

Distell is a major manufacturer and supplier of liquor brands across the world. In the manufacturing process, Distell employs two production processes: Primary production, which involves raw material procurement, distillation and winemaking; and Secondary production, which involves blending and bottling.

The burning of fossil fuels, mainly for steam generation, accounts for Distell's major impact on GHG emissions. Using 2009 as the base year, the group aims to reduce energy consumption by 25% per litre of packaged product by 2018. By 2012, total reductions had reached the half-way mark with 12.58% and fossil fuel energy usage amounted to 802,315 GJ from all sites.

Similarly, the group aims to reduce electricity usage per litre of packaged product by 15% by the year 2018, using 2009 as the base year. Annual electricity usage for the group was 72,373 MWh during 2012, which reflected a reductions of 10.49%.

Faced with increasing electricity- and fossil fuel costs, it was apparent that Distell required more focus on energy efficiency in order to comply with the corporate targets as well as social responsibility. The IEE Project was approached for assistance. It was decided to initially focus on electricity consumption.

The Adam Tas manufacturing site in Stellenbosch employs both primary and secondary production processes and is the second largest user of electricity in the Distell group. It was selected as the pilot site for Energy Management System (EnMS) implementation. In 2012/13 five employees attended the EnMS 2-day training programme. Subsequently, Distell Adam Tas signed up as a candidate plant for the IEE Project EnMS Expert Level training and two of the plant employees were enrolled as expert candidates.

KEY FINDINGS

Seven projects were undertaken, resulting in a saving of 825,760 kWh, or ZAR 698,526 p/a following an investment of ZAR 956,960 (payback period of 1.4 years). A reduction in GHG emissions of 726133 kg CO_2 was achieved.

IMPLEMENTATION OF AN ENERGY MANAGEMENT SYSTEM

Following an energy assessment in 2012, several energy saving measures were found to be in place, but there was a clear need for an EnMS to manage achievements and track progress. An energy team was established, and this closed the communication gap between departments and put an advancement plan into place. The team formulated a measurement plan to allow for the gathering and collation of accurate, accessible data. The approach to the EnMS implementation at Adam Tas was based on the Plan-Do-Check-Act cycle. The focus for the first phase of implementation was electricity consumption in both phases of production.

An energy policy was drafted and an energy team was established. Data was collected to determine Significant Energy Users (SEU's). The main cooling plant (primary production) and the main bottling plant (secondary production) were identified as focus areas. Energy saving opportunities were identified and reduction targets set. An action plan was devised to reach these targets, and a communication strategy to raise awareness was put in place. Awareness

training for permanent and temporary staff was conducted. Finally, an internal audit was conducted to assess the current standing of the EnMS project.

IMPLEMENTATION CHALLENGES

The split between primary and secondary production, which was one of the reasons for implementing a centralised EnMS, was a significant implementation challenge. The initial energy team was too large and not conducive to the organizational structure, and communication required extra effort.

Collection of primary production data proved to be a challenge. Production volumes affected energy usage, and data was being captured at several different locations in different formats. Attempts to correlate data with actual energy consumption demonstrated that the gathered data was not representative of production levels, and therefore a baseline for energy consumption could not be established. The lesson from this experience was that a more effective data capturing system would have to be devised before a sustainable energy monitoring solution could be implemented.

SUMMARY OF INTERVENTIONS.

System	Intervention	Capital Cost ZAR	Energy saving	Savings ZAR (Average of R0.82/kWh)	Estimated Payback period (years)
Air Compressors	Switch off over weekends	Zero	114 000kWh	R62 700	0
Main Cooling Plant	Plant optimization	R850 00	552 587kWh	R513 903	1.65
Lighting	Replace existing lamps with EE alternatives	R45 900	14 256kWh	R7 840	5.9
Lighting	Replace existing lamps with LED alternatives	R51 060	13 787kWh	R7 582	6.7
Main Cooling Plant	Decommission Freon plant; use under-utilized glycol plant for stabilization	<R10 000	74 880kWh	R41 184	<0.25
Cold Rooms	Timers on cooling compressors (St 24**)**	<R10 000	56 250kWh	R65 317	<0.25

LESSONS LEARNED

- **Structure of team** - The energy team must be correctly structured with clear roles relating to primary and secondary production.
- **Capacity and resources** – sufficient capacity should always be created and adequate resources allocated. This is important so that each team member is able to take ownership of his/her task and ensure continued commitment, especially if the scope of the EnMS is to include other energy sources and SEU's.
- **Awareness of performance** – Energy performance should be made visible throughout the site to promote awareness and validate energy saving efforts.

"Distell is committed to energy management and is using the lessons learnt in the EnMS implementation at Adam Tas towards integration into the ISO14001 EMS at Adam Tas as well as the other production sites."