

Industrial Energy Efficiency Project in South Africa

Case Study – ESO Interventions

Company name	Altech UEC South Africa
Sector	Electronics Manufacture
Year joined IEE Project	2012
Year of interventions	2012/2013
Contact person	Brendan Mayer
Systems of intervention	Lighting and Compressed Air

Purpose of this document:

This document is intended to gather information for use by the IEE Project to generate case studies from which to report and showcase the impact made by the Project. The information will also be used to educate industry on the results that can be achieved through effective EnMS and ESO interventions. In all case studies, the company concerned will be given due credit and will be consulted on content used.

Nature of the document:

Please be as clear and concise as possible, whilst ensuring all relevant information is captured accurately, factually and without bias. Please write in a suitable fashion for reporting. However please note that the final case studies are intended for use by multiple stakeholders and will be edited by the IEE Project from time to time to suit the target audience.

Note: As a minimum, sections 1, 3, 4 and 7 are required.

1. BACKGROUND

1.1 Company profile

Altech UEC SA is a manufacturing plant for Satellite and Terrestrial decoders and other consumer electronics. The primary processes are plastic injection moulding and electronic manufacture and assembly.

Plant profile

The plant is based in Mount Edgecombe, Durban and has a staff compliment of about 700 and operates over 3 shifts, 6 days a week. The site is approximately 13500m².

1.2 Nature of challenges

Due to rising Electrical costs and the inability of Eskom to continuously supply, it is necessary to try and reduce usage. We got to hear of this programme, probably from the DAC. It seemed like a good opportunity to kick start our energy reduction activities and the opportunity to learn best practice.

2. OVERVIEW OF IMPLEMENTATION

2.1 Steps taken and Interventions

In summary, we tackled lighting, compressed air and new equipment procurement opportunities. These were identified amongst the projects in the report. We also embarked on a programme of communication with staff and addressing poor habits with regard to energy usage.

2.2 IEE capacity building programme

Altech UEC had the following representatives attend IEE courses:

Manufacturing Engineering manager – 2 day workshop - Overview on energy reduction

Manufacturing Engineering manager – 2 day workshop - EnMS implementation

Maintenance manager – 2 day workshop - EnMS implementation

The IEE programme offers more than technical input, it is good for general awareness and keeping the momentum going with regard to the programme. The EnMS implementation workshop was good to assist us with our programme.

3. KEY ACHIEVEMENTS

Key findings table -

Implementation Period (yyyy-yyyy)	11/2012 – 12/2013
Total Number of project	4
Monetary savings in ZAR	253 381
Energy savings in KWh	325 166
Total investment made ZAR	34 500
Payback time period in years	0.14
GHG Emission Reduction (ton CO ₂) ¹	321 914

Altech UEC completed intervention with their lighting installations and compressed air reticulation as recommended in the Assessment report.

The lighting intervention comprised of the replacement of existing lighting technologies with new energy efficient lighting technologies for the most part. Some of the old technology process and external light fittings had not been replaced. Lighting control devices were also introduced to control lighting either manually or automatically where large areas were previously controlled by a single device. The lighting replacement was done via the Eskom Standard Product Package and the cost of the replacement did not exceed the rebate.

The Compressed air system was inspected by an independent specialist and significant leaks were repaired.

The detailed savings are tabled below.

¹ SA Grid kWh to CO₂ Conversion Factor set at 0.99 as per the 'Eskom Integrated Report; 31 March 2012.

4. HIGHLIGHTS OF ESO INTERVENTIONS

Table 4.1

System	Energy Carrier (i.e. electricity, LPG, etc.)	Intervention	Period of Implementation (yyyy-yyyy)	Investment ZAR	Savings ZAR	Payback Yrs	Energy saving (KWh)	GHG Emission Reduction (Kg CO2/year)
Factory Lighting	Electricity	Replaced with new energy efficient light sources	2012-2013	0	101 997	0	121 281	120 068
Internal and External Lighting	Electricity	Replaced with new energy efficient light sources	2012-2013	0	104 594	0	129 085	127 794
Internal Lighting	Electricity	Installed lighting control devices and local light switches	2012-2013	26 100	13 319	1.96	19 055	18 864
Compressed Air	Electricity	Detected and repaired leaks	2013	8 400	33 471	0.25	55 745	55 187
				34 500	253 381	0.14	325 166	321 914

Procurement Considerations

Altech UEC has also amended their procurement strategy to consider energy efficient equipment to replace existing units or additional units required for increased production. They have procured three fully electric injection moulding machines required for additional production rather than the units currently being used. The new units use approximately 50% of electrical energy.

They have also procured new high efficiency ovens for new lines in place of the existing type of ovens. The new ovens use about 40% of electrical energy and radiates approximately 20°C less into the surrounding area which is air conditioned.

Altech UEC have also implemented the use of robot arms to service the injection moulding process with a resultant 20% increase in throughput without any additional extruders.

4.2 Details of interventions

Details of the different ESO interventions:

Factory Lighting

- 400W HID fittings replaced with 250W HID fittings
- 121 281KWh saved annually with intervention cost covered by the Eskom rebate.

Internal and External Lighting

- Old technology internal and external lighting replaced with new energy efficient light sources
- 129 085KWh saved annually with intervention cost covered by the Eskom rebate

Internal Lighting

- Installation of local switches and presence sensors. Zoning of open plan lighting for sensor control.
- 19 055KWh saved annually with intervention costs estimated at R 26 100.00

Compressed Air

- A specialist contractor was appointed to detect leaks in the system and significant leaks were repaired
- 55 745KWh saved annually with an intervention cost R 8 400.00 excluding VAT.

5. PROCESS CHALLENGES

The Eskom lighting scheme was a problem in the beginning because we needed to get directors authority and there was a lack of understanding as to how it would work. The contractor who approached us to do this installed incorrect, poor quality light fittings and it required replacement for many of them. Also a drop in lux was experienced and this caused delays. Generally, it is difficult to dedicate time and effort to these initiatives due to more pressing production issues. We need to overcome this.

6. FUTURE PLANS

There are no further scheduled interventions but we are now always looking for ways to reduce energy consumption or improve efficiency. We have dedicated a resource that is responsible for energy efficiency and energy savings. This forms 70% of his overall responsibility.

The administration air conditioning units have been fitted with timers to switch the units off at night on a trial basis. This will be assessed and made permanent.

7. BENEFITS & LESSONS LEARNED

- Lessons learned by the company throughout the ESO implementation process most of what we have implemented. **We already had on our roadmap. It has helped us focus our attentions and highlight the need to upper management.**

- Lessons learned by the IEE Project for the company's future consideration. **The need for a structured EnMS has probably been the most important lesson and how to go about it.**
- How has the IEE project impacted on the company competitiveness and business culture? **A reduction in Electrical cost is a cost reduction which we strive for. It has also highlighted our intentions to the group at large and has reflected well on our company within the group.**
- Is there any specific quote/message that you would like to share and that has guided/supported you throughout this optimisation process? (Please provide a quote here that may be used by the IEE Project in its communication and marketing). **No**