

ETHEKWINI MUNICIPALITY

**Danida-supported UEM Output in respect to CLIMATE
CHANGE AND ENERGY ACTIVITIES**

Energy Efficiency Clubs – End of Project Report

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1. BACKGROUND

Within the Draft Energy Strategy developed for the eThekweni Municipality, targets for energy efficiency improvements have been set and detailed Action Plans for each sector provided. Within Action Plan 10 (Industry Sector), Energy Efficiency Clubs have been highlighted as a way forward for the industrial sector to meet their targets.

Two Energy Efficiency Clubs were initiated and operated within eThekweni, namely the Mariannhill Energy Efficiency Club (MEEC), and the Durban Automotive Cluster Energy Efficiency Club (DAC EEC). This report summarises the main activities undertaken within each of the clubs and the results (savings and other benefits) reported by club members.

2. MARIANHILL ENERGY EFFICIENCY CLUB

The MEEC was initiated through a meeting held with the Mariannhill Conservancy where the concepts of an energy efficiency club were explained. Based on the positive response received from the members of the conservancy, the MEEC was initiated in March 2008. A total of 8 meetings were held.

2.1 Club Members

The members of the MEEC are listed in Table 2.1. Two other companies, namely Astrafelx and OTH Beier, originally expressed interest in being members of the MEEC, but have not been able to attend any meetings to date. Copies of the minutes and presentations are however still circulated to these two companies.

Table 2.1: List of MEEC members

Name	Organisation
Willem Van Genderen	Mondi Packaging
Michael Weehuizen	BSN Medical
Danny Nel	BSN Medical
Mark Liptrot	DLC Packaging
Neil Davies	Sara Lee
Sam Roopnarain	Sara Lee
Vasco Andre	Ninian and Lester*

*Did not attend past the first 3 meetings.

2.2 Meetings

Table 2 provides the dates, venues and subjects covered at each of the meetings held to date. Each Club member takes turns to host a meeting. Each meeting begins with a recap of the previous meeting and feedback from the Club members on homework tasks set at the previous meeting. In this way discussion between Club members is encouraged.

2.3 Site visits

Site visits were undertaken of BSN Medical, Sara Less, DLC Packaging and Mondi Packaging by Dave Mercer. Reports outlining opportunities for energy savings were provided to the companies.

Table 2.2: Agendas for each of the MEEC club meetings

Meeting	Date	Venue	Subjects covered	Homework tasks
Inaugural meeting	4 th March 2008	DLC Packaging	Background to energy efficiency clubs Identification of barriers and drivers Undertaking a scoping audit The Energy Management Matrix	Undertake a scoping audit Complete energy management matrix
Second meeting	8 th April 2008	BSN Medical	Data gathering Undertaking an electricity audit Introduction to monitoring and targeting	Undertake an electricity audit Identify metering requirements
Third meeting	27 th May 2008	Sara Lee	Setting targets for reduction Compressed air technical training (Part 1)	Prepare an xy-scatter plot of energy use vs production
Fourth meeting	24 th June 2008	Mondi Packaging	Recap of previous meetings Recap of Monitoring and targeting Calculating carbon footprints Compressed air technical training (Part 2)	Determine carbon footprint
Fifth meeting	26 th August 2008	DLC Packaging	Metering – justifying and placing meters Motors and drives	Identify sub metering requirements
Sixth Meeting	25 th September 2008	Mondi Packaging	Update on the Power Conservation Plan Formulating actions plans for end 2008 Steam distribution Systems	Complete checklist provided
Seventh meeting	30 th October 2008	Sara Lee	Power Conservation Programme (Prashunt Lutchman, Eskom)	Determine base year data
Eighth meeting	5 th February 2009	Mondi Packaging	Future of Energy Efficiency Club Refrigeration (air conditioning)	Completing questionnaire

On conclusion of the last meeting, certificates of commitment were handed out to the companies that had attended the majority of the meetings and who had shown commitment to identifying options for reducing energy use. Certificates were awarded to:

- DLC Packaging
- Sara Lee
- Mondi Packaging
- BSN Medical

An example of the certificate is provided in Appendix 1.

2.4 Results

At the end of the eighth meeting a questionnaire was circulated to all club members in order to determine the benefits from being a member of the Energy Efficiency Club (see Appendix 2 for copy of questionnaire) in terms of savings (identified and achieved), the benefits of attending meetings, and suggestions for the future of the Club.

Savings

Companies were asked to list the savings that they achieved as part of the Energy Club, and also the savings that were identified during the course of the Energy of Club. The summary of this feedback is provided in Table 2.3.

Benefits of the meetings

Companies were also asked to report on other benefits of being a club member. Responses included the following:

- Learnt a great deal about the following;
 - metering Electricity
 - Compressed Air, the ways of running the Compressor efficiently for the Plant
 - Boilers and the importance of condensate return, temperature and steam traps
 - Metering water to check for leaks
 - Energy efficient motors and drives
- The meeting generated a lot of discussions on how to make savings
- Networking with other companies and sharing information has been good
- It's great to have interactive workshops within various industries.
- Via the workshops we picked up on possible electricity savings
- Excellent forum for exchanging of ideas & initiatives implemented
- Technical training has proved invaluable with regards to how savings can be achieved
- Greater understanding of measuring energy usage has been obtained
- On site energy savings audit – a number of recommendations have already been implemented.

Future of the Club

Some suggestions as to the future of the Club included:

- A meeting held in 6 months time to verify the savings and obtain an update on the activities at each member site
- Email updates on any relevant information
- It would be beneficial to continue if there are the right number of participants, and if necessary to fund it privately even if we have to reduce the frequency of the meetings to quarterly
- Monthly or quarterly forum to feedback on progress & successful initiatives implemented

Table 2.3: Summary of energy savings for the Mariannahill Energy Efficiency Club

Company	Option Identified	Savings Per annum	Installed/ Potential	Estimated payback
DLC Packaging	Metering of key operations	15%	All Potential	2 years
	Thyristors on all presses (heaters)	40%		
	Variable Speed Drives	10-15%		
	Extraction of hot air	Estimate 15%		
Mondi Packaging	Equalizer power quality solution	10-15%	Installed	3 to 5 years
Sara Lee	Compressed Air Isolating Valves	Not quantified	Installed	Not quantified
	Electricity metering for Refrigeration plants		Potential	
BSN Medical	Installation of onload/offload system on compressors.	Company has made total savings of approximately R220K for the 1 st quarter of 2009.	Installed	Immediate
	Installation of a smaller compressor in C-block airconditioning plant.		Installed	
	Isolation of C-block airconditioning during non production hours.		Installed	
	Redesign of boiler logbook for improved monitoring on boiler efficiency.		Installed	Immediate
	Replacement of Ogden pumps for condensate return to boiler		Installed	
	Upgrade to warehouse lighting with the installation of energy efficient lighting.		Installed	
	Relagging of steam reticulation lines		Installed	
	Implementation of a switch off campaign.		Installed	Immediate
	Installation of day-night sensors on exterior lighting.		Installed	
	Isolation of chilled water to chilled roller during non production hours.		Installed	
	Repair of compressed air leaks & water leaks		Installed	
	Isolation of A-block airconditioning systems during non production hours.		Planned	
	Replacement of one compressor with a variable speed compressor (phased plan)		Planned	
Review of incoming power & adjustment of power factors, maximum demand etc	Planned			

3. DAC ENERGY EFFICIENCY CLUB

The DAC EEC was initiated through discussion held with B&M Analysts who facilitate the Durban Automotive Cluster, and who have initiated an Electricity Interest Group within the DAC. It was felt that the EEC would fit well into the objectives of this interest group.

3.1 Club Members

The members of the DAC EEC are listed in Table 3.1.

Table 3.1: List of DAC EEC members

Company	Representative
Behr SA	Gavin Bromley
Federal Mogul	Ross Peters
Kaymac Structural Foam	Adrian van Zyl
Smiths	Mark Lightley
*Toyota SA	Lino Pucillo
*Toyota SA	Arden Wessels
Dunlop	Warren Reynolds
Smiths Plastics	Brendan Mayer / Sizwe Khanyile
Smiths Manufacturing	Brad Freeman
Smiths Manufacturing	Cameron Chisholm
**Macdonals Precision	Don Bedford
Ramsay Engineering	Malcolm Byres

****Toyota withdrew after the second meeting***

*****Macdonals Precision only attended 1 meeting***

3.2 Meetings

A total of 8 meetings were held with DAC Club members. These are shown in Table 3.2. As with the MEEC, each Club member takes turns to host a meeting and each meeting will begin with a recap of the previous meeting and feedback from the Club members on homework tasks set at the previous meeting. In this way discussion between Club members is encouraged.

On conclusion of the last meeting, certificates of commitment were handed out to the companies that had attended the majority of the meetings and who had shown commitment to identifying options for reducing energy use.

Certificates were handed out to:

- Behr South Africa

- Dunlop Tyres International
- Federal Mogul Friction Products
- Kaymac Structural Foam
- Ramsay Engineering
- Smiths Manufacturing
- Smiths Plastics

An example of the certificate is provided in Appendix 3.

3.3 Site visits

Site visits were undertaken to Behr, Smiths manufacturing and Kaymac by Dave Mercer. Reports outlining opportunities for energy savings were provided to the companies

3.4 Results

At the end of the eighth meeting a questionnaire was circulated to all club members in order to determine the benefits from being a member of the Energy Efficiency Club (see Appendix 1 for copy of questionnaire) in terms of savings (identified and achieved), the benefits of attending meetings, and suggestions for the future of the Club.

Savings

Companies were asked to list the savings that they achieved as part of the Energy Club, and also the savings that were identified during the course of the Energy of Club. The summary of this feedback is provided in Table 3.3.

Benefits of the meetings

Companies were also asked to report on other benefits of being a club member. Responses included the following:

- It helped us focus on the electricity consumption which led to changes in the tariff structure which in turn led to a significant monthly saving
- The largest benefit I found from the various meetings held was the general discussion with all the parties concerned. Issues were brought up either on meeting related topics or other general issues and between the facilitator and members present we were able to find a suitable solution.
- Implementing what I have learnt within my company.
- The monetary and energy saving benefits
- Interacting with other club members
- There has been some good information distributed & learning

Future of the Club

Some suggestions as to the future of the Club included:

- I would support the continuation of the club even at company expense, as I believe that simply sharing information between companies generates ideas and retains focus for ongoing improvements.

- Changing from a meeting every month to a bi-monthly meeting due to current economic crisis. This relates to both funding and available time of various company Champions.
- Companies to contribute funds towards the running of the club and investigate the possibility of other funders.
- DAC & project leaders to keep in contact & pass on information.
- Designate project champion on rotational basis to update status

Table 3.2: Agendas for each of the DAC club meetings

<i>Meeting</i>	<i>Date</i>	<i>Venue</i>	<i>Subjects covered</i>	<i>Homework tasks</i>
Inaugural meeting	12 th June 2008	Smith Manufacturing	Background to energy efficiency clubs Identification of barriers and drivers Undertaking a scoping audit The Energy Management Matrix	Undertake a scoping audit Complete energy management matrix
Second meeting	17 th July 2008	Toyota	Data gathering Undertaking an electricity audit Introduction to monitoring and targeting	Undertake an electricity audit Identify metering requirements
Third meeting	19 th August 2008	Behr	Setting of targets Reporting on variances	Prepare an xy-scatter plot of energy use vs production for a high consumption area
Fourth Meeting	23 rd September 2008	Smiths Plastics	Discussions Compressed air training part 1	Obtain information on compressed air Quantify leaks
Fifth Meeting	21 st October 2008	Dunlop	Discussions Compressed air training part 2	Continue with monitoring and targeting Continue with compressed air monitoring
Sixth meeting	26 th November 2008	Kaymac	Action plans for end 2008 Motors and drives	Complete planning template Survey motors and drives
Seventh Meeting	28 th January 2009	B&M Analysts	Feedback on action plans Calculating carbon footprints	Calculate carbon footprint
Eighth meeting	24 th February 2009	B&M Analysts	Future of club Questionnaire Technical training	Complete and submit questionnaire

Table 3.3: Summary of energy savings for the DAC Energy Efficiency Club

Company	Option Identified	Savings	Installed/ Planned	Estimated payback
Behr South Africa	Tariff change from residential to Time of Use. Switch it off campaign Weekly air leak maintenance scheduling. Reduce temperatures of furnaces during standby periods	R50k per month Difficult to calculate with fluctuating demand Estimate 5% of electricity bill. Not yet calculated	All installed	Immediate
Smiths Manufacturing	Fixing air leaks Installing individual electricity meter Removing cooling tower and installing a heat exchanger for the brazing furnace Replacing old ballast type tube fittings with electronic units	25 to 30% Not calculated Not calculated Not calculated	Installed Planned Planned Planned	Immediate Not calculated Not calculated Not calculated
Smiths Plastics	Installing highbay lights Fixing compressed air leaks Installing cooling tower fans Optimizing Fans Optimising lighting and air conditioning Installing blankets on moulding machine barrels Installing fan controls on paint booths Installing ball blankets on plating bath tanks Optimsing geysers	Not provided	Installed Installed Installed Installed Planned Planned Planned Planned	No calculated

Company	Option Identified	Savings	Installed/ Planned	Estimated payback
Kaymac Structural Foam	New t/bay light fittings(3x) Geyser temp. set to 55 deg C Running 2 compressor in place of 3 Reduced all air leaks	Not provided	Installed Installed Installed Installed	Not calculated Immediate Immediate Immediate
Federal Mogul	High users Load shedding Tariff periods Shutdowns Geyser Showers Compressed air	Not provided	Installed Installed Installed Installed Planned Planned Planned	Immediate Immediate Immediate Immediate 18 months 6 months Not provided
Ramsay Engineering	No response at time of writing report			
Dunlop Tyres	No response at time of writing report			

4. SUMMARY

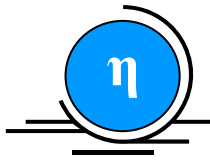
Based on the outcomes of these pilot Energy Efficiency Clubs, the following points can be noted:

- It was a successful method of providing information and training on energy efficiency techniques to industry
- The “club’ concept was successful in that it allowed for interaction between different companies and allowed for the exchange of information and ideas.
- Having regular meetings ensured that energy efficiency was kept as a priority within the participating companies and maintained the momentum of energy efficiency projects.
- The participating companies all identified and implemented energy efficiency projects which reduced energy consumption and saved money.
- Lack of commitment from some of the companies with respect to attending meetings and implementing changes was noted. This could possibly be due to a lack of commitment on the part of the company management and it may be useful for future clubs for more senior management to be involved in the recruitment stage to ensure this commitment is obtained.

All companies that participated in the clubs commented that it was beneficial both from a technical and social point of view. The majority of members would have liked to see the club continue in some form or another and these possibilities are being investigated.

APPENDIX 1:

**COPY OF CERTIFICATE OF COMMITMENT FOR THE MARIANHILL ENERGY
EFFICIENCY CLUB**



ENERGY EFFICIENCY CLUBS

saving energy - saving money - protecting the environment

Declaration of Commitment

COMPANY NAME

hereby commits to the

Mariannahill Energy Efficiency Club

By making this declaration, the company shows commitment to:

- ♦ *implementing a programme of energy efficiency*
- ♦ *reducing the consumption of energy (electricity, steam, HFO, etc.)*
- ♦ *reducing the generation of waste related to energy consumption at source*
- ♦ *continual improvement*
- ♦ *establishing a monitoring programme*
- ♦ *reducing environmental impact*
- ♦ *sharing information with other club members*
- ♦ *attending regular club meetings*

Signed this _____ day of _____ 2009 in _____

For the company

For the Club Management



RICHMOND MARIANNHILL CONSERVANCY



APPENDIX 2:
COPY OF QUESTIONNAIRE

Company name:	
Company address:	
Project champion (s):	
Contact phone number:	
Contact email:	
Number of meetings attended:	

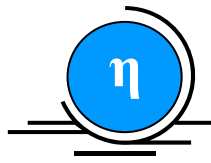
How have you benefited from being a Club member?
What suggestions do you have to continue the Club activities in the next year (bearing in mind that there may no longer be any funding)?

Please list any energy projects and the savings made since becoming a member of the Club.				
Description	Type of saving (electricity, steam, water)	Capital cost	Saving (Rands / percentage)	Payback

Please list any planned energy projects and the projected savings.				
Description	Type of saving (electricity, steam, water)	Capital cost	Potential Saving (Rands / percentage)	Payback

APPENDIX 3:

COPY OF CERTIFICATE OF COMMITMENT FOR THE DAC ENERGY EFFICIENCY CLUB



ENERGY EFFICIENCY CLUBS

saving energy - saving money - protecting the environment

Declaration of Commitment

COMPANY NAME

hereby commits to the

Durban Automotive Cluster Energy Efficiency Club

By making this declaration, the company shows commitment to:

- ◆ *implementing a programme of energy efficiency*
- ◆ *reducing the consumption of energy (electricity, steam, HFO, etc.)*
- ◆ *reducing the generation of waste related to energy consumption at source*
- ◆ *continual improvement*
- ◆ *establishing a monitoring programme*
- ◆ *reducing environmental impact*
- ◆ *sharing information with other club members*
- ◆ *attending regular club meetings*

Signed this _____ day of _____ 2009 in _____

For the company

For the Club Management

