32R – 3003 Linencare

Trialling the Aquamiser and Energymiser technology in the commercial laundry

November, 2007

`Name:	LINENCARE
Project Description:	A PARTNERSHIP IN SAVING WATER
Date of Report:	8/11/07

1.Background

Linencare is a commercial laundry based in North Geelong. Linencare processes approximately eighty five thousand kilos of linen per week, predominately to the Healthcare sector and is the second largest corportised laundry in Victoria. Major customers include Geelong Hospital, Northern Health, The Royal Dental Hospital, The Metropolitan Ambulance Service, Bundoora Extended Care, Broadmeadows Health Service, Colac Hospital, Werribee Mercy Hospital and Western Private Hospital.

Linencare, like many organizations, has become increasingly aware of the need to conserve water and began to look at initiatives that would result in water and energy savings. We found, through various avenues, that technology was available to reduce water and energy consumption whilst at the same time, reducing environmental impacts. We began to look at how we could fund such a project. We became aware of funding opportunities through the Smart Water Fund, to financially support such projects and as a result, submitted a business case to Barwon Health for approval. (Linencare is a independent business unit of Barwon Health) Barwon Health approved the project and our application submitted to the Smart Water Fund was eventually approved.

Linencare, with the support of the Smart Water Fund, has installed an advanced water filtration unit (The Aquamiser) and Heat recovery unit (Energy Optimiser). The Aquamiser filters water down to 25 micron and reuses this water in our washing/laundering process. The Energy Optimiser uses hot effluent normally discharged to sewer, to pre heat cold fresh water resulting in significant energy savings.

The project has been designed so to evaluate and develop a process that identifies water and energy savings. This has been achieved by installing water metres/data loggers on both our washing systems. The metres have recorded accurate water consumption prior to the installation of the Aquamiser and Energy Optimiser thus allowing accurate and transparent saving once the units were fully operational. Energy usage was also recorded so to establish savings on steam, gas and electricity.

We believed that the introduction of this new technology would ;

1. Reduce water consumption by approximately 40%
2. Reduce Trade Waste discharge by the same
3. Improve the quality of the waste discharged to sewer by improved filtration and lower discharge temperature
4. Decrease energy costs, i.e. steam, gas & electricity.
5. Increase production output from our Continuos Batch Washing System

This project has a number of important partnerships which includes the Smart Water Fund, Barwon Water and our Chemical supplier, Ecolab.

Ecolab were responsible for the installation and commissioning of both units and training of our staff. This partnership ensured that the integrity of our washing systems were maintained without compromising our washing process or trade waste agreement with Barwon Water.

Pro-Jo Engineering were employed to carry out the installation, under the supervision of Ecolab.

This involved the installation of a sedimentation tank, which is stored under the main batch washing system. The sedimentation tank provides the facility to store used water prior to the filtration process and is linked via pipe work to the Aquamiser and Energy Optimiser. The heated effluent is pumped from the sedimentation tank to the Energy Optimiser which uses the heated effluent to heat cold fresh water used for rinsing. This heated water reduces steam and energy consumption in the washing and drying process. After passing through the Energy Optimiser, the waste water is then captured and pumped through the Aquamiser where it is filtered and stored in another holding tank and then returned to pre wash in the first module of the continuous batch washing system. Any excess water not used in our main batch washing system is stored in a 8,000 litre holding tank and a pressurized pumping system is used to pump this filtered water to our secondary washing system- washer extractors. This water is also used in the pre-wash (first washing) process.

2. Description of Project

The project has involved the installation of an Aquamiser (advanced water filtration unit) and Energy Optimiser (Heat Exchange unit) to assist in reducing the reliance on water and energy resources throughout the operation of the laundry.

The Aquamiser and Energy Optimiser are housed in a small shed (approximately 4 metres x 3 metres) which is located outside of the main laundry close to our washroom machinery.

The project involved the installation of a sedimentation tank installed under our Main Batch Washing System. This vessel provides the facility to capture water prior to the filtration process. This water is then pumped from the sedimentation tank through the Energy Optimiser transferring thermal energy to heat fresh cold water which is then used in our rinsing process. As the water is pre-heated, the amount of steam required to be injected into the washer to heat our cold water in the washing process is significantly reduced. Higher rinsing temperature also equate to shorter drying times resulting in gas and electricity savings.

The water is then transferred from the Energy Optimser to the Aquamiser . The Aquamiser is a system that filters water to achieve savings through reuse of 'cleaned' water. The system removes lint, sand and other particles down to 25 microns.

The filtered water is used in the pre wash cycle of our Continuous Batch Washer which processes approximately 95% of Linencare total volume per week. Any excess filtered water not used in the pre-wash cycle on our Continuous Batch Washer, is captured and stored in a 8000 litre holding tank. The holding tank has pressurized pumping system that pumps this filtered water into our secondary washing system and again is used in the pre-wash. These machines are called washer extractors and are used for specialised washing processes such as rewash which is a dedicated process used to remove stubborn stains from linen.

Apart from the water saving which are permanent, the project has delivered some positive environmental impacts. As our water consumptions has been reduced there has also been a significant reduction in the amount of water discharged to sewer. Trade waste, due to the reuse of filtered water has been has been reduced by 54%

The quality of water discharged to sewer has been improved due to the filtration process, as there are three pre filtration devices, which are used to filter water prior to the main filtration process. The have been no adverse affect on our trade waste in terms of chemical concentrations and we continue to comply with our trade waste agreement with Barwon Water.

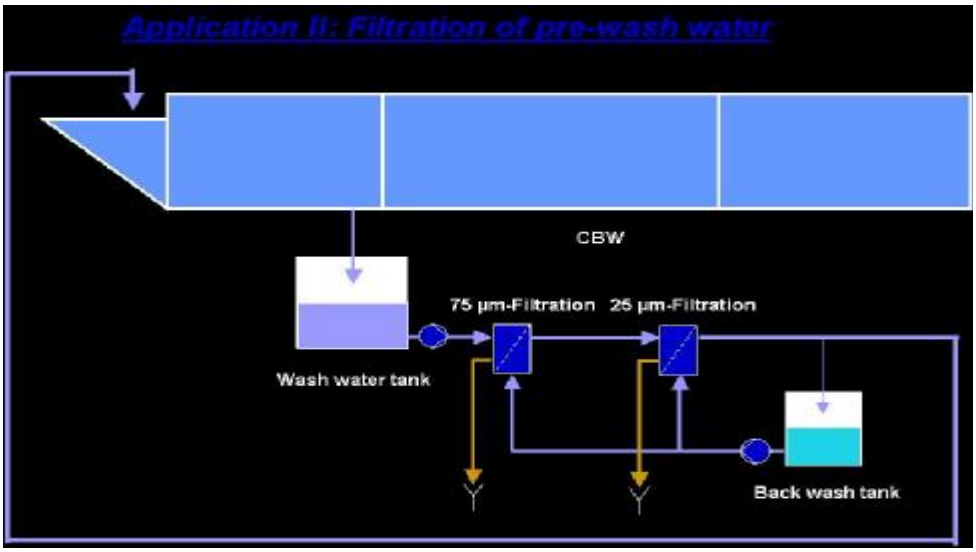
The installation of the energy optimiser has also reduced the temperature of the effluent to sewer to around 30 degrees Celsius, (down from approximately 35 degrees Celsius) which has further improved the quality of the waste discharged.

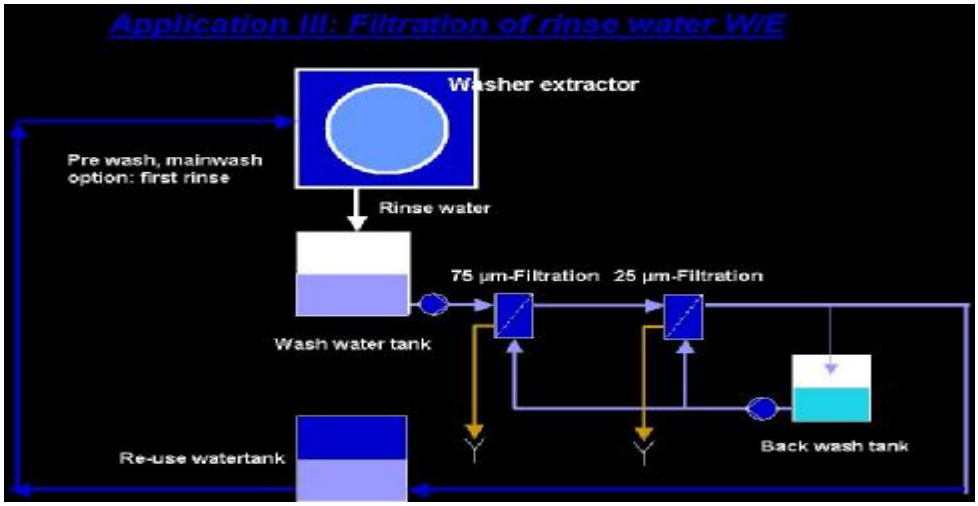
Operation and Maintenance

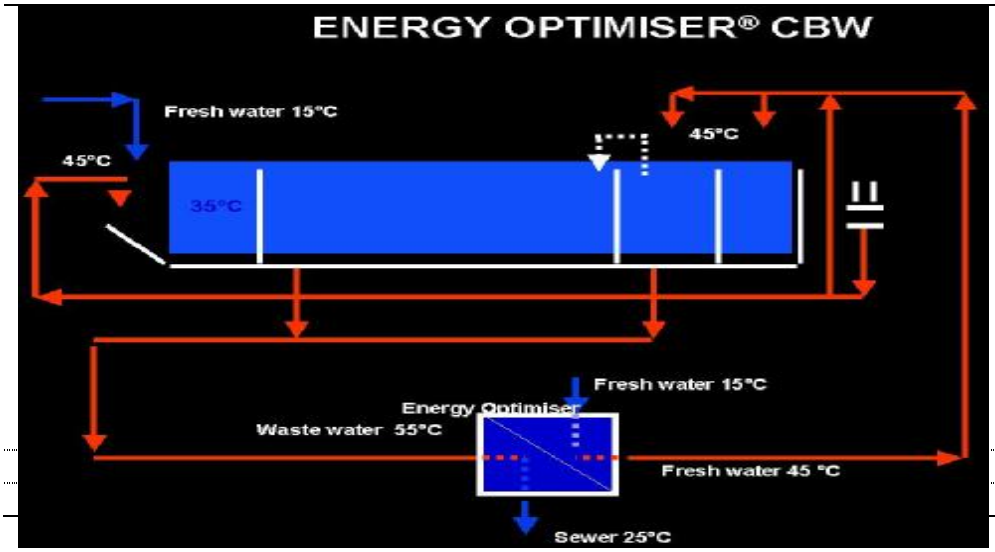
The Energy Optimiser is a self cleaning, non-fouling unit which is compact with low maintenance requirements. It is easy to install and no pre-filtration is required. The Energy Optimser has a self cleaning rotar which revolves in the stainless steel tank. Cold fresh water flows inside the rotar with the heated effluent flowing on the outside of the rotar.

The Aquamiser (Advance water Filtration Unit) is a self cleaning and is designed to operate continuously with minimal maintenance. The filters are self cleaning and the unit has a low space requirement (2M sq) The unit is simple to maintain wit h the bulk of general maintenance revolving around housekeeping in ensuring the holding tank on the Aquamiser is cleaned on a regular basis to avoid accumulation of lint, sand, grit etc. Internal rubber filters are cleaned on a bi-monthly basis.

Both units, in the event of mechanical or electrical failure ,can be switched over to manual override to avoid any interruption to our normal production cycles.







3. Key Activities Completed

After the initial installation and commissioning of the Aquamiser and Optimiser, Linencare has continually monitored water and energy consumption. Comparisms have been made so to establish an accurate data base on the benefits of this project.

In line with Linencares project and communication plan, Linencare has also :

Promoted the project highlighting achievements of the importance of water and water conservation through the peak Industry bodies, "The Textile Rental Laundry Association 'and the "Victorian Institutional Laundry Association".

Promoted internally the project within Barwon Health highlighting the outcomes that the project has delivered whilst encouraging staff to save and use water wisely. (Barwon Health has a workforce of 4500 plus 1500 volunteers.

Has encouraged, promoted and generated interest and the benefits of such projects within the Laundry Industry as well as other Industry sectors through exposure gained from winning the Regional Business categorty of the Save Water Awards, from being a finalist in the Geelong Advertier Business Excellence Awards and general exposure through the media and peak industry bodies.

Has raised the profile that industry has to play in conserving water and energy consumption and reducing environmental impacts.

Has demonstrated how Industry can work in partnership with Water Regulators and The State Government- Smart Water Fund to achieve common goals and deliver outcomes that benefit the entire community.

4. Results Achieved

After monitoring for a period of twelve months, Linencare has achieved the following;

An annual reduction in water consumption of 43%
A annual reduction of trade waste of 54%
A annual reduction in steam consumption of 21.5%

A annual reduction in gas consumption of 12%
An annual reduction of electricity consumption of 10%

In line with our project and communication plan, Linencare has gained exposure and promoted this project in line with out objectives.

Articles have appeared in two of Barwon Health's internal news letters - "Making Waves" and "From the CEO Desk". These articles are circulated to 4500 staff and 1500 volunteers at Barwon Health via hard copy, intranet and internet providing updates on the Smart Water Fund Project.

Articles have also appeared in the Saturday's edition of the Geelong Advertiser on the 2nd of September 2006. The Geelong Advertiser circulates its newspaper in the Barwon Region, The City of Greater Geelong, The Surf Coast Shire, The Borough of Queenscliff, The Golden Plains Shire and the Colac Otway Shire.

The Geelong Advertiser has a circulation of 123,000 papers on a Saturday.

The official launch was held on the 5th of September 2006 with the Manager of Linencare making a presentation on the project. Prominent attendees at the launch included representatives from Barwon Water, Melbourne Water, City West Water and member of the Barwon Health Board as well as the Geelong Advertiser and Industry representatives.

Additional exposure increasing awareness of the project appeared in the Geelong Advertiser on the 6th of September 2006. The Geelong Advertiser has a circulation of 78,000 during the week.

Presentations have also been made to the peak Industry body " The Textile Rental Laundry Association " that represent the majority of major laundries that operate in Victorian encouraging them to investigate similar technology to reduce water consumption and funding opportunities available which they may wish to apply for.

An article also appeared in a publication from Ecolab (Textile Care News) in December 06 given additional exposure to the benefits of installing an aquamiser and the project undertaken at Linencare. Textile Care News is distributed to many major Laundries that operate in Victoria.

Linencare were winners of the prestigious 2007 Save Water Awards (Regional Business) with exposure of the project appearing in the Geelong Advertiser on the 27th March 07 as well as the Age Newspaper.

Additional exposure through Barwon Health's internal news letter (New from the CEO Desk-publication - June 07 to 4500 staff and 1500 volunteers through hard copy/intranet /internet on the water saving initiative congratulating Linencare on winning the Saver Water Awards.

Barwon Water also published an article on the Save Water Awards which was sent out with each Water Rate notice further giving exposure to this project.

Linencare were also finalist in the 2007 Geelong Business Excellence Awards for the installation of the Aquamiser and Energy Optimiser.

The Manager of Linencare, Graeme Nimmo represents the peak industry body (The Textile Rental Laundry Association) on Water, Trade Waste and compliance. The industry body is currently working with the Australian Industry Group, The Department of Sustainability and Environment and Sustainability Victoria to improve the performance of commercial laundries by implementing projects and actions which result in real, measurable resource consumption.

A number of similar installation have occurred at two major Commercial Laundries in the Melbourne Metropolitan area and another two water saving initiatives being undertaken in the Victorian regional area.

Signage on trucks will further promote water savings within the community with the message
Linencare- Smart Water User
Don't be a drip
Save Every Drop

A screen saver will be displayed via the intranet, during the upcoming summer months, promoting water conservation and helpful hints on how to save water

Conclusion

The project has been an outstanding success and has delivered the following

- a 43% savings on water consumption saving in excess of 28 million litres of water p.a.
- a 54% reduction in trade waste
- an average 21.5% saving in Steam consumption
- a 12% reduction in Gas consumption
- a 10% reduction in Electric consumption.

Other benefits.

Cleaner trade waste discharged at lower temperatures.
No adverse affects in terms of increased chemical concentrations to trade waste
No adverse deterioration to the quality of processed linen
Increased output/production through our main Continuous Batch Washer

All objectives have been met and the project has had considerable exposure with Linencare winning 2007 Saver Water Awards for Regional Business and also being a finalist in the Geelong Advertiser Business Excellence Awards.

The project has generated interest within our Industry with additional units being installed at South Pacific Laundry and Spotless Linen Service. The introduction of similar technology is being investigated by Eureka Linen Service and Loddon Linen Service have received funding through the Smart Water Fund for introduction of Class A Water to replace the usage of potable water.

Photographs

AUQAMISER

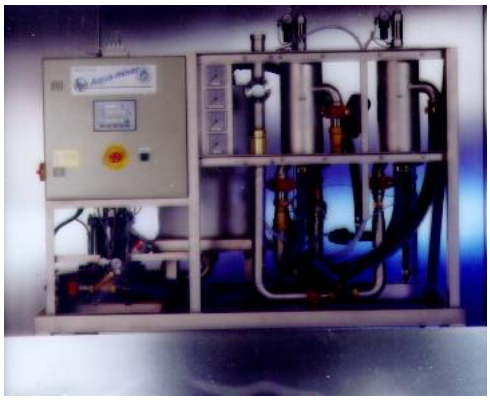
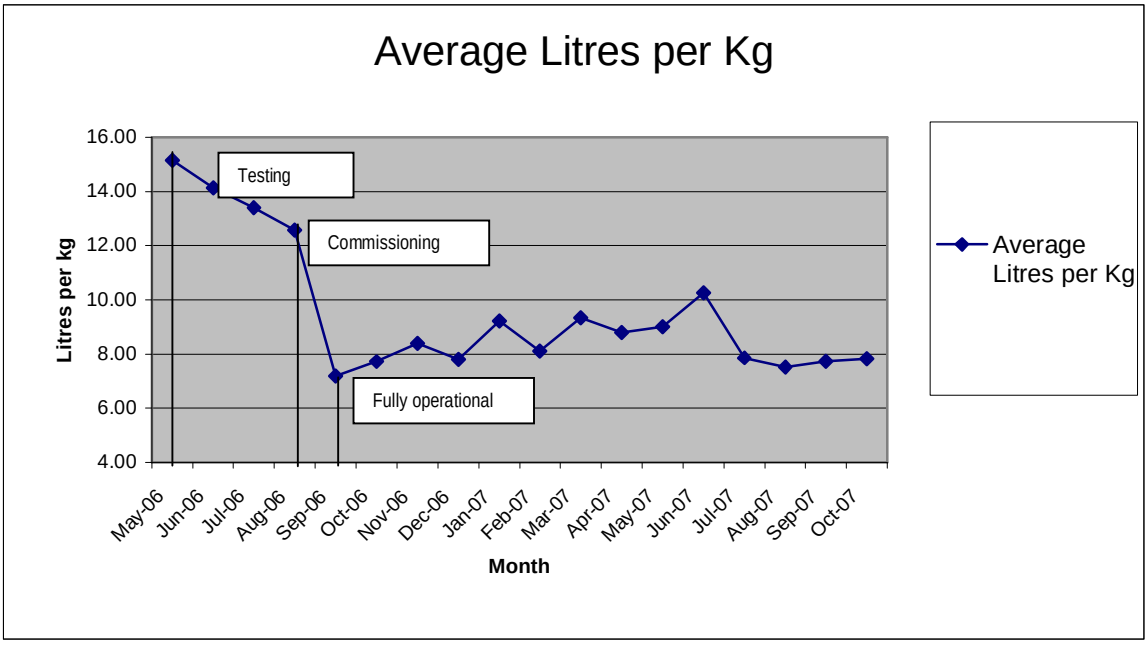


Figure 1. Picture of Aquamiser- Advanced Water Filteration Unit that filter water down to 25 micron and reuses in the pre –wash.



ENGERGY OPTIMISER

Function
Rotar revolves in the Stainless Steel Tank
Cold Fresh Water revolves inside the rotar
Hot Effluent flows on the outside of the Rotar
Heat Exchange is transferred from the outside to the inside

Figure 3. Elevated View- Energy Optimiser.

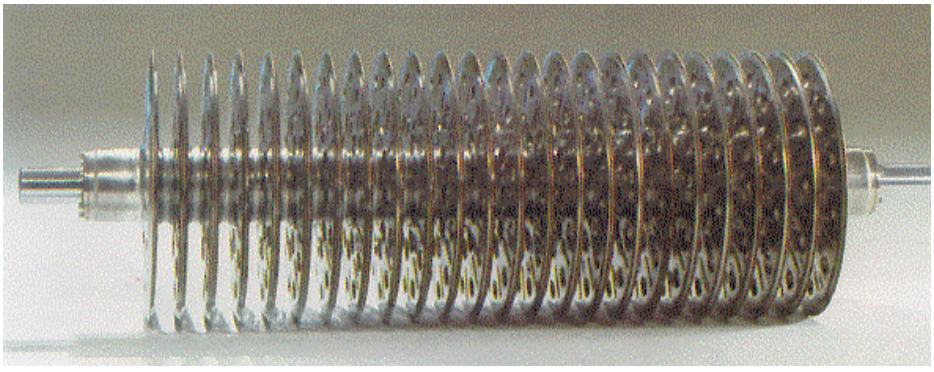


Figure 4. Picture of Rotar

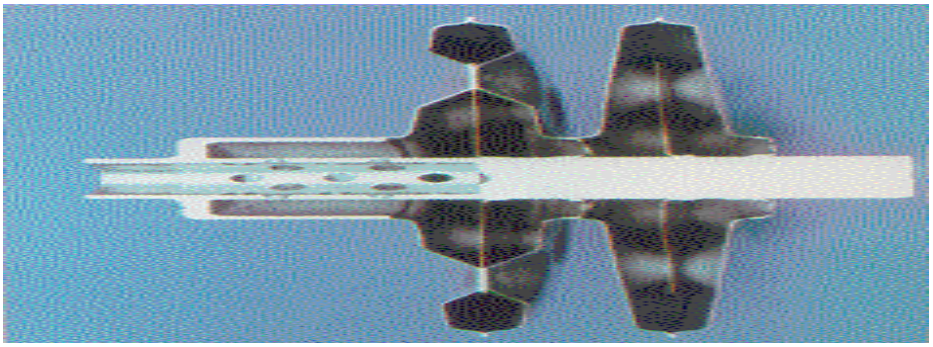
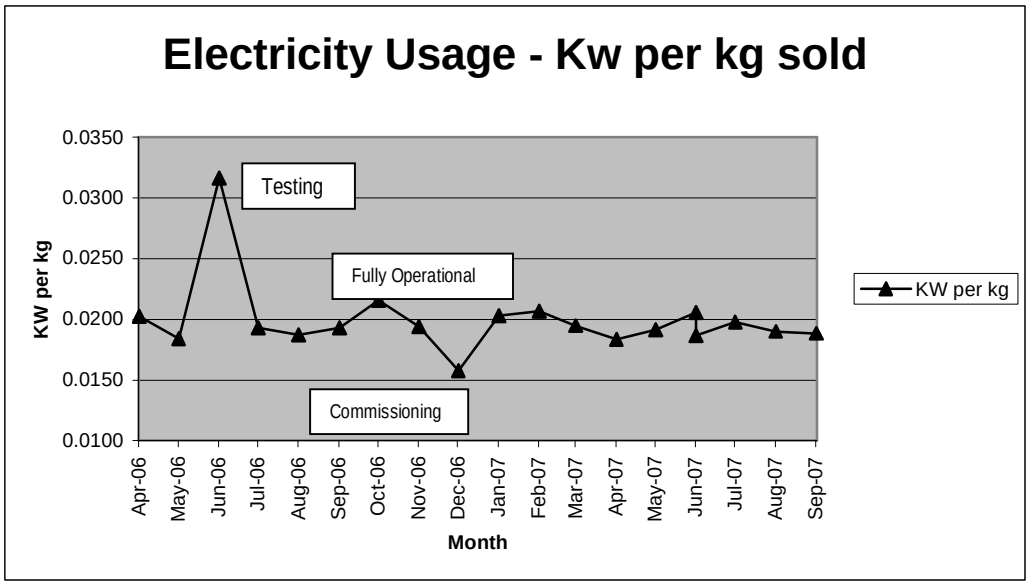
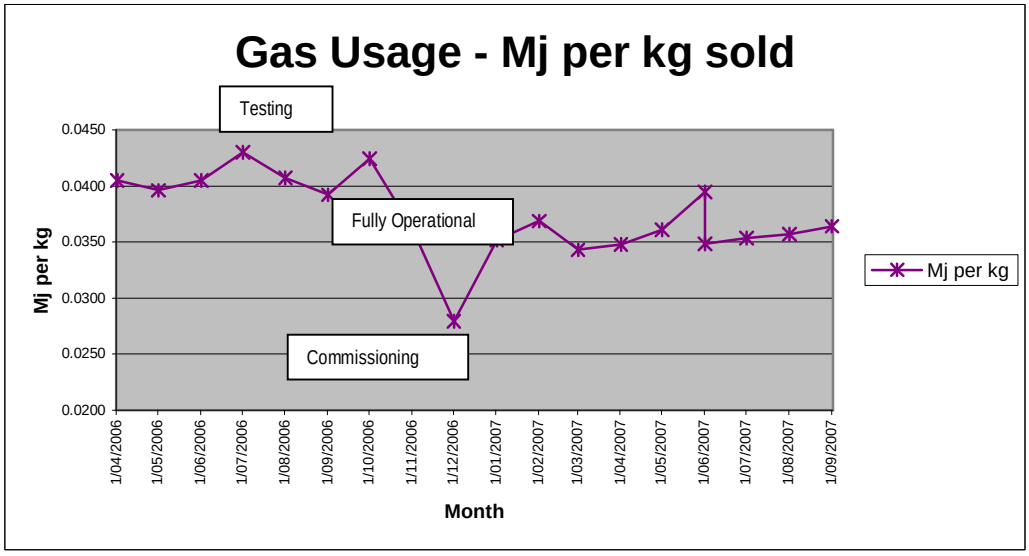
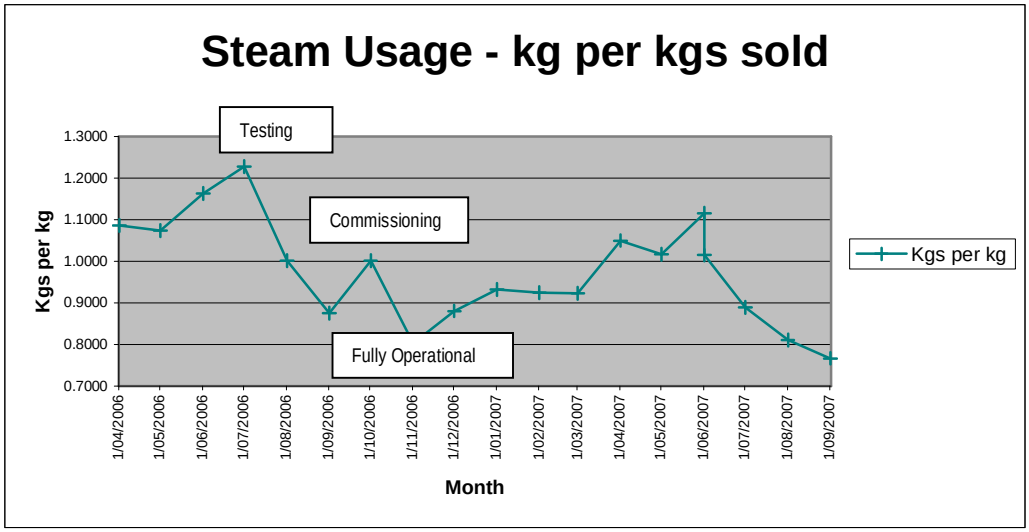


Figure 5. Cross section of Rotar






Steam Usage - kg per kgs sold
Testing
Commissioning
Fully Operational
Kgs per kg
1.3000
1.2000
1.1000
1.0000
0.9000
0.8000
0.7000
Kgs per kg
1/04/2006
1/05/2006
1/06/2006
1/07/2006
1/08/2006
1/09/2006
1/10/2006
1/11/2006
1/12/2006
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Month