

# ECO News

Published by  
ECOsystems Ltd  
PO Box 44-121  
Lower Hutt

Ph. 04 566 3666  
Fax 04 566 0666  
Email:

[econews@paradise.net.nz](mailto:econews@paradise.net.nz)

January 2002

## HAPPY NEW YEAR !

ECOsystems wishes all our readers a safe and prosperous 2002

### New Technology:

#### Energy Automation System (EAS)

As the Australasian representatives for Walker Building and Energy Management Systems, ECOsystems has been developing some innovative integration to make controlling energy more cost effective.

The single biggest advantage of the Walker system after cost effectiveness is ease of operation. Because the system was developed from the beginning with the Internet in mind, control and scheduling of lighting, heating, water heating and ventilation etc. is all done through a simple web browser. Anyone who can use a web browser can use the system to control their energy. No need to learn difficult computer languages.

As previous articles have reported, we use powerline systems as a very cost effective means of sending signals over the existing wiring, to switch lighting and heating. As reported on page 2, we also use C-Bus where appropriate. In order to integrate all these various systems, we have had the C-Bus and powerline protocols built into the Walker chips. For you this means that we can use all these systems and control them through the one browser based Walker system. This makes energy automation very cost effective and ECOsystems has called this integration Energy Automation Systems or EAS for short.

#### In this issue:

- New Technology EAS 1
- Developing relationships with Walker Systems and CBUS 2
- Minister commends ECOsystems projects 3
- Lessons from the Energy Crisis 4
- New Products 5
- Education Projects 6
- New Staff 7
- Regulation, de-regulation and re-regulation 7



A typical screen view from an integrated EAS system



## Walker Systems

In late November, ECOsystems hosted the president of Walker Systems, Al Walker in New Zealand. The skies opened and we had our total average monthly rainfall on the day Al arrived in Wellington and it took 3 hours to get from the airport to the office! While there was little incentive for sight seeing, we made good use of the time to further develop our relationship.

We had productive meetings with Tyco, for whom we are developing some exciting control systems and meetings with Clipsal Integrated Services from Australia with whom we are looking at international opportunities. You can expect to hear more about these projects in the coming months.

Tyco is one of the largest property services companies in the world. While the name may not be so familiar in New Zealand, Tyco owns companies such as NewPower Streat, Associated Electrical, Armourguard, Energy Products, Fuelquip, Kooline, Wormald and Climatech.

Clipsal is a multinational electrical equipment wholesaler based in Adelaide. Currently the largest electrical accessories brand in Australia and Asia; they are also the 5<sup>th</sup> largest in the world.

## C-Bus Lighting Control

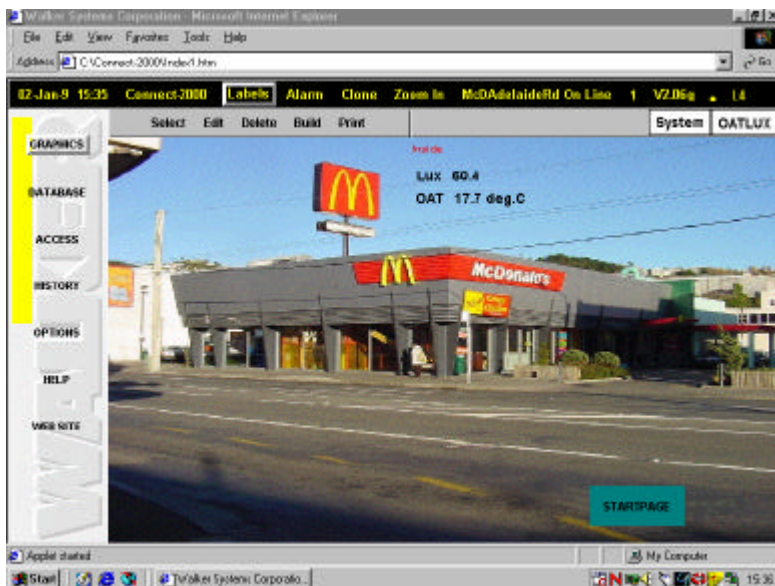
We mentioned our staff having C-Bus training last time. We have now completed our first installation of this lighting control system at a WELTEC. This site has recently had a campus development plan completed with energy efficiency an integral part of it. ECOsystems was contracted to completely upgrade the building controls and installed a power factor correction unit and new light fittings controlled by the C-Bus lighting system. See page 7 for more details on the WELTEC project.

The new flexible learning spaces have the most efficient new T5 light fittings with the majority having dimmable ballasts. The whole system is controlled by C-Bus, which means all the lighting can be controlled by the click of a mouse as well as locally at each room. This means the lights can be automatically switched off when classes are not in use, dimming when there is sufficient daylight and scheduling for holidays up to 12 months ahead. Again this system has been integrated with the EAS so it can all be controlled through a standard web browser for easy management.

Weltec had the following to say after the project was completed:

*“The timeframe for this project was extremely tight and it was necessary to work in very closely with other contractors ... ECOsystems got the job done on time and had a good working relationships with the other contractors. The system to date has been successful and we can recommend both ECOsystems and the C-Bus systems.”*

Since that time ECOsystems has seen great potential with this product and we are now official system integrators of Clipsal Integrated Systems (CIS). What this means for you is that we can purchase this product direct from CIS in Australia, one of only two companies in New Zealand able to do so, meaning significantly lower prices for our clients.



Screen view from an EAS. Anyone who can use a web browser can use an EAS system to control their energy use with a click of a mouse.



## Minister commends two ECOsystems projects

*The following statements come from an article by the Minister of Energy, Pete Hodgson, in the October 2001 Energy Wise News.*

“Setting tougher energy efficiency targets for its own operations shows the government is serious about creating a sustainable energy future for New Zealand. Central government is committed to improving its energy efficiency by 15% within five years. Local government is being encouraged to do the same through the Energy-Wise Councils partnership. This programme has already helped local bodies such as the Hamilton and Christchurch City councils cut their energy costs.”

“The public sector has demonstrated its ability to show leadership this winter, when it achieved a 15% electricity savings target set for it during the period of possible supply shortages. The government is now pushing the sector to make as much as possible of that saving permanent.”

“Public Sector energy management initiatives funded through the Crown Energy Efficiency Loan scheme have already proven their value.”

“Schools like **St Patrick’s College Silverstream** and **Rongotai College** are shaving thousands of dollars a year off their energy bills. Making energy efficiency improvements throughout the public sector will mean money spent on electricity or gas can be spent on schoolbooks or healthcare instead.”



*“Schools like **St Patrick’s College Silverstream** and **Rongotai College** are shaving thousands of dollars a year of their energy bills”*



## Walk Through Energy Audits

While the energy crisis was on, EECA funded, as part of the government’s commitment to identifying energy savings measures, brief walk through energy audits for large energy users. Auditors were required to be members of the Energy Management Association and have relevant prior experience.

ECOsysteMS were contracted to carry out energy audits for a chain of modern rest homes, a number of properties belonging to the Hutt City Council, a number of major commercial office buildings in Wellington, Lincoln University and McDonalds stores in Wellington and Auckland.

Good opportunities were identified in most sites and in a number of cases a more detailed grade 2 energy audit will be completed during 2002.



### News Flash

**Hotels – Wellington YHA**

**A new development, currently nearing completion at Wellington YHA has integrated both the Quantum and the ECO GFX (see new products – pg. 5). YHA have been an early adopter of many energy efficiency measures and ECOsystems is pleased to continue this relationship.**




## A Second National Energy Wise Award for ECOsystems


Two years ago ECOsystems was successful in conjunction with Rongotai College in winning a prestigious national Energy Wise award in Auckland. This past year we were again successful in winning a national award in the event held at the Events Centre in Wellington. This award was based on all the education sites completed in the last few years. Three of these were independently audited by EECA after at least two years of operation.

In 2000 we won the Small Business Award and for 2001 we were Highly Commended in the Projects and Services category. We thank all our clients who made this award possible.

A previous project with Ken Souto (shown above with Scott) at Taranaki Polytechnic helped Ken win his Energy Manager award. We were also thanked by NIWA for completing the energy audit that led to an energy efficiency project at Greta Point, which also won an award.



*One College was, without sufficient warning, put onto the spot market by their supplier, increasing their monthly energy invoice from around \$3,500 to \$8,000!*



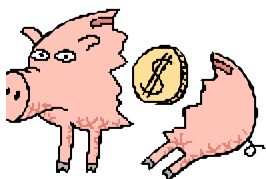
## Utility Auditing Lessons from the Energy Crisis

Our Utility Auditing service manages the purchase of energy for our clients. We not only negotiate energy contracts but also review the contract and monitor the monthly invoices.

Does anyone remember the energy crisis during the winter of 2001? As you can imagine, ECOsystems was exceptionally busy over this time. As well as many calls from upset energy users, we were also asked by Morning Report to comment on the crisis.

Some of the issues, that show the need to keep on top of your energy contracts, are recorded for your information. They may be useful next winter given the current state of water storage!

- a) We had one college that was, without sufficient warning put onto the spot market by their supplier. This increased their monthly energy invoice from around \$3,500 to \$8,000. By carefully reviewing the energy contract we were able to get a full refund of the additional charges. Not only had the supplier given insufficient notice, a clause in the contract specifically stopped them charging the amounts they did. We appreciated that on receiving the challenge, the supplier made a full refund.
- b) During this time a new fast food outlet was established and needed energy. The incumbent supplier with a large national contract for outlets throughout the country would not accept this outlet into their existing contract. When we went to tender, initially only one supplier would offer pricing (we finally managed to plead for two more but when we did get these prices they were much higher). This pricing was approximately double the national contract. You can count on new contracts rising substantially as existing contracts expire. A recent contract for a large multi story office was 20% higher than the contract negotiated 3 years previously.



- c) A recent example shows the importance of checking the facts from your energy supplier even when received in written correspondence. In this case a South Island client had received numerous written communication stating that the peak demand charges were measured at particular times over the three winter months. When ECOsystems was contracted to manage the energy at this site, we installed an Energy Automation System designed to minimise this peak during those times. After noticing that the savings were not what they should be, we investigated and found that the times stated were wrong. The supplier is arranging a credit!
- d) At a large north island boarding establishment, we found the energy supplier had been over charging the demand or line charges for three months. When challenged they promptly issued a refund.

## What is happening to Energy Prices?

Energy prices are on the rise. The main factor for this is a total lack of competition. We have gone from the original regional monopolies (remember local power boards), through private oligopolies (only a few competitors) to the present situation where we have a couple of private companies and three large State Owned Enterprises. As each of these is vertically integrated (have generation and retail energy) and has closely matched the amount of energy they generate with the amount of energy they sell, there is no longer any pressure to get more customers. As well as this the fact that they have all purchased large chunks of customers (very cheaply) from companies such as On Energy, means that they are taken up with managing the integration of these clients into their existing systems. We are now at the same situation as we are with fuel energy retailers. No real competition but a retailer may have a play in the market from time to time to give the impression!

## New Products

### Quantum Water Heating and ECO GFX

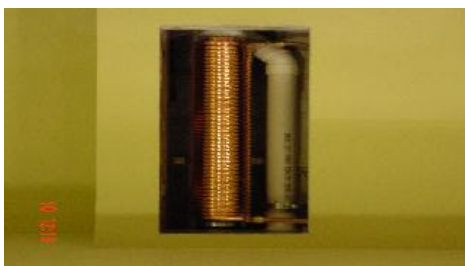
ECOsystems continue to specify Quantum water heat pumps in conjunction with the ECO GFX water-to-water heat exchangers wherever there is a major requirement for hot water. This typically means hotels, hostels and rest homes as well as residential homes. This is an exceptionally efficient way to produce hot water.

The main advantage of Quantum's over solar hot water units is that showers are typically the major use of hot water. Showers are predominantly taken at night or early in the morning when there is very little solar energy available. In the case of solar, the electric elements kick in and the whole idea of using solar heating is defeated. Because the Quantum uses a refrigerant, it is not dependent on the sun shining - just as you get heating from air-conditioning on winter days.

A recent novel integration in the U.S. is the combining of the ECO GFX with an instantaneous hot water heater. This improves the capacity of instant hot water units very substantially and is something ECOsystems would like to develop further in New Zealand.



*Enviro panels for the heat pump hot water units at YHA, Wellington*



*The ECO GFX which recovers waste heat from the showers*

## Project Brief

### Fast Food - McDonalds Porirua

Trevor Campbell, owner of a number of McDonalds outlets has been a strong supporter of ECOsystems since he agreed to an upgrade of this store, which was our second commercial project. Since that time Trevor's support has led to us completing a number of outlets for other franchisees.

Now the Porirua store is undergoing a major re-fit and ECOsystems are delighted to be involved in ensuring the job is completed in the most energy efficient way. Look for very efficient lighting, a full lighting control system integrated with the Energy Automation System which will not only control the air conditioning for maximum savings but also allow all the fryers and other appliances to be programmed and scheduled from the same system.

### Hutt-Mana Charitable Trust

ECOsystems worked with the Hutt Mana Charitable Trust over the past year to carry out six energy audits of local colleges, three of which are currently having energy efficiency upgrades completed over the summer.

In addition the trust funded upgrades of 5 sites. These colleges had previously had energy efficiency upgrades but the funding from the trust allowed us to modernise the controls and dramatically improve the front-end software. This means that the whole system can be managed via a PC and, for example, lighting and heating can be scheduled through a simple web browser to be turned off at the end of each spell, during breaks and when classes are not in use.

We appreciate the opportunity to work with the trust to bring modern energy management to education sites in the trusts area. The results are significant - see article (over) on Wainuiomata High School.



*See Education Projects - page 6 - for more project briefs*

*ECOsystms  
will be  
upgrading 5  
local education  
sites over the  
summer*

## Education Projects

ECOsystms are pleased to be upgrading 5 education sites over this summer period. These projects include the integration of a whole range of energy efficiency measures including, insulation, energy efficient lighting, lighting control systems, energy automation systems, heat pumps and hot water control.

### Wainuiomata High School

One of the sites we are having a large involvement with is the new Wainuiomata High School. This is an amalgamation of two colleges. We are pleased to be working with Rob Mill who is the Principal of the new college and Fiona Christella who is the project architect. ECOsystms previously completed an upgrade of the Wainuiomata College site where Rob was Principal. We have also previously worked on education projects with Fiona and established a good rapport. As part of our involvement we carried out a comparison of the two sites to be merged. Wainuiomata College had an ECO energy efficiency upgrade in 1997 and this was modernised, courtesy of the Hutt Mana Charitable Trust, in 2001. Parkway had never been upgraded. Although Parkway had 100 fewer pupils, it used 60% more energy per pupil than Wainuiomata College. It used approximately 60% more electricity and 30% more gas in the 2001 school year! ECOsystms looks forward to working with Rob to ensure a more efficient site.



### Rongotai College

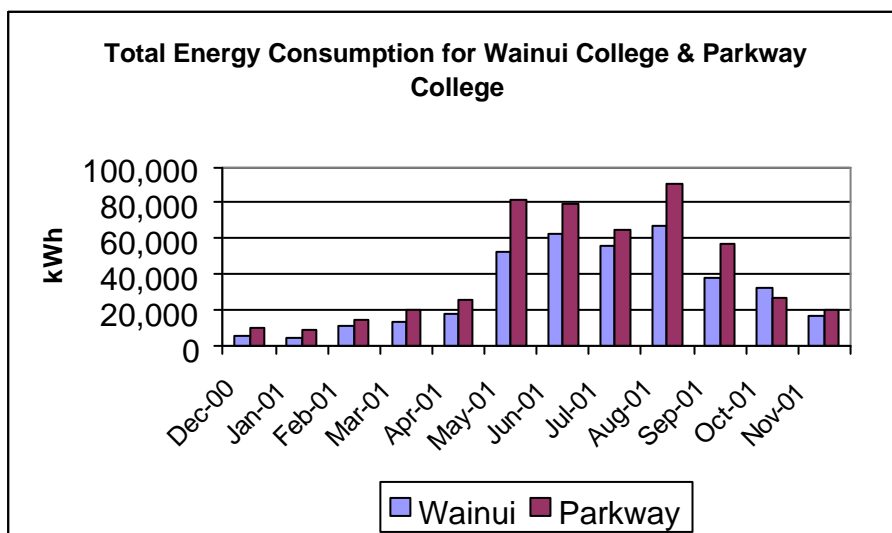
ECOsystms and Rongotai College were joint winners of the 2000 National Energy Wise Small Business Award. Since that time the college has implemented additional energy efficiency improvements as they upgrade various parts of the college. Once the basic Energy Automation System is in place it is very cost effective to add controls to lighting and heating so that they can be controlled from the one system.

Last year, a number of rooms were added to the C-Bus system to maximise energy savings on the lighting. The hardware and software was upgraded to the new Walker system so that Executive Officer, Barry Law can control and schedule lighting and heating from his office using a simple web browser.

ECOsystms encourages all our clients to discuss any upgrades or new developments with us so that energy efficiency can be integrated at the design stage and controls installed during construction. This reduces the costs significantly.



*A Wellington rest home recently audited*



## Regulation, De-regulation and Re-regulation

See the other articles in this newsletter to get some idea about the effects of deregulation of the electricity industry in New Zealand and the US. The latest development in this play has been the spectacular crash of the US energy company Enron. This company developed rapidly when the electricity industry was de regulated in the US. It became the way forward in a new millennium for new companies and was held up as the future of the industry. Its collapse is likely to end up taking many private investors and international banks with them. Its operations became so complicated and diverse, with many 'off balance sheet' ventures, that not even the company's auditors had much comprehension of the total operation.

Many prominent spokespeople are now questioning whether electricity can be effectively de regulated. As one spokesperson recently stated, traditionally, regulated power coexisted with adequate supply and fair prices, but de regulation signals companies to mass the sort of market power that brings price manipulation. Can anyone relate this to the New Zealand scene? He went on to say, "even in a capitalist economy, some major sectors of the economy demand regulation. Clearly electricity is one of them".

The commission that looked into the very high prices during the winter of 2000 in New Zealand, did not find any evidence of price gouging. We believe that these commissions, with all due respect to the individuals involved, do not have sufficient information to be able to identify any but the most blatant breaches.

The commentator went on to say "better to regulate electric power directly, by regulating price and supply, or generate it publicly". At least in New Zealand we still have major generation tied up in SOEs!

The writer's aunt in California, is supplied electricity from the Los Angeles public power utility. They had no increases in electricity prices and no rolling power cuts to conserve electricity. The commentator quoted

above had this to say. "It is hardly accidental that the one oasis of stability immune from the California electric power disaster, was the Los Angeles public power district. The power plants were municipally owned, and there were no profit opportunities – hence, no games to be played with supply or price."

"Theorists of deregulation have contended that competition is inherently more efficient because government intervention is corrupted by politics, while markets are cleanly accountable to investors."

Recent events around the world are certainly calling this into question, especially in the energy sector.

## New Staff Members

ECOsystems is pleased to advise clients that Richard Harbour has joined our team. Originally from Honeywell in the U.K. where he was a controls engineer for 10 years, he more recently worked in New Zealand for Aquaheat and Advanced Building Services. At ABS he managed a number of buildings including; The Park Royal, and ASB and City Towers. Richard looks forward to working with you to manage your sites more efficiently.

More recently Dammika Weerakkody has joined the ECO team. Dammika is originally from Sri Lanka where she completed an electrical engineering degree. Since coming to New Zealand she completed a Masters in Engineering Management at Canterbury University. While in Sri Lanka she compiled an energy balance for the whole of Sri Lanka. Dammika brings detailed energy auditing skills to the company!

ECOsystems has also been restructuring this past year. Previously the Smart Energy division of ECOsystems was a joint venture between ECOsystems Ltd and Smart Energy Ltd, while the Environmental and Utility Auditing Divisions were owned directly by ECOsystems. We have found that there was good synergy between the various parts of the company and, after five years of working together, it made sense to restructure so that rather than joint ventures, ownership of ECOsystems is now shared by the directors. Scott and Frans look forward to working with you to reduce your energy costs further in the coming years. Looking back to 1995 when ECOsystems was established there have been many memorable projects and we would like to take this opportunity to thank our clients for making these possible.



## More energy for Dave?!

Oh yeah ... Dave has a new kidney after many years on the donor waiting list ... thanks so much to the donor! Dave can now look forward to good health and more energy ... how's that for energy efficiency?



## Wellington Institute of Technology (WELTEC)

WELTEC is the result of a merger between the Hutt Valley Polytechnic in Lower Hutt and the C.I.T. of Upper Hutt. By combining the two institutes on the one site in Lower Hutt, considerable redevelopment of this site was called for. Neil Kemp of Stapleton Architects managed the redevelopment.

Not only did all this redevelopment have to be carried out in an extremely tight time frame over the summer break, the main Tower block teaching space on levels ground to 4 was totally gutted and refitted with more flexible teaching spaces. ECOsystems completed an energy audit of the site and was successful in obtaining funding under EECAs Crown Loan Scheme in conjunction with the funding from the Hutt Mana Charitable Trust. This funding allowed a full energy efficiency upgrade to go ahead at the same time and ECOsystems contractors worked in with L.T. McGuinness Ltd, the main contractors, to have the total project completed on schedule.

Apart from the C-Bus lighting control with dimming when the natural daylight levels are sufficient, and new technology T5 lighting, mentioned earlier, ECOsystems also totally upgraded the Energy Automation System. The EAS is controlling the boilers to optimise start and stop times dependent on outside temperatures, controls the air-conditioning units and manages hot water cylinders and electric heating for demand control. We also installed a Power Factor Correction unit, which maximises the efficiency with which the electricity is used at the site.

ECOsistemas has been contracted to complete the remaining floors of the Tower block over the 2001/2002 summer break. Additional control of a multi stack chiller and other ventilation is also being added to the EAS as the re development continues.

As the increased use of classes means much longer running hours, the savings from installing energy efficient products will be maximised.

*Some briefs from our past e-mail newsletters.*

*(To join, just send an e-mail to [econews@paradise.net.nz](mailto:econews@paradise.net.nz) with econews as the header)*

### Distributed Power (DP) or Generation (DG)

This term is likely to become increasingly popular over the next 5 - 10 years. The current fiasco in California where energy companies are practically bankrupt apart from State lending, and where there have been rolling power cuts to protect the whole energy system from overloading, has ensured DP is in the news.

DP means that, rather than energy being produced at massive power stations and transported over crowded networks, some or all of your energy requirement can be produced locally on site. Where there is a surplus this is fed back into the national grid.

This energy could be provided by solar panels, fuel cells or some form of micro generation. Another option is to use this localised generation to provide energy at the peak demand to reduce expensive line or demand charges.

There are still many technical issues to be overcome and standards to be settled. For example, if your local line company switches off the power to work on part of their line, they don't want someone's DP unit switching on and sending 230 Volts down the line being worked on!

Millions of dollars are being spent to develop and commercialise DP. We expect to see viable commercial opportunities in New Zealand over the next 3 to 5 years.

### California Power Crisis

Much has been written about this crisis in February/March 2001. Much of it is also political and of little real relevance to the debate. However from our understanding we noted that there were some lessons for deregulating of utilities.

The main points are:

- 1) The system worked fine until there was no rain and the State, which depends on hydro generation for about a quarter of its requirements, had a severe supply constraint.
- 2) No substantial new generation has been built over the last 10 years while the economy, and with it energy demand, has increased substantially.
- 3) Deregulation required the energy companies to sell off their generation assets.
- 4) The deregulation capped what energy companies could charge customers (the politicians had to put something in for the customers!).
- 5) At the same time, the energy companies had to purchase all their electricity through the Power Exchange (PX) spot market. The idea was to make pricing transparent. The effect though was that the energy supply companies were unable to enter into long term contracts to give certainty of supply.
- 6) Even though there were 3 State agencies involved, no 1 of them had overall responsibility.

With hindsight it is easy to see that once the rain stopped and the summer heat arrived, there was a major shortage. Spot prices increased dramatically so generators made super profits while the energy supply companies could not pass on the increase in costs.