

Auckland laundry cleans up on energy



A “cold call” by energy consultant ESP Ltd’s Frank Chang led to substantial energy savings at Auckland’s NZTS laundry – mostly by drawing attention to items that had been taken for granted. ▶

NZTS-ALSCO LTD MAINTENANCE MANAGER
GRAHAM NOTMAN.

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Item	Cost	Payback
Energy audit	\$3500	
Power factor unit	\$16,000	1.6 years
Clipsal energy controller installed into fluorescent lighting circuit	\$700	
Somar Powerboss motor control unit	\$2000	0.65 years
Daylight sensors installed for fluorescent light circuits on landing	\$262	One month
Automation of switch for plant high-bay lighting	\$250	One month
Discovering and rectifying source of high base load	\$100	One day
TOTAL	\$22,812	

ENERGY SAVINGS

Energy saved in 2003	249,331 kWh
% saving compared to 2002	40%
Annual cost of energy used	\$61,863
% saving compared to 2002	32%
Amount of investment	\$22,812

Auckland NZTS plant maintenance manager Graham Notman is a clever guy and good at his work – as was his predecessor in the same job. But until Energy Solution Providers (ESP) Ltd energy consultant Frank Chang knocked on the door one day recommending an energy audit, the electricity bill hadn't really been questioned. It was just an invoice that came in for payment once a month.

After having an energy audit done and carrying out the most cost-effective recommendations, the Auckland site is spending \$40,000-\$50,000 less a year on electricity and has leapt up the league table against the other branches in the company.

The results have been so good that ESP is lined up to conduct audits for 14 more branches.

Says Notman: "The power bill was something that just came in, \$10,000 a month, we thought it was normal. We didn't think it could be changed."

Notman had to put up a good case and wait a while to get the \$3500 budget for an energy audit. His argument was that if it showed the company was already managing its energy as well as it could, the audit would be a pat on the back. Otherwise, the company would have the opportunity to make cost-effective changes.

ESP managing director Jeremy Allen and energy consultant Andrew Farndon collected the energy

invoices, compiled the audit and made a set of recommendations.

The company

NZTS, which started as a laundry in 1910, operates as a division of AlSCO Inc. AlSCO Inc is a US corporation, with 15 branches in New Zealand. NZTS describes itself as a "textile rental company", supplying businesses with garments, kitchen towels, washroom towels, roller towels and floor mats. The drivers deliver clean items and take away the used items, which are processed through the plants.

The process

The 3600 m² plant in Kingsland, Auckland, uses



NZTS-AlSCO's Auckland branch has saved \$40,000-\$50,000 on electricity in 12 months. Says maintenance manager Graham Notman: "It shows you can't afford to take things for granted. The things we've done are really basic, easy-peasy stuff."



When new equipment is being purchased it will be vetted for energy efficiency. Energy management improvements will be scheduled into the company's financial planning.

1 THE NEW GAS DRYER ON THE RIGHT IS MUCH MORE ENERGY-EFFICIENT THAN THE OLDER ONE ON THE LEFT.

electricity for its production machinery and plant operation, and gas for the dryers and boilers. The washing machines handle loads ranging from 50 kg to 450 kg. The dryers' loads range from 50 kg to 100 kg.

A "continuous batch" washer cleans the unwound and strapped roller towels, tea towels and towels. The roller towels and tea towels are dried till they are damp then rolled through an ironing machine and rewind. A specialised low-pressure room cleans items for customers with the strictest hygiene requirements.

What they did

The audit found several items that could be

changed for little or no cost.

First, it identified a high baseload of power that was on 24 hours a day, even though the facility generally operates only from 6.30 am to 3 pm.

With the electrician, Notman noted the items they knew ran around the clock: PCs, fridges and the fan unit in the clean room. However that load came to only 3 kW, which didn't explain the high baseload.

Says Notman: "The usual procedure [at the beginning of the day] was to come in through the front door, turn off the alarm and turn on the power for the plant. During power cuts in the past the basement had been black – we assumed all the lights went off.

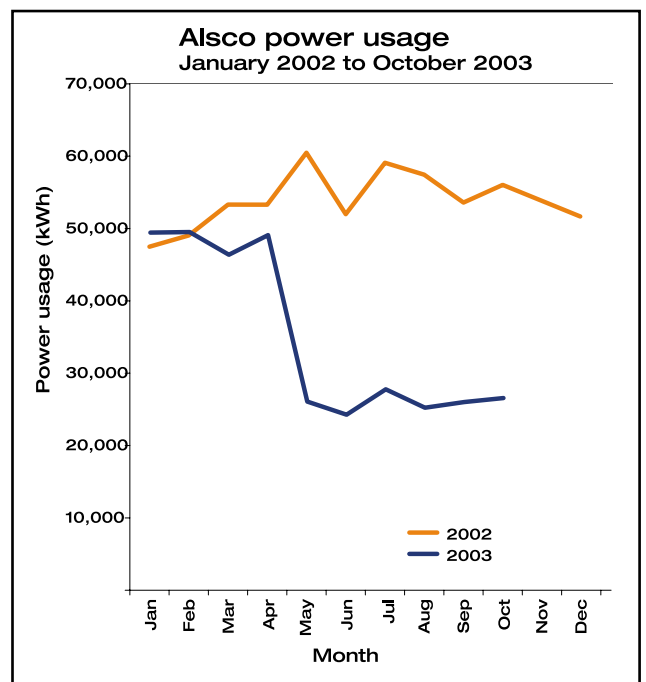
"We wondered what the hell was going on. So I came in on the weekend, left the power switched off and had a walk around. I found a whole series of fluoro lights and high bay lights – all the lights in the basement were on."

The electrician took the basement lights off the 24-hour circuit, eliminating 72 40W fluorescent tubes and two 400W high-bay lamps that had been burning around the clock.

Another change was more obvious: the lights in the loading dock were on a manual switch and were switched off only when anybody thought of it, regardless of the level of natural light. They were necessary when work began at 6.30 am but usually



2 THIS AMERICAN 450 KG SIDE LOADER WASHING MACHINE HAS A POWERBOSS MOTOR CONTROLLER THAT REPAYED ITS COST OF \$2000 IN JUST UNDER EIGHT MONTHS. THE UNIT MONITORS THE ELECTRIC MOTOR AND DELIVERS ONLY AS MUCH POWER AS IT NEEDS.





3 BEFORE, HIGH-BAY LIGHTS IN THE **LOADING DOCK** WERE LEFT ON UNTIL SOMEONE THOUGHT TO SWITCH THEM OFF. NOW, A **DAYLIGHT SENSOR** SWITCHES THEM OFF WHEN DAYLIGHT IS ADEQUATE.

► stayed on after 8.30 am when the sunlight became brighter.

Notman had a sensor installed that switches off the 12 twin-fluorescent lamp fittings when daylight is adequate.

The nearby high-bay lamps are individually switched and can be operated to suit the conditions, but the default position is that a timer switches them off automatically at 8.30 am.

Big savings were achieved by improving the power factor, which had been a low-performing 0.75. This effectively choked the amount of effective power available to run machinery, by up to 25%. A power factor unit installed in the first month of the 2003 financial year brought the power factor up to 0.98 or 0.99.

A \$2000 Somar Powerboss motor controller unit installed on a large washing machine has paid for itself in energy savings in 0.65 years. The Powerboss modulates the power supplied to the motor, smoothing out its stopping and starting, matching power to varying loads and protecting it from excessive wear.

The electrician suggested a Clipsal energy controller for the basement fluorescent lamps that cuts the voltage by around 15% after the lamps have warmed up. The lighting levels still comply with code requirements, but less power is consumed. Says Notman: "We've got one in next year's budget, for the office."

Savings for gas were not so obvious, because the dryers were already operating efficiently. But adjustments to an older dryer eliminated the need for a pilot light to run all the time. Says Notman: "We've got a starting sequence now. And when it stops, it stops burning gas."

Notman looked at using a heat exchanger to collect heat from wastewater, but for now it is not cost-effective. Similarly, the cost of using and discharging water is not high enough to make major water-saving measures cost-effective.

The energy savings and improved power factor have made it possible to reduce the electricity demand from its original 450 kVA, saving money on the power company's maximum demand charge.

The company benchmarks its use of gas, coal, electricity and water per



4 THE **LAVATEC WASHER** COMES WITH THE LATEST **VARIABLE SPEED DRIVE** USING A **SINGLE MOTOR DRIVE**. THE WASHERS ARE **MORE EFFICIENT** THAN OLDER TYPES THAT REQUIRED UP TO FOUR MOTORS.

kilogram washed, against the other branches in New Zealand and Australia. Says Notman: "When the first lot of invoices came in, power consumption was halved. The same thing happened the next month."

He says his engineering boss, Fred Gardyne, has taken the energy efficiency line on board and is open to ideas, so that when new equipment is being purchased it will be vetted for energy efficiency. Energy management improvements will be scheduled into the company's financial planning.

Ongoing savings

Gardyne has engaged ESP to conduct a preliminary audit of all the branches to check energy usage and carry out in-depth audits of around 13 of them.

Power factor units have been installed in Wellington and Christchurch, and another is being installed in Palmerston North.

The Auckland branch has saved \$40,000-\$50,000 on electricity in 12 months, for an outlay of only a fraction of that amount. Says Notman: "It shows you can't afford to take things for granted. The things we've done are really basic, easy-peasy stuff."

During the winter 2003 hydro shortage, when employees were asking what the company was doing to contribute to the 10% Challenge, Notman was able to cite the energy audit. "In the end we had a 40% reduction – a huge effort."

CREDITS

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