

PRODUCT PROFILE Smart Energy

Our Smart Energy division implements integrated energy efficiency projects for commercial clients. Firstly, an investment grade energy efficiency audit is completed to determine energy and maintenance savings and a fixed cost to install the project. We then work with Government and financial partners to obtain funding for our clients.

Our team project manage the resulting energy efficiency upgrade and complete the commissioning. Once a project is complete we recommend an annual health check to confirm the savings continue to be achieved.

Levels of Energy Audits

- The New Zealand Standard AS/NZS 3598:2000 (Energy Audits) sets out the standard required for completing an energy audit.
- A Level 1 audit is an initial overview to investigate the overall energy consumption and determine whether energy use is reasonable or excessive. It provides initial benchmarks so that the effect of any efficiency measures can be tracked and evaluated.
- A Level Two audit identifies the sources of energy to a site, the amount of energy supplied and what the energy is used for. It also identifies areas where savings can be made, recommends measures to be taken and provides a statement of costs and potential savings. A Level Two audit is the most common standard in New Zealand—accuracy of figures would generally be within +/-20%.
- A Level 3 audit provides a detailed analysis of energy usage, the savings that can be made and the cost of achieving those savings. We use high quality meters and data logging equipment to cover the whole site or to concentrate on an individual process or service. A audit of this quality provides a firm estimate of savings and costs—accuracy of figures would be within +/-10%. Most of ECOsystems audits meet the Level 3 criteria.

We develop and offer a wide range of integrated measures to our customers to facilitate the integration of their IT and energy management systems for the purpose of reducing energy costs.

Energy Efficiency Audits

As the first step in energy efficiency management, energy audits identify cost savings that can be made within your business. In buildings where energy efficiency has not been a high priority there are typically very good savings available.

ECOsystems employs accredited energy auditors and all audits are peer reviewed. In addition to qualified personnel, ECOsystems can draw on a wide range of practical experience from many years working with commercial clients.

The cost of the audit is largely dependent on the time required to complete the audit and the level of details and accuracy of costs.

ECOsystems audits are typically based on an end result where you know what the actual costs of installing the energy efficiency measure will be. Typically you can expect to pay between 5% and 10% of your annual energy bill.

The most cost-effective time to complete an energy audit is at design stage.

By looking at replacing standard components with energy efficient ones, we can consider the marginal costs of the more efficient components over the standard items and work out the energy savings of these products relative to this additional cost.

- Reduce your energy costs
- Simply control your lighting, IT, heating, cooling, appliances and hot water from a web browser
- Reduce harmful greenhouse gases

Project Implementation

Once an energy audit has been completed, the next step is to implement the recommendation to achieve the savings. ECOsystems provides practical experience with extensive project management skills.

Our aim is to ensure you get the upgrade completed within budget and you achieve the savings expected.

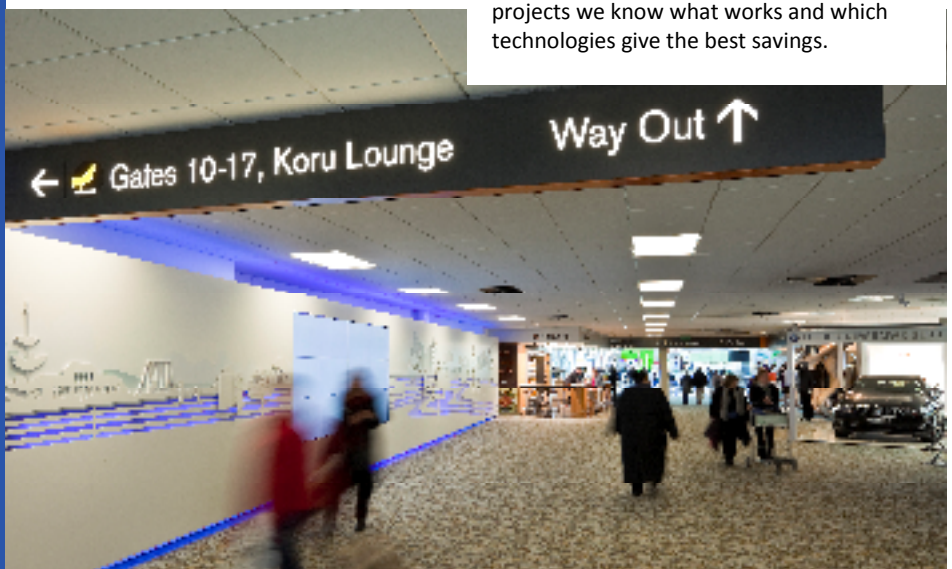
The typical steps involved are:

- Development of specification for installation
- Agreement on contractors to price upgrade
- Ordering of components and materials
- Confirmation of contractors
- Delivery of components and materials to site
- Project management by ECOsystems
- Installation by contractors
- Management of progress payments according to schedule
- Programming of Energy Automation Systems
- Final commissioning
- Monitoring of results

Targeting and Monitoring

Once an energy efficiency project has been implemented, the final step is the monitoring of results to ensure you achieve the savings. ECOsystems offers to provide this service for free to all our clients because this is also a benefit for us.

Having completed many energy efficiency projects we know what works and which technologies give the best savings.



CASE STUDY BP New Zealand

The first site upgrade was completed in May 2008 at BP Connect Pacific Manukau



In 2007 BP New Zealand commissioned ECOsystems to carry out two full energy audits of typical BP installations and identify where energy savings could be achieved cost-effectively through automated control solutions.

The audits identified exterior canopy lighting, flood lighting, signage and refrigeration as the major energy cost centres and the target for energy efficiencies.

Project Overview

As a 24-hour operation BP New Zealand was not seeking efficiencies through a simple energy-efficient lighting retrofit at the expense of light output and staff and customer safety. BP sought instead an integrated lighting management tool that required little or no human interface after

installation yet with the flexibility to change lighting sequences and parameters on site without the requirement for a service technician.

The brief was met with a Schneider C-Bus solution to remotely schedule exterior lighting via a single HMI password-protected interface. The C-Bus platform was also configured to manage anti-sweat elements in retail chiller doors and chiller alarms.

The chief source of energy savings achieved was through scheduled staging of forecourt and area lighting. Most automated lighting controls rely on a single light level sensor to switch a bank of contactors to switch all lighting on and off at the same time.

By bringing the light level sensor reading into the logic held in the on-site monochrome touch screen a single light

Energy Savings

- Average saving per site per month is 3.31 MWh
- Average tonnes of CO₂ saved per site per month is 1.98 tonnes
- Total MWh saved to date is 2,340.5 MWh
- Total CO₂ saved to date is 1,404 tonnes

level sensor can be used to switch multiple loads at different light level readings. Scheduled lighting control allows lights to be turned on or off automatically at different times according to priority. This in effect means less critical lighting can be scheduled to switch off earlier than more critical areas of the site.

The integrated C-Bus solution reduced total energy use by 15 to 20 percent and has subsequently been installed at 59 BP sites around the country and is now a standard specification for all new BP station facilities.

This project was a finalist at the ECANZ Awards in 2010 as a result of the impressive measured energy savings.

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Completed BPs - Total kWh used

