

## Christchurch Engine Centre

## Target Sustainability Programme

### About the Company

Christchurch Engine Centre is a joint venture between Pratt and Whitney and Air New Zealand Ltd providing engine overhaul and repair services for Pratt and Whitney JT8D, Rolls-Royce Dart and International Aero Engines (IAE) V2500 engines.

Christchurch Engine Centre operates at two sites in the vicinity of Christchurch International Airport Ltd.

### Introduction to the Project

Christchurch Engine Centre joined the Christchurch City Council Target Sustainability Programme in 2007. The Target Sustainability Programme supports business to reduce waste and to be energy and water efficient. Christchurch Engine Centre's objective at the time of joining the programme was to reduce water use and to improve the amount of recycling. The Christchurch Engine Centre implemented a range of projects to reduce their waste sent to landfill and to improve their energy and water efficiency.

### Key Achievements

**Waste sent to landfill reduced 55%**

**Recycling increased 72%**

**Water savings from a project of 63%**

**LPG savings from a project of 66.7%**



Recycling station for bubble wrap, waste, co-mingled recycling and cardboard © Copyright

### Waste Reduction Initiatives

The Christchurch Engine Centre have achieved the following waste reduction results:

- Waste sent to landfill reduced from 96 tonnes per year in 2008 to 43 tonnes per year in 2009, a decrease of 55%.
- Recycling increased from 81 tonnes per year in 2008 to 139 tonnes per year in 2009, an increase of 72%.

Christchurch Engine Centre provides monthly reporting of their waste sent to landfill and recycling to their parent company in the USA.

The following initiatives were implemented on both sites to reduce, reuse and recycle their waste:

- Installed bins for co-mingled recycling (cans, plastics and glass bottles).
- Improved paper recycling by placing paper recycling collection units next to photocopiers and printers.
- Improved the cardboard collection system by installing additional dedicated cardboard recycling bins in high-use areas.



Co-mingled and toner cartridge recycling © Copyright



Bubble wrap separated for reuse © Copyright

- Used "Unibins" to collect dry-waste for further recycling and waste separation off-site.
- Used toner cartridge recycling collection bins.
- Collected bubble wrap for reuse as packaging for sending engine parts offsite.
- Collected cardboard boxes for reuse as packaging for sending engine parts offsite.
- Reused wooden crates for shipping engine parts.

# Energy and Water Efficiency Initiatives

In January 2009, an electronic control system was put in place at the two Christchurch Engine Centre sites for controlling the electroplating tanks.

This system controls the rinse circulation through the rinse tanks and is designed to significantly reduce water consumption by only flushing the rinse tanks when required. The rinse tanks flow for 10 minutes and then they are switched off for 20 minutes. Prior to implementation of this system the tanks flowed continuously.

The installation of the computer system has resulted in an estimated reduced water consumption of 24,300m<sup>3</sup>/year, a 63% reduction on the previous operation.

The system also controls steam flow and the electrically heated tanks. The tanks are now programmed to switch off at certain times of the day and over the weekend. They only switch on when they are needed. The tank temperatures can also be controlled using this computer system, meaning that the tanks can more easily be kept at the correct temperature.

As a result of this project being implemented, there have been savings in total energy consumption, including savings in LPG for steam production used for heating the tanks, and electricity consumption for the sump pump. These savings were:

- Total energy consumption (including electricity and LPG) reduced by 357,500 kWh/year.
- Reduced total energy cost of \$50,600 per year.
- Total site energy consumption reduced by 3.8%.

## Summary

Since joining the Target Sustainability Programme, the Christchurch Engine Centre have implemented a range of projects that have resulted in a reduction of waste sent to landfill and an improvement in energy and water efficiency.

Future resource efficiency initiatives that the Christchurch Engine Centre are investigating include:

- Undertaking a waste audit with their contractor to identify further waste diversion opportunities.
- Investigating organic waste diversion.
- Investigating ways to reduce paper use onsite e.g. auto-duplex printing.
- Investigating alternatives to using polystyrene cups internally.



The tanks in the plating shop © Copyright

- LPG use reduced 66.7% compared to the previous operation. Total site LPG consumption reduced by 5.2%.
- The sump pump now operates less to discharge less water, saving approximately \$340 in electricity per year.

The capital cost to implement the electronic control system was \$130,000. The direct energy savings of \$50,600 means the project has a pay back of 2.6 years.

In addition to the calculated savings, a number of other benefits have resulted from the implementation of this project. These include:

- Better control of tank operation.
- Better control of tank temperature.

Christchurch Engine Centre has also implemented the following energy and water efficiency initiatives:

- Regular maintenance checks for compressed air leaks.
- Using the “Turbine Talk” newsletter to remind staff to switch off lighting when not needed and to look for compressed air and water leaks.

- Investigating movement sensors on the “fill and flush” urinals.
- Completing a detailed water balance for the site.
- Implementing a staff training package on resource efficiency including how to reduce and reuse waste.
- Carrying out an energy audit using an Energy Efficiency Conservation Authority grant for the whole site.

*“Although putting staff on these projects takes them away from their primary roles, it is still worth doing. In our case, the benefits are permanent, the payback is quick and we have significantly less impact on the environment.”* Chris Cornelissen, ACE Facilitator, Christchurch Engine Centre