

Life Technologies

Target Sustainability Programme

About the Company

Life Technologies is a global biotechnology company, with its main business being to provide tools for scientific research.

The main role of the Christchurch plant, based in Islington, Hornby, is to separate proteins from blood plasma. The final product is then sent to the Auckland plant for further processing. Approximately 99% of the products are for export.

Introduction to the Project

Life Technologies joined the Christchurch City Council Target Sustainability Programme in 2008. The Target Sustainability Programme supports business to reduce waste and to be energy and water efficient.

Life Technologies main objective at the time of joining the Target Sustainability Programme was to reduce energy and water use and to reduce waste sent to landfill.

Life Technologies implemented a range of projects to reduce their waste sent to landfill and to improve their energy and water efficiency. The organisation has an objective to reduce energy use and waste by 5% per year.

Key Achievements

Reduced waste sent to landfill by 24%

Reduced total site electricity use by 10%

Reduced total site diesel use by 38%

Reduced total site water use by 5%



Life Technologies Hornby Plant © Copyright

Waste Reduction Initiatives

Life Technologies has reduced waste sent to landfill from 45 tonnes per year in 2008/2009 to 34 tonnes per year in 2009/2010. This is a 24% decrease in waste sent to landfill in 2009/2010 compared to 2008/2009.

Life Technologies implemented the following initiatives to reduce, reuse and recycle their waste:

- Installed new clarifiers, which removed the requirement for the one litre bottles that were used in the centrifuges, and ultimately prevented up to 800 one litre bottles being sent to landfill every day.
- Rinse plastic filters to facilitate greater reuse.
- Donate clean, used laboratory equipment that is no longer required, e.g. test tubes, beakers and bottles, to high school laboratories.
- Issue all staff in the organisation with their own reusable cup and reusable shopping bag.
- Use the Christchurch City Council organic waste collection for food waste.
- Use the Christchurch City Council co-mingled recycling bins for plastics, glass bottles, paper and cans.



The central recycling station © Copyright



Left: The new clarifier that removed the requirement for using one litre bottles © Copyright

Right: Reusable cup supplied to all staff © Copyright

Energy Efficiency Initiatives

Life Technologies use electricity and diesel for their energy requirements. They have high energy consumption due to the energy intensity, and long operating hours of much of their equipment.

An energy audit was undertaken at Life Technologies with financial assistance from the Energy Efficiency and Conservation Authority in 2008. The following energy efficiency initiatives were implemented, focusing on the heating, ventilating and air conditioning (HVAC) system:

- Installed variable speed drives on the air handling units (AHU) fans. This enabled a reduced air flow of 50% outside operation hours, while still maintaining the plant pressurisation required for their manufacturing requirements. Savings

are estimated to be 117,000 kWh/year and \$12,800 per year.

- Increased the operating temperature deadband of the AHUs after hours to between 14°C - 22°C to reduce the heating demands on the AHUs and cooling demand on the refrigeration units. Savings are estimated to be 8,100 kWh/year and \$750/year.
- Installed a separate heat pump in a laboratory with local temperature control to improve the operation of the central heating system. Savings were estimated to be 4,700 kWh/year and \$600/year.

Implementing these initiatives reduced the overall electricity used on site. The estimated savings were based on the



Variable speed drive on one of the AHUs © Copyright

energy audit. The overall savings due to the changes to the HVAC system were measured to be approximately 130,000kWh and \$18,200 per year. This is a 10% saving on total site electricity consumption.

Water and Energy Efficiency Initiatives

One of the main uses of water at Life Technologies is for the cleaning and sanitising of the ultra-filtration (UF) plant. Approximately 30,000 litres of hot water per day is used in the UF cleaning process. Significant water and energy savings were made by reducing the time taken, and amount of hot water required, for the rinse process, and by reusing waste hot water.

The hot water used in the UF cleaning process is initially heated to 60°C using diesel boilers. To recover waste hot water an insulated 30,000 litre tank was installed. This is used to recover approximately 5,000-7,000 litres of used

water at 40-50°C from each UF cleaning process. This waste water was originally discharged to trade waste. The waste hot water is recovered during the final rinse step, stored in the 30,000 litre tank and then reused in the tank cleaning process where the water needs to be at least 40°C. This initiative has resulted in savings of up to 1.6 million litres of water per year and \$8,000 per year in water and diesel costs.

Additionally, the UF hot water rinse time was reduced from 15 to 8 minutes. This reduced the amount of hot water used by a further 1.6 million litres per year and \$12,000 per year savings in water and diesel costs.

As a result of these initiatives, total site diesel use has reduced by 38% from approximately 65,000 litres per year in 2008 to approximately 40,000 litres per year in 2009. In addition, Life Technologies has converted to using a 20% biodiesel blend.

These initiatives have resulted in the following savings:

- An estimated 3.2 million litres per year reduction in water use. This is an estimated 5% reduction in total site water use per year.
- Savings of up to \$20,000 per year in water and diesel costs.

Summary

Since joining the Target Sustainability Programme, Life Technologies 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.

Further opportunities to reduce waste and resource use at Life Technologies have been identified and are programmed to be implemented in the future. Life Technologies have a global environmental

sustainability group and is listed on sustainability indices, including the Dow Jones and FTSE4Good. The company is currently tracking their carbon footprint and have developed a corporate policy looking at ways of reducing this.

“Target Sustainability has been instrumental in helping us identify resource efficiency opportunities. They raised our awareness of providers of services such as the Energy Efficiency

Conservation Authority. An energy audit resulted in significant energy savings. Waste sent to landfill was reduced and water saving projects also resulted in a significant drop in usage. We intend to maintain our relationship with Target Sustainability to further our progress towards a zero footprint”. Carole Heatherbell, Senior Manager, Environment, Health and Safety, Asia Pacific.