

## Life Technologies New Zealand Ltd

## Implementation Grant

### About the Company

Life Technologies New Zealand Ltd is part of Life Technologies, 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 New Zealand Ltd 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 New Zealand Christchurch site's main objective at the time of joining the programme was to reduce energy and water use and to reduce waste sent to landfill.

The Life Technologies New Zealand Christchurch site 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. See the Life Technologies June 2010 case study for their previous waste reduction, energy efficiency and water efficiency achievements.

This case study relates to the implementation of a new energy efficiency initiative.

### Key Achievements

- Installation of heat recovery on refrigeration units to pre-heat hot water and converted existing holding tanks to store and deliver hot water as required saving 20,000 litres of diesel and \$27,000 per year.



Life Technologies New Zealand Ltd, Hornby Plant © Copyright

### Energy Efficiency Initiatives

One of the main uses of water at the Life Technologies New Zealand Christchurch site is for the cleaning and sanitising of the ultra-filtration (UF) plants. Approximately 30,000 litres of hot water per day is used in the UF cleaning process.

This water was heated to 60°C by two diesel fired boilers, consuming approximately 40,000 litres of diesel per year. During peak times, these boilers struggled to meet demand, meaning the cleaning process was impacted.

To reduce this diesel use, heat recovery was installed on the condensers of the two largest refrigeration units onsite. This heat recovery saw cold water entering the site, pass through two heat exchangers, being heated from 10°C to 40°C (approximately), before being stored in a large insulated tank. The storage tank is essential as the refrigeration operates continuously where the cleaning is sporadic throughout the day – this tank was onsite already and has been reconfigured for this purpose.

This stored pre-heated water is then fed into the boilers to be further heated as required to a cleaning temperature of approximately 60°C.

Annual diesel consumption has decreased from 40,000 litres to approximately 20,000 litres, saving \$27,000 each year and reduced CO<sub>2</sub> emissions by close to 50%. The cost of implementation was \$48,000 giving a 21 month payback period.

Further, the boilers are no longer under capacity and can easily provide the top up heating required for the cleaning.



Refrigeration compressor with heat exchanger © Copyright



Heat exchanger where refrigerant heats cold water © Copyright



Insulated tank to store the pre-heated water © Copyright

## Summary

Since joining the Target Sustainability Programme, Life Technologies New Zealand 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.

This latest heat recovery project illustrates the considerable savings that can be made from relatively simple system modifications and capital installation. Further, projects such as this improve the performance of the site, while saving energy.

*“The Christchurch City Council Target Sustainability Programme and the Energy Efficiency Conservation Authority through their Energising Business Funding Agreement have been a critical component in the success of this project. The project involves the capture of waste heat from the freezer compressor units which is used to pre-heat water for our hot water system. The project has gained this site some great PR both within the company and our profile with external customers, making it easier for all sites to look at further energy efficiency and sustainability initiatives”.* Jeff Hall, Process Engineer.

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