biozyme laboratories
QUALITY AT THE HEART OF DIAGNOSTICS

- Energy savings of approximately 223,000 kWh/annum
- Cost savings of approximately £4,500/annum
- Emission savings of 42 tonnes CO_2/annum
- Payback of 4.8 years

Biozyme Laboratories Ltd

Faced with replacing an aging heating and hot water system, Biozyme Laboratories Ltd took the opportunity to seek out a low carbon solution and approached the Carbon Trust for an energy efficiency loan.

CARBON TRUST

Making business sense of climate change

The Business Case

Company Profile

Biozyme Laboratories Ltd is a world leader in the supply of high quality specialist enzymes to the medical diagnostics and healthcare industries. With a range of more than 80 products and a worldwide blue chip client base, Biozyme specialises in the development and bulk manufacture of high purity enzymes and biochemicals. Set up in 1974, the company occupies two purpose-built units on an industrial estate in Blaenavon, with a combined footprint of 2280m^2. Biozyme operates from 7am to 6pm five days a week, for 50 weeks of the year, and employs 49 people. It also has a sales office in California and recently expanded into the active pharmaceutical ingredients market.

The Blaenavon units have a total of eight laboratories, a main production area, office accommodation and a warehouse. Primary energy users include heating, refrigeration and lighting.

Introduction

Environmental management and sustainable development had long been high on Biozyme's business agenda, but as the company expanded to meet increased demand the focus to reduce energy consumption increased. Company shareholders were issued with a questionnaire to assess how Biozymes' environmental performance influences company decision-making. Responses showed that a detailed environmental policy was considered to be beneficial, prompting senior management to look at ways of improving onsite energy efficiency and reducing CO_2 emissions.

With existing heating and hot water systems approaching the end of their working lives, Biozyme believed a low carbon replacement should be considered. A combination of high efficiency boilers and solar thermal was deemed the most cost effective way to reduce gas consumption. Health, safety & environment manager Chris Long approached the Carbon Trust in Wales for an energy efficiency loan to fund the project.

The Carbon Trust carried out a survey which supported Biozyme's plans to reduce energy consumption via the use of renewable energy technologies. The energy survey also identified a number of additional low and no cost energy saving measures that could be implemented alongside the replacement boiler project to help reduce further the company's annual £53,000 energy bill.

"As soon as the Carbon Trust in Wales got involved we had the encouragement and the funding to enable us to take the solar project forward, as well as progress other energy efficiency measures. We have had excellent support and advice from the organisation and the loan we received from them was instrumental in helping us reach our goals in terms of reduced energy consumption."

Chris Long
Health, Safety & Environment Manager
Biozyme Laboratories Ltd

Achievements

By monitoring onsite energy consumption and existing equipment, Biozyme Laboratories were able to collect data to support the case for renewing the boiler system. The evidence showed significant cost and environmental benefits were achievable. As a result of this substantial exercise the Carbon Trust awarded the company a loan of £21,560 to proceed with the improvements. The business case for the company's action plan focused on:

- Reducing carbon emissions
- Improving the company's environmental credentials
- Attracting more clients via an enhanced environmental reputation
- Reducing gas and electricity costs via the use of solar energy
- Improving and replacing outdated equipment and technologies
- Reducing maintenance costs

The Technical Case

Existing heating and hot water systems had been provided by four cast iron boilers. These had not been reviewed since their installation thirty years previously and were fast approaching the end of their working lives. Over-sized for their purpose, the boilers were also operated by very basic thermostatic control systems.

In addition, the buildings were outdated and poorly insulated, having been constructed in the early 1970s. Staff awareness of the costs of energy and the importance of energy efficiency was also limited.

Rules of Thumb

- Around 20% of heat generated by a boiler goes straight up the chimney. This can increase to 30% if the boiler is poorly operated or maintained.
- Effective insulation can reduce heat losses by up to 90%.
- A typical small office uses around 15,000 kWh of electricity a year. Generating this energy from fossil fuels adds nearly 6.5 tonnes of carbon dioxide into the atmosphere – with renewable electricity, it would be zero.

The Solution

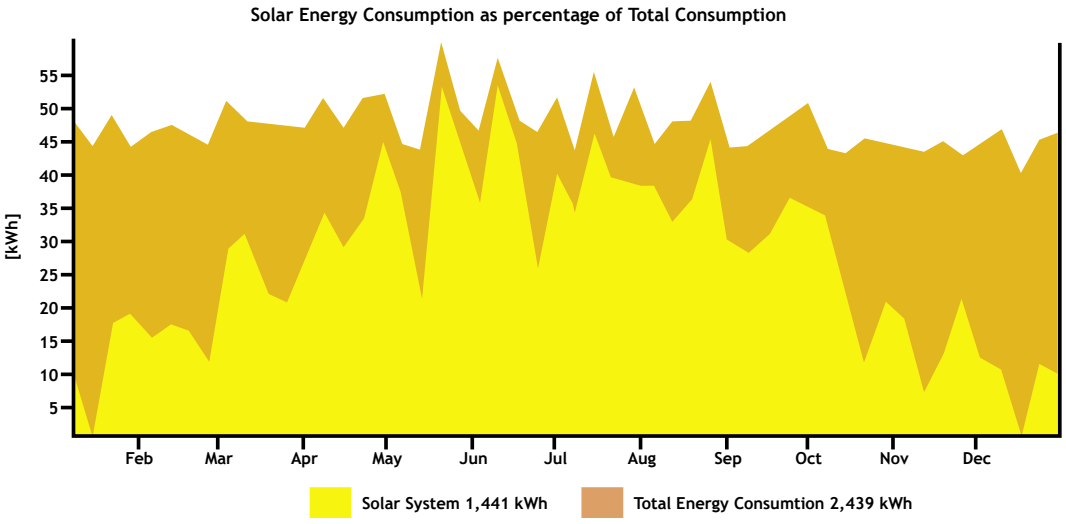
In advance of the heating project, a number of low cost initiatives were implemented as recommended in the energy survey. Heaters used onsite were repositioned further away from refrigerated units to improve efficiency and false ceilings were constructed to better retain heat in both buildings. Shutdown procedures were set up to ensure production equipment was turned off overnight and at weekends.

Lighting in the main production area was zoned to ensure it was in operation only when required and high frequency energy efficient lighting installed. Several refrigerated vacuum chambers were installed to eliminate the use of dry-ice and acetone in freeze-drying operations, ensuring savings on the transport emissions of bringing dry ice to the plant. The company also liaised with its contractors to request they replace ozone depleting substances used in the company's refrigeration equipment.

A staff awareness campaign was rolled out across the plant to encourage all employees to take simple measures to cut their individual energy consumption, such as switching off equipment when they left work stations.

The subsequent £21,560 Carbon Trust loan enabled the purchase and installation of a new space and water heating system. This included high efficiency boilers, a 4m^2 solar roof mounted panel, a double-coil hot water vessel, and individual tamper-proof TRVs. The existing oversized boilers were downsized, and all point of use electric hot water heaters were removed.

The success of the solar project has encouraged Biozyme to set new energy and carbon emission reduction targets. The company is now investigating the potential of using wind energy at the plant.



The above graph shows the contribution of the new solar thermal system to the overall hot water generated.

The Financial Case

The awarding of a £21,560 energy efficiency loan from the Carbon Trust in Wales saw Biozyme Laboratories make substantial energy and cost savings with a payback of under five years. These savings were made possible following the installation of a new space and water heating system and associated controls.

Savings

Biozyme's new heating system has reduced gas consumption and delivered cost savings of £4,500 per annum and emission savings of 42 tonnes CO_2/annum.

Costs

The cost of supply and installation of the solar panel and new heating system was £21,560. This equipment is approved on the Energy Technology List and qualifies for Enhanced Capital Allowances. All businesses who pay corporation tax can claim Enhanced Capital Allowances on qualifying expenditure.

Payback

Based on current energy costs, the savings are £4,500 per annum and the simple payback is therefore 4.8 years.

Energy Efficiency Loans

The Carbon Trust can provide an energy efficiency loan to SMEs in England and Wales of up to £100,000* and for all businesses in Northern Ireland of up to £200,000 for investment in energy saving projects such as the upgrading or replacement of lighting, boilers or insulation. The loans are interest free, unsecured, repayable over a term of up to four years and with no arrangement fees. In Scotland, the Scottish Executive offers a similar scheme called 'Loan Action Scotland'.
*subject to terms and conditions and local funding

Tax incentives

Enhanced Capital Allowances (ECAs) enable businesses to buy energy efficient equipment using a 100% rate of tax allowance in the year of purchase. Businesses can claim this allowance on the investment value of energy efficient equipment, if it is on the Energy Technology List. The procedure for claiming an ECA is the same as for any capital allowance. For further information please visit **www.eca.gov.uk** or call the Carbon Trust on **0800 085 2005**.

Expert advice

The Carbon Trust provides free, expert energy efficiency advice. Your company may qualify for a free energy efficiency survey from one of the Carbon Trust's qualified consultants.

Receive free publications

Call the Carbon Trust on **0800 085 2005**
You'll find free advice on what your organisation can do to save energy and save money. Our team handles questions ranging from straightforward requests for information to in-depth technical queries about particular technologies and deals with all kinds of energy saving topics for people at all levels of experience.

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The Carbon Trust works with business and the public sector to cut carbon emissions and capture the commercial potential of low carbon technologies.

An independent company set up by the Government to help the UK meet its climate change obligations through business-focused solutions to carbon emission reduction, the Carbon Trust is grant funded by the Department for Environment, Food and Rural Affairs, the Scottish Executive, the Welsh Assembly Government and Invest Northern Ireland.

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