



Shearwater Environmental

Three energy case studies

April 2008

James Robinson Fibres
Sparks Confectioners
Field Studies Council

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Date	25 April 2008
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About Shearwater Environmental



Roland Arnison provides consultancy services through Shearwater Environmental, focussing on reducing organisations' environmental impacts.

He can help with anything from short-term work with tight deadlines, including interim project management, to longer term developmental work. He is flexible in his working arrangements with clients and can bring in new ideas and approaches.

Roland has fourteen years professional experience, ranging from the practicalities of delivering recycling services to consultancy and stakeholder engagement. The technical areas he has specialised in include energy efficiency, microgeneration, waste collection systems, organic waste, composting, community recycling and stakeholder engagement.

Roland is a member of MCCR & Associates (www.mccrassociates.biz), a Manufacturing Advisory Service supplier and is an associate member of the Institute of Environmental Management and Assessment.

TYPICAL SERVICES

- Energy, water and waste surveys, including data management and analysis and practical opportunities for reducing consumption
- Carbon footprint analysis
- Environmental policy and strategy development
- Research studies, feasibility studies and technical trials
- Independent monitoring, auditing and evaluation of services and projects
- Modelling of past performance and future scenarios
- Assessment of proposals
- Management and communication for working groups, steering groups, forums, seminars etc
- 'Rapid response' project management: swift intervention to take over roles or projects that need urgent and reliable action for tight deadlines



Carbon footprint analysis and energy reduction

Client	James Robinson Fibres Ltd, Bradford Texfelt Ltd, Elland
Date	Nov 07 to Mar 08



James Robinson Fibres (JRF) imports and processes textile fibres for sale in the UK and European markets. The company supplies recycled fibres to its sister company, Texfelt, which uses these to manufacture felt underlays.



JRF asked Shearwater Environmental for help in becoming more energy efficient and in calculating the carbon footprint of their main product, "Envirolay". This work was carried out as part of a wider MAS¹ business support package provided by MCCR & Associates.

The energy efficiency side of the work involved detailed analysis of data from the energy suppliers and from data logging carried out at the factories. The two sites were each visited on a number of occasions to survey the main uses, observe operations and talk to staff on the factory floor.

This assessment enabled a calculation of the amount of energy used by individual equipment and daily and weekly energy profiles, as well as specific energy reduction recommendations. The recommendations included:

- Immediate actions, such as changing control settings, that were implemented during the project. The resultant energy savings were demonstrated through subsequent energy consumption data from the electricity supplier.
- Zero cost changes to some operational practices, including improved maintenance of equipment, better habits of turning off lights and equipment when not needed etc.
- Investments in specific areas, ranging from improved timer controls to replacement lighting.

The combined recommendations would reduce the overall energy consumption of the two factories by an estimated 20%.

The carbon footprint analysis was based on the methodology developed by the Carbon Trust's Carbon Label team and involved calculating the carbon emissions from each stage of the supply chain for Envirolay. The work involved collating detailed production and procurement data from JRF, Texfelt and their suppliers. The analysis included the carbon emissions from the manufacture of the feedstock and packaging upstream of JRF and Texfelt, haulage and energy used by JRF and Texfelt, all attributed to each roll of Envirolay.

¹ Manufacturing Advisory Service, a BERR (formerly DTI) programme.



Measuring and reducing energy and water

Client	Sparks Confectioners Ltd, Bradford
Date	Apr 07 to Mar 08



Sparks Confectioners are craft bakers, manufacturing a wide range of bakery goods. They supply customers ranging from their own shops to major supermarkets.

Following a Carbon Trust report, Sparks asked Shearwater Environmental for support in implementing the recommended energy-saving measures. With the help of a grant from the BREIG programme², this work developed into a wider support package and included assessing the potential for water saving.

The general approach taken was one of working closely with Sparks to make ongoing and practical progress on energy and water reduction, as opposed to a one-off investigation followed by a report.

Much of the work involved detailed analysis of energy and water data from the six factory units, including half-hour electricity profiles, weekly meter readings and data logging of electricity used by individual equipment. Numerous site visits at different times of the day and week and discussions with staff at all levels also contributed to the investigation.

The data were analysed to identify the breakdown of energy use by factory unit and by appliances, and to calculate potential energy and water savings. An analysis of 'out of hours' energy and water use was also undertaken. Options and quotes for more automated energy monitoring systems were also explored.

The improvements developed in the project were wide ranging, covering:

- staff involvement in reducing energy and water consumption through more efficient use of machinery and fewer hours of equipment running idle.
- improved and more regular maintenance of equipment, such as rapid repair of water and compressed air leaks.
- better use of existing controls and investment in new controls to reduce unnecessary periods of space heating, process heating and water use.
- cost-benefit assessment of investments in replacement lighting and voltage optimisation and motor control equipment, along with identification of appropriate suppliers.

Implementation of the measures would lead to reduction in energy use of 10 to 15% and about a 5% reduction in water use. The investigation also identified opportunities to reduce energy bills through a better deal on energy bills.

² Business Resource Efficiency Improvement Grant, run by YFM Ltd and funded from the BREW (Business Resource Efficiency and Waste) programme



Corporate energy management plan and training

Client	Field Studies Council, UK
Date	Jul 07 to Sep 07



The Field Studies Council (FSC) is an environmental education charity that helps people understand and be inspired by the natural world. The FSC runs cross-curricular courses and fieldwork for students through its network of 17 centres across the UK.

The FSC asked Shearwater Environmental to carry out an extensive project to assess existing energy survey reports for some centres, carry out energy surveys of a further six centres and to develop these into a single corporate energy management plan. This was backed up a series of training sessions run by Shearwater Environmental for newly appointed energy managers for each centre.

The work covered all aspects of energy management including overall policy, energy monitoring systems, communication between head office and the centres, calculation and comparisons of normalised energy and carbon performance between the centres and specific energy reduction recommendations. The project also included a basic assessment of the potential for renewable energy generation at selected centres.

The work culminated in reports for each centre and for FSC as a whole and included suggested targets in each case. The proposed energy management strategy for the FSC including a prioritised approach to implementing the energy reduction measures across the centres, allowing for cost payback and the practicalities of implementing them.

The recommendations would lead to an estimated 18% reduction in energy consumption across the centres. The analysis of energy data also uncovered billing irregularities for some centres, resolution of which led to significant savings.

The training package designed and run by Shearwater Environmental was aimed at staff with varying levels of understanding of energy management and was delivered to twenty staff. The training included presentation and practical exercises and provided the delegates with the knowledge and tools to carry out ongoing energy management at their own centres.