

Energy Efficiency in Plastics Processing

Case Study - Styropack (Aberaman)

Monitoring and Targeting in Plastics Processing

Styropack

A SYNBRA GROUP COMPANY

Energy monitoring provides targets for energy cost improvements and also indicators for process efficiency and effectiveness monitoring.



EPS products for impact and thermal protection



EPS moulding rapidly generates large volumes of product

Introduction

Some plastics processors simply accept and pay the energy bills as they arrive, no matter what the amounts. Some plastics processors treat energy as a fixed cost that they are unable to reduce. Rising energy costs and the need to improve energy consumption mean that these are no longer acceptable practices - if they ever were.

Monitoring energy usage and targeting improvements, rather than simply accepting and paying the bill or treating energy as a fixed cost, leads to greater control of energy usage and reductions in both energy usage and costs.

The techniques of monitoring and targeting are sometimes seen by the plastics industry as being expensive and not relevant to the industry. This Case Study shows how Styropack (Aberaman) uses low cost but effective monitoring and targeting methods to not only control energy costs but also to provide extremely sensitive indicators of process efficiency and operational effectiveness.

The company

Styropack (UK) Ltd is the leading moulder of EPS (expanded polystyrene) packaging in the UK. It has 8 production plants and 150 machines spread throughout the UK and employs some 350 people. It is part of the international Synbra Group which has 32 sites in the UK and Europe. Styropack (UK) Ltd's annual turnover is around £32m.

The company's clients include many of the household names in the electronics, electrical and automotive markets such as Sony, Candy, Crosslee, Philips, Sanyo, LG Electronics, Compaq, Samsung and Panasonic. Styropack's UK-wide network means that the company can be located close to the customer to reduce transport costs and fuel emissions.

The Aberaman site produces EPS protective packaging for the teleelectronics industry located in the South Wales area. The site employs approximately 55 people and

processes several thousand tonnes of EPS per year. Energy is the third largest component of the product cost after raw materials and labour.

The actions

Internal development

The Technical Manager at the Aberaman site has used in-house resources to develop and install a utilities monitoring and analysis system for all the major utilities. This system provides essential operating data to the Management Team.

The system consists of a variety of sensors measuring energy and water use for each process area and these are linked together to provide a complete factory energy monitoring system. The monitoring system interface is largely graphical to enable the user to quickly identify areas of excessive or out of specification energy use.

Low cost

The system shows that it is possible to develop a low-cost but effective monitoring system to manage the energy and water usage in a plastics processing site. The system is currently being extended to cover more processes and areas of the factory but all extensions are treated as standard budget items and there is no specific budget for the monitoring and targeting system - the system is integrated into the factory operations and is treated as such.

Real time information for process control

A particular aspect of the system is that it is not used simply for the measurement and control of the energy usage. The energy use during many of the process steps is a key measure of the process efficiency and the energy use can be used as a process control signal. The energy usage can be used to carry out fault finding on process both for corrective and preventive action.

Similarly, water usage during the process is measured and monitored as part of the drive to reduce the cost of utilities but also to monitor the process operational effectiveness.

Using the information

All recording and reporting from the system is computer based and the system allows distributed access to all the site utilities consumption data. This access is available in real time (for the current processes) and in historic detail (for comparison and viewing of trends). The information can then be used by the Management Team to analyse consumption against the relevant production statistics and to set targets for energy use reduction.

The benefits

The experience at Styropack (Aberaman) shows that measuring, recording and acting on the gas, electricity and water usage can have very positive cost and operational benefits.

It is estimated that the policy of monitoring and targeting energy usage improvements has reduced energy costs by up to 10% to date and the system continues to provide guidance and information for further energy reduction actions.

Historic records show that the trend for the benchmark values of gas, electricity and water usage per kg of EPS raw material has been downwards since 2003 and current results are now significantly lower than the average values for 2003.

The continued decrease in these costs has allowed the company to remain competitive and to protect jobs.

Transferring the lessons

The low cost monitoring and targeting used by Styropack provides an effective model for other plastics processors. The installed system is effective and provides significant benefits to the management in terms of controlling energy usage and reducing the cost of energy to the company. The lessons learnt from the operations at Aberaman are readily transferable to other UK plastics processors and could be used to reduce energy usage and costs in many companies.

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