

Energy Efficiency in Plastics Processing

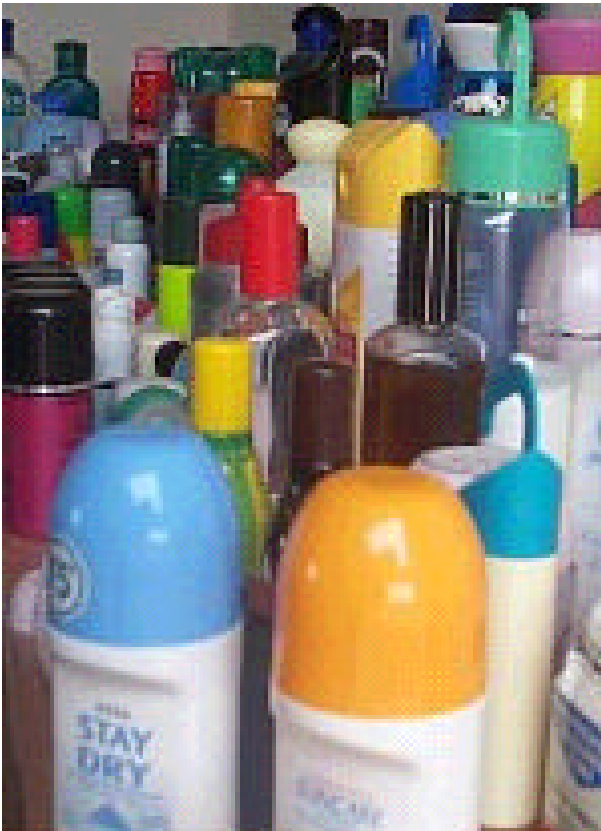
Case Study - Coda Plastics Ltd.

All-electric injection moulding machines



All-electric machines give up to 40% energy savings and have other quantifiable benefits in productivity, process control and quality.

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All-electric machines are ideally suited for high volume and high accuracy products

Introduction

All-electric injection moulding machines have substantial benefits in terms of reducing energy usage. They are an emerging technology and have considerable benefits for most processors. Despite this, the uptake of the technology in the UK has been slow compared to that of the Far East and the USA.

The aim of this Case Study is to illustrate the practical benefits of all-electric machines and how they can benefit processors in terms of reducing energy usage and costs, improving processing productivity and improving quality.

For many applications, all-electric machines are rapidly becoming the technology of choice and most major manufacturers of conventional injection moulding machines already produce all-electric or 'hybrid' machines (all-electric with some elements of the machine using hydraulics).

The company

Coda Plastics was formed in 1973 and has since grown to become one of the largest independently owned UK manufacturers of injection moulded caps/closures and roll-on deodorants. The company operates from a modern purpose-built factory in the North Norfolk market town of North Walsham.

Coda's primary manufacturing process is injection moulding and the company operates 25 machines in the size range 30 to 330 tonnes with a policy of purchasing identical machine types (where possible) to give increased flexibility in production planning and shorter than average lead times. The current production facility is capable of manufacturing over 20 million mouldings per month.

The company primarily manufactures a range of closure systems for the packaging sector, ranging from simple screw caps to flip tops and non-drip valves. The expertise and experience in designing, developing and manufacturing plastic packaging components

has also been successfully transferred to other market sectors including the automotive and electrical markets, toys, DIY, flooring and horticulture. As a result, Coda has a customer portfolio that includes many blue-chip companies in the toiletries, cosmetics, household and technical sectors.

Coda continues to invest in new production technology, such as all-electric injection moulding machines, and product development, such as non-drip closure systems and the development of the first integrally moulded large ball roll-on deodorant pack in the UK.

The actions

Expanding demand

As a successful moulder, Coda Plastics needed new injection moulding machines to increase production capacity and reliability. Equally there was a need to make strategic decisions to reduce energy costs in a market where the cost of energy is a rapidly growing component of the product cost.

Coda decided to purchase a new all-electric machine meet all of the competing demands for increased, improved production reliability and reduced energy costs.

The machine and application

The machine purchased was a Negri-Bossi VE 160 ELMA. This machine has shown energy savings of up to 60% (0.29 kWh/kg compared to 0.67 kWh/kg) when directly compared to an equivalent hydraulic machine running the same tooling and process settings.

The machine is used to run multi-cavity cap and closure tooling using 4, 8, 12 and 24 impression tooling.

The benefits

The new all-electric machine has demonstrably reduced energy costs for processing and, depending on the product being run, energy savings exceed 40%.

The introduction of the all-electric machine

has also increased productivity by 10% through reduced cycle times and improved quality through more accurate process control.

Using the Carbon Trust Loan Scheme

The purchase of the all-electric machine was made using the Carbon Trust interest free loans scheme and Coda have since used the scheme again to purchase an advanced hydraulic moulding machine to further increase capacity and decrease costs. In both cases the energy savings from the purchase of the machines will fund the repayment of the loans.

Coda believes that satisfied customers come back; obviously the same principle applies to their use of the Carbon Trust Loans scheme.

Transferring the lessons

The introduction of all-electric moulding machines to the UK plastics processing industry is increasing, moulders (both contract and in-house) are rapidly recognising the many benefits offered by the machines.

With rising energy costs the substantial reductions in operating costs possible by using all-electric machines provides a compelling case for investing in the technology. The additional benefits of improved productivity through decreased cycle times and improved product quality make all-electric machines very attractive for moulders.

The availability of interest free loans from the Carbon Trust (subject to conditions) makes the purchasing decision even more compelling.

The lessons learnt from the use of all-electric injection moulding machines at Coda Plastics Ltd. 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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