

Energy Efficiency in Plastics Processing

Case Study - MH Technical Mouldings

All-electric injection moulding machines



MH Technical Mouldings now have a policy of only purchasing all-electric machines. The benefits are so clear-cut that we no longer purchase hydraulic machines except for very special applications.

**Mike Malby
Managing Director
MH Technical Mouldings**



All-electric machines have clear benefits for technical mouldings.

Introduction

All-electric injection moulding machines can reduce energy use in injection moulding for all types of materials. The technology is not only applicable for commodity plastics but also works exceptionally well for engineering plastics that need higher processing temperatures and also need higher torque motors for successful processing.

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

Successful processors of technical plastics are rapidly making all-electric machines the machine of choice for new machines and in some cases this is now a company policy.

The company

MH Technical Mouldings is part of the MH Group of companies; consisting of MH Mould Tools, MH Technical Mouldings, MH Technical Developments and MH Components. The MH Group of companies provides a range of design and manufacturing services to the plastics industry and the service portfolio includes design, rapid prototyping, rapid tooling, production tooling, injection moulding, plastic finishing and assembly. The Group is an independent company based West Sussex and aims to use the range of Group resources to provide a seamless transition from development to production for their customers.

Established over 35 years ago, the MH Group has used investment in the latest plant and technology to remain at the forefront of the plastics processing market. This has generated a strong and expanding customer base in diverse and demanding sectors such as aerospace, automotive, white goods, telecoms, electronics and lighting.

MH Technical Mouldings provides the production capacity for the group and operates 24 injection moulding machines

with sizes ranging from 22 tonnes to 520 tonnes, the majority of which are fitted with robotics. The smaller machines are Boys, whilst the larger machines are all Negri Bossi, which enables production of mouldings of up to 2.5 kg. The materials processed are primarily engineering plastics, both filled and unfilled, as well as conductive materials.

The actions

Expanding demand

Expanding demand for complex and cost-effective technical solutions and the need to reduce costs has led MH Technical Moulding to invest in energy efficient technology and to purchase 5 new machines since 2003. Four of these machines are all-electric and the purchases have significantly reduced energy usage and costs for the company.

The machines and applications

The initial all-electric machine purchased in 2003 was a Negri Bossi VE 210 ELMA and this was followed 6 months later in 2003 by an identical Negri Bossi VE 210 ELMA machine. Three new machines were purchased in 2004 - a Negri-Bossi VE 90 ELMA, a Negri-Bossi VE 70 ELMA and a 40 tonne Boy hydraulic machine for a specialist product application.

Most of the products produced by MH Technical Mouldings use engineering plastics that require high processing temperatures and high processing torques. Processing at MH generally involves high temperatures and the new all-electric machines have uprated motors specified to cope with the higher torques used. This is especially necessary as PC is a frequently used material at MH Technical Mouldings.

All machines produce highly technical mouldings in markets where accuracy and repeatability are key factors for success in gaining and retaining business.

The benefits

MH Technical Mouldings has seen consistent energy usage and cost savings of at least 50% on the new all-electric machines and on the

larger machines the energy usage and cost savings are up to 60% for some products and tooling. These significant savings generate short pay back times on the investment in the new technology machinery.

When the first all-electric machines were purchased in 2003, the additional cost for purchasing all-electric was approximately 30% and payback times of 2 years were achieved. Since then, the additional cost for purchasing all-electric has decreased rapidly and all-electric machines purchased in late 2004 cost only around 10% more than equivalent hydraulic machines. This has reduced the payback time to less than 1 year for new purchases.

This is not the only benefit for MH, the new all-electric machines have proved to be excellent at producing technical mouldings where accuracy and control are paramount. The all-electrics have successfully delivered reduced costs and improved productivity for MH Technical Mouldings.

The investments have been so effective and the benefits have been so clear-cut that MH Technical Mouldings now has a policy of only purchasing all-electric machines except for very special applications.

Transferring the lessons

The introduction of all-electric moulding machines to the UK plastics processing industry is increasing, in the processing of both commodity and engineering plastics. Investment in advanced energy efficient technology, such as all-electric injection moulding machines, can provide multiple benefits. They reduce costs, improve productivity and improve accuracy and repeatability.

Moulders are rapidly recognising the many proven benefits offered by all-electric machines and the benefits found by MH Technical are readily transferable to other moulders who invest in this technology.

Energy costs are set to increase in the future and prompt strategic investment in energy efficient all-electric machines will pay increasing dividends as energy costs rise.

Produced with the assistance of:
MH Technical Mouldings
Dickinson Place,
Bognor Regis
West Sussex,
PO22 9QU

Whilst we have taken reasonable steps to ensure that the information contained within this guide is correct, we give no warranty and make no representation as to its accuracy and we accept no liability for any errors or omissions and nor does the Carbon Trust nor the Government. Action Energy is a programme of the Carbon Trust. The Carbon Trust is a company limited by guarantee.
Registered in England and Wales Number 4190230.
Registered at:8th Floor,3 Clement's Inn, London WC2A 2AZ.
©Queen's Printer and Controller of HMSO July 2004.