

## At a Glance

Tool and Plastic Ltd. is a dynamic and innovative contract injecting moulding company. The project aim was to identify and implement environmental and economic cost savings initiatives.

A review of Energy, Waste and Water consumption were carried out by staff and external experts, which identified a number of opportunities and resulted in the following achievements:

- Increased knowledge of the company's energy usage lead to extensive staff training and equipment efficiency upgrades that achieved significant energy, CO<sub>2</sub> and cost savings
- Total of €46,500 saved in energy costs
- Reuse of plastic waste to manufacture two new products
- €55,400 saved in cardboard use following packaging waste prevention of cardboard boxes used and use of returnable boxes
- Negotiations with clients to implement packaging return schemes, innovative plastic waste reuse for new products and real time online production monitoring achieved significant waste reductions during production and landfill waste.
- A reduction of over 50% in landfill waste by increasing recycling.
- Rainwater harvesting is used to conserve potable water for use in toilets and will provide supply during now more frequent water restrictions. 200m<sup>3</sup> of water saved annually following installation of rainwater harvesting.

## 2008-CP-5-S2

### Waste Minimisation at Tool and Plastic Ltd.



### Longford Business & Technology Park Ballinalee Road, Longford, Ireland

Tool and Plastic Ltd. is a well-known name in contract injection moulding in Ireland. It was set up in 1968 in Longford Town, and has established itself since then with an enviable reputation in technical moulding, reliability and customer service. Located in the town of Longford, the company re-located to a new modern purpose built facility in July 2007.

The new facility is 38,000 Sq ft and comprises 15,000 Sq ft white room manufacturing, a 5,000 Sq ft cleanroom, fully equipped quality, metrology and product testing laboratory and warehouse and distribution areas. Today, over 70% of the company's customers are in the Medical/Healthcare industry sectors, with 35% of all product manufactured at the Irish facility exported.

The company is privately owned and employs 50 people operating 7 days week, 24 Hrs/day. The Tool and Plastic Quality System is certified by NSAI to ISO9001:2000 standard. The company operates a range of secondary processes, including assembly, insert moulding, ultrasonic welding and printing (Tampo and Silk screen) in White-Room and Class 100,000 Cleanroom production environments

### Aims of this project

The main aims of this CGPP project were:

1. to minimise waste by applying avoidance, reuse and manufacturing efficiency.
2. to implement an energy conservation programme with economic and environmental benefits
3. to reduce the volumes of potable water used for toilets and cleaning by installing a rainwater harvesting system

4. to install an innovative paper-less real-time production management system
5. to deliver staff training and development in environmental management knowledge, skills and abilities.

### Project Description

The CGPP team at Tool and Plastic Ltd. decided that a quality goal for 2008 and 2009 was to achieve ISO-13485. To achieve this, a major systems review and upgrade was required. The output of this review and analysis also raised a number of environmental-related opportunities with particular focus on plastic waste arising from non-conforming product and paper consumption associated with tracking quality and production information.

The project undertook a top level waste management review. Waste management reports from our waste management provider indicated that there was an opportunity to reduce landfill waste and associated costs. Scope for substantial reduction was identified in the amount of industrial waste, cardboard and paper waste generated by implementing the various measures and systems set out in the project. The plastic waste that was being sent for recycling was also identified as an area where reductions could be achieved.



Initiatives undertaken as part of this CGPP project at Tool & Plastic Ltd. include:

- **Energy Conservation:**

A comprehensive energy survey provided detailed knowledge of the company's electrical load resulting in a power factor correction, reduction of Maximum Import Capacity (MIC) and implementation of an innovative strategy of gas price forward hedging.

The energy survey also identified the opportunities outlined below:

**-Installation of an Air Handling Variable Speed Drive** in combination with filter replacements and room seal improvements achieved a reduction in load profile.

**-Chiller load reduction** due to change in process parameters reduces the cooling load and energy demand on the chillers.

**-Compressor air pressure reduction** due to staff training and relocation of air receivers to exterior of building.

**-Installation of granulator sensors**, due to identification of significant energy use of machines when idle, reducing granulator runtimes by 33%.

**-Installation of a live online production monitoring IT system** reduced volumes of rejects and provides now a paperless electronic production control system.

**-Moulding cycle time reduction** improved energy efficiency and increased productivity.

• **Waste Minimisation:**

**-Packaging waste reduction** from introduction of a returnable corri-board plastic box scheme and a cardboard box return scheme.

**-Industrial landfill waste reduction** due to increased waste segregation and recycling.

**-Reuse of plastic waste to manufacture two new products.**

• **Water Conservation:**

**-Installation of rainwater harvesting system** to supply water for toilets and cleaning.

## Outcomes

The following is a summary of the environmental and economic benefits from this project:

- **Total of €46,500 saved in energy costs**
- **€10,000 saved in energy costs** following MIC and Power Factor Correction
- **€10,500 saved in energy costs** following the installation of variable speed drive and filter changes equating to 165,000 kilowatt hours annually and 85 tonnes of CO<sub>2</sub>
- **€27,000 saved in energy costs** following a review of compressed air and reduction of heat of air intake equating to 19,286 kilowatt hours annually and 10 tonnes of CO<sub>2</sub>

- **€9,000 saved in energy costs** following the optimisation of granulator machines and run times equating to 64,000 kilowatt hours annually and 33 tonnes of CO<sub>2</sub>
- 200m<sup>3</sup> of water saved annually following installation of rainwater harvesting
- **0.5 tonnes of paper per annum** following installation of Live Production Monitoring System
- **€55,400 saved in cardboard use** following packaging waste prevention of cardboard boxes used and use of returnable boxes
- A reduction of over 50% in landfill waste by increasing recycling.

## Lessons

Many important lessons were learnt during the CGPP including:

- Incorporating reuse options into new products
- Focussing on saving packaging by reuse
- Train staff on environmental awareness and encourage staff to give views and opinions
- Optimising the use of material by segregating waste and identifying alternative uses
- Engage consultants on energy management
- The importance of creating opportunity matrix with accurate saving calculated. This allows management to prioritise resources on specific projects.

## More Information

For more information on this project please contact:

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**The Cleaner Greener Production Programme (CGPP)** of the EPA is funded under the National Development Plan 2007-2013. The CGPP was launched in 2001 as a grant scheme to fund Irish organisations to implement cleaner greener practices while achieving significant cost savings.

Cleaner Greener Production is the application of integrated preventive environmental strategies to processes, products and services to increase overall efficiency and reduce risks to humans and the environment.

- Production processes: conserving raw materials and energy, eliminating toxic raw materials, and reducing the quantity and toxicity of all emissions and wastes
- Products: reducing negative impacts along the life cycle of a product, from raw materials extraction to its ultimate disposal.
- Services: incorporating environmental concerns into designing and delivering services.

The programme aims are focussed on avoiding and preventing adverse environmental impact rather than treating or cleaning up afterwards. This approach brings better economic and environmental efficiency.

The CGPP is funded by the EPA STRIVE and NWPP programmes

Additional case studies from companies that participated in CGPP are available on our website ([www.cleanerproduction.ie](http://www.cleanerproduction.ie)), including:

- A full technical report for each project
- Programme brochures, summarising all projects funded under CGPP

More information on CGPP is available from the EPA:

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