



Reducing component weight and cost with MuCell.

Scheffenacker Vision Systems Australia (SVSA) manufactures approx 2 million external car mirrors pa, 60% of which are exported.

External car mirrors are also becoming increasingly complicated with motors for electric adjustment and integrated lights. In supporting and protecting this technology, the mirror design must be able to withstand stringent specification testing, yet still maintain an ease of manufacture and assembly at a competitive price.

Scheffenacker have recently begun using a new form of continuous structural foam moulding called microcellular injection moulding (MuCell). MuCell is very advantageous as it has the potential to mould thin-walled components at lower weight, reduce cycle times, improve dimensional stability, reduce warpage and improved power consumption during the manufacturing process. As with any new product or process, there is a development period where new plastic components are intensely scrutinised for their ability to meet real world performance criteria. This was particularly important in the case of MuCell, because it is widely known that the performance of structural foam mouldings is below that of solid parts.

A thorough analysis of physical properties was undertaken in collaboration with the Ian Wark Research Institute in order to gain a better understanding of the effect of microcellular moulding on the structure-property relationships of critical engineering plastics deemed relevant to SVSA. Techniques such as differential scanning calorimetry (DSC), dynamic mechanical analysis (DMA), scanning electron microscopy (SEM) as well as a variety of standard testing equipment were used to show that through an effective design of experiment, the expected decrease in performance of key physical, mechanical and thermal properties can be minimised, and even improved in some cases.

With the large production runs there are obvious cost savings from using less material. Also production cycle time is reduced because the component being lighter, cools quicker and less power is consumed further reducing costs.

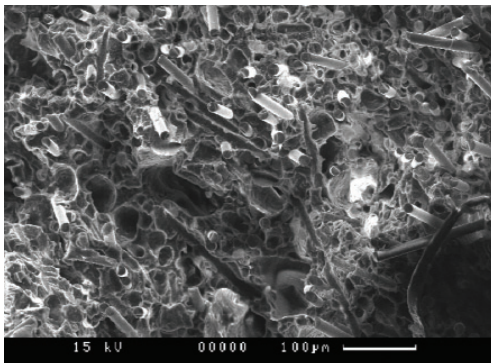


Figure: SEM micrograph of the Freeze fractured morphology of a glass-filled polypropylene, processed using MuCell.

Company quote: "Scheffenacker recognises the need to reduce manufacturing costs to stay competitive. The micro-cellular injection moulding process has proven itself to provide these opportunities. The Ian Wark provided us the means to determine the effect of MuCell on some of our more critical materials, providing our engineers with a sense of confidence in the process and speeding our time to production".