A clear case for closing the loop for glass

The case for recycling waste glass back into the production of new bottles and jars is compelling. As well as reducing the amount of natural minerals extracted to produce virgin glass, the energy saved by the container manufacturer creates a saving of one tonne of carbon dioxide for every six tonnes of recycled glass used.

The Scotch Whisky sector in Scotland demands exacting quality standards for its packaging materials, reflecting the premium products they contain. Even minor defects in the bottles can lead to rejection. While the industry works tirelessly on its own at bottling halls, and with bottle manufacturers, to minimise the scale of rejects, there will always be a significant quantity of glass containers that are rejected for recycling.

This has led to the Scotch Whisky industry undertaking research to better understand what was happening to the rejected bottles and how could they be recycled into new glass containers.

The quality of waste glass and the close geographic proximity of the bottlers and container manufacturers indicated that a business case for a 'closed loop' recycling system - where this waste glass would be recovered, cleaned and recycled into new bottles - was a possibility. Supported by waste and resource management operator Viridor, glass container manufacturer O-I Manufacturing and Zero Waste Scotland, the industry carried out a small survey and a recycling trial.

There are 17 spirits bottling halls within an area of the central belt of Scotland, and two bottle manufacturers. A survey showed that, in 2014, the Scotch Whisky bottlers created some 7,300 tonnes of waste glass, the majority being clear or 'flint' glass. The estimated figures for 2015 indicate that these figures will remain static, with improvements in rejection rates being countered by growth in the industry.

To pilot the opportunity, a trial collection of seven tonnes of glass from a series of bottlers was sent to the glass recycling facility attached to the O-I bottle manufacturing plant at Alloa. This was inspected for colour purity, particle size and contamination levels against the regular waste glass receipts at the plant. It was found to be superior in all aspects. After carrying out minimal 'cleaning' by removing labels, closures and any product residues, the glass was successfully recycled into new Scotch Whisky bottles.

The added value of the Scotch Whisky industry's glass waste, measured by its sales value minus the additional collection costs, was estimated at £51,000 per year at 2014 prices. However, when used as aggregate replacement it has a cost of disposal of £73,000. Therefore, a closed loop recycling arrangement would see a financial gain of £124,000 per year. While this gain is lower when compared to that for other recycling options, such as glass fibre or road paint, the closed loop system still provides a positive financial return.

The sector continues to work with its waste contractors and Zero Waste Scotland to facilitate this waste glass material to be returned and used as a raw material for future Scotch Whisky bottles.

Estimated Waste Glass 2014 - Total 7,315 tonne