

Global glassmaker outlines four key goals for sustainability

As one of the world's largest container glass manufacturers, Owens-Illinois has a potentially significant influence on reducing the carbon footprint of this energy-intensive industry. Helen Bird spoke to Tim Neal, the company's Environment, Energy and Risk Manager about its sustainability initiatives which, following a complete glass life cycle assessment, take the form of four key goals.

Owens-Illinois (O-I) describes its commitment to sustainability as 'the bedrock' of its corporate priorities. To that end, the global giant in container glass undertook a wide-ranging life cycle assessment (LCA), measuring the carbon emissions generated by each phase in the life cycle of a glass container across all of the regions it operates in - not just the UK or Europe but worldwide.

The LCA was one of the first in the packaging sector to follow the complete life of a package - from the extraction of raw materials to the reuse or recycling of the container. It was carried out in alignment with the work that the European Container Glass Federation, FEVE, undertook for its European members, as well as work carried out by the Glass Packaging Institute (GPI) in the USA, since O-I operates heavily in both regions.

"That has given us a very full picture of the impact of glass as we currently stand," says Tim Neal, O-I's Environment, Energy and Risk Manager, who is based at the company's Harlow, UK site. "Following that," he continues, "We set four key sustainability goals; three of them very much related to environmental impact that we saw within the LCA, and one relating to health and safety in the workplace."

The intention set out by the three environment-related targets is, based on 2007 figures, as follows: To reduce energy by 50%; to increase recycled



▲ Tim Neal, Environment, Energy and Risk Manager, O-I Europe.

(post-consumer) content to 60%; and to reduce total CO₂ emissions by 65% by 2017. The final target regarding health and safety is to achieve zero accidents in the workplace.

"Quite clearly, these are very ambitious goals," says Mr Neal. However, he emphasises, "For a lot of these savings or increases, we know exactly how we're going to achieve it."

Energy savings

The first phase of the work towards the energy reduction goal, Mr Neal confirms, will be for O-I to make all its furnaces 'best-in-class' in terms of efficiency. "We're a large company and we have furnaces of various designs and various technologies across the group, largely because we have acquired many of the plants within the group today," he says. "We know which furnaces are the most energy-efficient, no doubt."

The most energy-efficient furnaces, he adds, are not necessarily electric. "In terms of direct energy usage, yes, electric

furnaces would be using less kilowatts, but if you look at the total energy used, particularly for the generation of the electricity off-site, they are not necessarily the most energy-efficient."

The aim for O-I is to achieve a consistent level of efficiency across its plants, implementing a rebuild process for its least efficient furnaces in order to get "a fair proportion of the way" towards the energy reduction target.

In addition, Mr Neal confirms, it is investing in research and development to advance technologies to improve the melting process, carrying out a significant amount of work at its technical centre in Perrysburg, Ohio in the USA. "As with all research and development, there's no guarantee that it'll be commercially successful, but we're doing all the right things in order to make that next step improvement in glassmaking," he says.

Cullet increase

To achieve the targeted cullet increase, the company will implement a purchasing strategy to increase the quantity of cullet it buys. Mr Neal emphasises the importance of cullet that is value for money, as well as the right quality. "As sort technology improves, it may be that we're able to use a wider range of cullet, and that's work ongoing," he says.

Of course, there are certain regions

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that use a higher percentage of cullet than others, but there is nonetheless room for improvement across the board, Mr Neal asserts. "The average recycled content within European furnaces is higher than the rest of the world and we have many furnaces in Europe that are well above the 60% external cullet level today. However, we're only at 47% recycled content today in Europe so we still have some more to do here.

"The recycling networks of many parts of Latin America, Asia and the USA are not as developed as Europe, so of course there will be additional focus within those regions. But it doesn't mean Europe can take a holiday on this one!"

Emissions reduction

The target to reduce CO₂ emissions by 65% is largely dependent upon the achievement of the previous two. In other words, Mr Neal explains, "If we reduce our energy consumption by 50% that will have a massive effect on our CO₂ emissions. Likewise, if we manage to reach our cullet target, that will also have a massive impact on our CO₂ emissions," he says.

While these are two of the main ways in which O-I plans to reach the target,



▲ Clear communications are vital to ensure consumers understand the value of the glass they recycle.

they are unlikely to create a 65% reduction. "We're also looking at changing our raw materials to reduce the amount of carbonates that go into the furnace as a virgin material," says Mr Neal, primarily referring to limestone, soda ash and coke.

Furthermore, the company is looking into other technologies; in particular, for capturing the CO₂ after it has been emitted. While the current focus falls on large emitters such as power stations to implement such technologies, O-I believes that there may eventually be opportunities for lower level emitters like itself to get involved in that area. "Those are much longer term projects," Mr Neal adds.



▲ Lean+Green glass is a global initiative from O-I. These bottles are being made at its plant in Adelaide, Australia.

Regional focus

In light of its growing presence in China (with eight plants producing one million tonnes of glass packaging per year), as well as the country's increased emphasis on environmental protection, energy efficiency and emissions control, O-I recently presented its complete LCA study at the China Safe and Sustainable Packaging Summit in Hangzhou, China. The summit discusses best practices in reducing resource use, waste and associated costs, and creating sustainable packaging with consumer appeal.

Steve Bourke, Regional Environmental and Risk Manager for O-I Asia Pacific, who presented at the summit, said: "Sustainable packaging is becoming a critical consideration for food and beverage industries in Asia Pacific. The focus on sustainable packaging in China is expected to grow due to

lightweighting's sake," Mr Neal emphasises. "Very clearly, we advocate design optimisation," he says, explaining that where improvements to the design of certain containers can be made, the company is rapidly working on this.

The well-publicised 'Lean+Green' range provides an excellent example of where this principle has been applied successfully. "With Lean+Green we've got a range of different weights so they're not all at the 300g level but they offer some market differentiation, for example, the lightest in its class of a premium wine," says Mr Neal. "That kind of work will make a big difference in terms of the carbon footprint of an individual container."

Indeed, O-I understands that a lightweight bottle must still fulfil the requirements of the consumer and be fit for purpose. Simply opting for the lightest design without considering the needs of the market is a risky strategy, it believes. Perhaps this is why the Lean+Green range has proved so successful across the world, with particular demand in the USA and Asia-Pacific and a sales amounting to 36 million bottles in 2009.

The road to achievement

Now that the targets have been set, O-I has a lot to do in order to reach them. Mr Neal, who has been part of the company's emissions reduction steering team since it was set up some 12 months ago, is fully aware of the 'ambitiousness' of the four key targets but is nevertheless optimistic, as he is for the future of glass as a packaging material.

"We've worked very closely with FEVE for future regulation and the direction that the European Commission is going," he says. "For instance, there's the 2050 Roadmap, which is being developed now by the Commission, and via FEVE we are beginning to give our input of where container glass will fit into the European economy in 39 years' time." ■

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▲ Every 10% of recycled glass used in production cuts carbon emissions by about 5% and reduces energy use by around 3%.

environmental awareness, government initiatives and an increasing population.

"O-I's LCA provides key packaging decision-makers in China with more insight into the environmental impact of their packaging choices. It also dispels any myths associated with the carbon footprint of different packaging types," he continued.

Design optimisation

Another way in which O-I can, as one of the world's major glassmakers, contribute to the sustainable development of the industry is to optimise the design of its products with a view to using less glass. "We are not advocating lightweighting for