

Recycling – what the big companies are doing

Dean Bellefleur investigates a number of application-dependent solutions to address post-consumer waste.



It's shiny, and when new travels at a speed of 72,000 units an hour rolling off a production line. No, it's not a Ferrari, but a can of Red Bull.

The lucrative beverage market is highly competitive, diverse, innovative and above all accelerating. The best illustration of acceleration occurs downstream of the filling lines, where streams of roller conveyors and accumulators shuttle uniform, pristine product with military precision.

Spellbinding as these geometric abstractions materialise, they're rapidly reshuffled into patterned payloads for distribution. Cycling at 72,000 cans/hour/line, and deafening as it may be, it's truly the sound of money.

To be more precise, Kronos' filling lines of Red Bull in China actually have a cumulative capacity of 5,100 cans a minute. Tetra Pak filling machines produce just short of 28 billion aseptic cartons in China, and their global figure was 141 billion for 2008. The US, with a population of 300 million, annually consumes 101 billion beverage cans, and the European numbers are 45 billion cans with a population of 400 million.

World population is approximately 6.8 billion. These are staggering quantities to conceptualise, but let's try.

“Every person in the UK uses about 240 steel cans a year, which is about enough cans to stretch to the moon and back three times!”. These figures represent but a fraction of total packaging production. OK ... are you ready for it? About 400 billion plastic bottles are filled with beverage every year.

The need for production capacity is predominantly fuelled by the development of the emerging markets, where in the past I would have said mergers and acquisitions. Today, China, Brazil and Russia are the boardroom stars commanding the lion's share of the budget pie. Who can say no to the projected growth, and why would you? It is but the tip of the iceberg.

'Green' issues, however, have progressed from beyond a rear-view distraction to negotiating a detour. The enthusiasm to satisfy the global beverage demand has outpaced a municipality's capacity to deal with the post-consumer waste. The challenge therefore is to mitigate the colossal amounts of waste without impeding the speed of commerce. Hence the need for speed.

Continued harvesting

Recognising and acting on a window of opportunity isn't restricted to entrepreneurs, nor does a solution necessarily need to be of a radical design. In fact, there may not be an immediate big bang for the buck. Rather, think in terms of perpetuating a marketing legacy. The optimising processes put in place today will sustain the packaging industry for continued harvesting.

The new business model surely needs to be predicated on sustainability. Ultimately, the production engine should be sustained by its own waste; a closed life cycle loop. Local production consumes local waste. No more shipping waste off to the neighbour's backyard or oceans. We're talking recycling as opposed to downcycling!

Pipe dream or reality? Let's consider how Krones AG is closing the loop. Firstly, Krones has chosen to work with material at hand, PET a beverage industrial standard. No need to reinvent the wheel, and Europe is already recycling upwards of 15% PET containers, thus establishing a dependable source of recyclates.

Developed in-house, Krones' bottle-to-bottle recycling process emphasises economy, energy efficiency coupled with an avoidance of any chemical conversion of the PET to produce its PET flakes.

Approved by the Food and Drug Administration, the recycle flakes are suitable for reuse in direct contact with beverage and other foods. Preforms are produced from recyclates with ratios of 50/50 and 40/60 exceeding all expectations (recycled/virgin PET), including their visual characteristics.

There's no black box when it comes to the process. The flow chart commences with material preparation, separation of PET and PO (polyolefines), drying, grading and the

final removal of migrated constituents in the ‘super cleaning’ phase. What remains is the deployment of the PET-recycling module. Well done.

Brand ideology

Where Kronos represents a leading provider of technologies and engineering to the beverage industry, our next innovative strategy comes from Coca-Cola – the global beverage brand leader. Brands as we know reflect the ideology of their consumers and as such are ideal barometers of the social conscience.

The Coca-Cola Company – a visionary leader with serial ground-breaking initiatives in sustainable packaging – bases its strategy on incremental improvements. The PlantBottle that we’re reading about today is in fact a campaign to reduce PET’s dependency on petroleum, a non-renewable resource.

Building on the existing PET recycling infrastructure, be it flakes or pellets, the PlantBottle is a plug-and-play solution. The PlantBottle can replace up to 30% of petroleum-based PET resins with plant-based material. Coca-Cola’s goal is a completely recyclable bottle utilising 100% non-food plant waste material in its construction.

To this end, Coca-Cola is a direct investor in six global bottle-to-bottle recycling plants, including the world’s largest recycling plant in Spartanburg, South Carolina. The innovative aspect I’m particularly impressed with is that the PlantBottle can be recycled in the same mainstream programmes as PET is today. It’s precisely this leapfrogging approach that fast outpaces a ‘not invented here’ culture.

Implementation of Coca-Cola’s recycling programme can therefore be deployed as swiftly as the PlantBottle can be introduced to communities around the globe. Talk about facilitating environmental best practices. Hats off to the Coca-Cola Company.

Visibility and transparency are two key elements of communication that for Coca-Cola build brand equity and loyalty. Coca-Cola’s consumers can now demonstrate their endorsement for a sustainable bottle, and the beverage packaging industry has a viable solution to mitigate the colossal amount of post-consumer waste. This is exactly the technique one uses to eat an elephant: in small bites.

Up until this point, the recycling platform has been based on PET which makes use of an existing industrial base. In an industry where product differentiation is a critical success factor, it would be naive to entertain the idea that one solution will triumph over others, nor should it. What we need to look for are application-dependent solutions rather than a one-solution-fits-all approach.

Recycled carpet

So let's consider NatureWorks LLC, the supplier of Ingeo biopolymer – a plastic resin that offers a significant reduction in greenhouse gas emissions and energy consumption when compared to petroleum-based polymers.

Ingeo biopolymers are derived from 100% annually renewable resources, with performance and economics that compete with oil-based plastics and fibres.

In addition to an overall smaller carbon footprint than oil-based polymers, Ingeo is certified compostable to the ASTM D6400 standard for compostable plastics. While volumes are not now high enough to warrant widespread recycling of Ingeo bottles, the technology exists today for automated sortation, and it's expected that when markets evolve for recycled Ingeo, recyclers will find it advantageous to invest in this technology. Furthermore, there's no downcycling of Ingeo when it's recycled through a process called hydrolysis.

Now, think disposable cups and tableware and guess what the delegates at the recent Copenhagen Climate Change Conference were eating from? The answer is Huhtamaki BioWare cups and containers. In fact, all 285,000 BioWare cups and the 12,000 deli containers supplied to delegates at the conference were made from NatureWorks' Ingeo bioplastic.

And while the delegates are eating and drinking, they'll be standing on an Ingeo carpet that will be recycled following the conference through a hydrolysis process. An ingenious application of Ingeo bioplastics for commodity articles; articles that when compared to petroleum plastics offer lower greenhouse gas emissions and energy consumption.

And there you have it. Synchronising an integrated approach to problem solving as demonstrated by a manufacturer, a brand owner and an ingredient supplier isn't unlike negotiating a roundabout on the journey to deliver sustainable packaging.

Canadian-born Dean Bellefleur is an international expert in consumer packaging design.