

Dividella's monomaterial packaging solution to the global plastics crisis

Overview

In February 2108, a young sperm whale, an endangered species, washed up on a beach in southeastern Spain. When scientists carried out a necropsy, they discovered the huge mammal had succumbed to a fatal infection caused by more than 30 kilos of plastics in its stomach and intestines. The whale was far from alone. Some 90% of dead sea birds, are found to have plastic in their gullets. And the problem is only getting worse as an estimated 10 billion kilos of plastics enter the rivers and oceans every year – on course to double by 2025.

The world has a new acronym for environmental crisis – GPGP – the Great Pacific Garbage Patch an 80,000 tonne island of mostly plastic trash swirling around between California and Hawaii. These plastics not only kill animals but decimate coral reefs, and damage human health as they break down into microplastic particles that are now prevalent right across the food chain.

This is why enterprises increasingly aspire to become “plastics free” as part of their sustainability goals. For the pharmaceutical industry, the biggest use of plastics is, of course, in the packaging and logistics chain. Tackling this problem means embracing the use of monomaterials (essentially cardboard) to replace plastics in packaging.

Monomaterial packaging benefits

Parenteral packaging specialist Dividella has long espoused the concept of using 100% monomaterials in its packaging solutions – not just for environmental reasons but also to deliver much lower Total Cost of Ownership (TCO) and Total Cost of Package (TCP).

In depth research and numerous case studies enables Dividella to calculate actual savings from using monomaterial packaging with some precision.

In principle, the development of the packaging solution should take place right at the beginning of the decision-making process. The choice of a suitable packaging solution has considerable impact on very many TCO points. Special attention must therefore be paid to the packaging solution, because it may undoubtedly be one of the dominant cost drivers.

To explain this, consider the simple example of packaging three syringes and a pack insert. The choice is between a classic blister pack in a side-loading folding box or a 100% cardboard solution consisting of a folding box with a glued corrugated flute, which can be produced on a toploader.

The table below shows how the material costs differ:



Figure 1

Figure 1: Packaging material costs

Item	Blister pack	NeoTOP 100% monomaterial
Folding box	10¢	8¢
Plastic tray/cardboard flute	9¢	2¢
Aluminum lidding foil	5¢	0
TOTALS:	24¢	10¢

Thus, for an annual quantity of 2.5 million packs, total costs are \$600,000 US for the Blister pack, compared with \$250,000 for the monomaterials Toploading pack – a recurring saving of \$350,000 per year.

This is from the chosen packaging solution alone, but there are consequent savings to be achieved in simplicity of manufacture and, not least, in logistics from weight and volume reductions, particularly in cold chain where both are at a premium

To develop the above example, the NeoTOP monomaterials package has a volume about half that of the blister pack, partly because the former is optimised for volume and also by eliminating the need to seal blister with the lidding foil.

By land, it costs some \$5000to shift a 9m3 refrigerated container over 3000 km . Now consider the number of packs such a container can carry.



Figure 3: Cleaning all plastics from our seas will require a global effort including monomaterial packaging

Figure 3: Logistics costs

Item	Packs per container	Cost per pack	Cost for 2.5m packs
100% monomaterial Cardboard	20,833	24¢	\$600,000
Blister pack	12,315	40.6¢	\$1,015,000

These transportation saving are further magnified when moving goods by sea or air.

The TCP savings extend onwards into energy cost in packaging installation, that can also be determined fairly easily from manufacturers' information. The high heating demands for film forming and sealing meant that a thermoforming process for blister packs will cost more than a toplayer for monomaterial packaging (cardboard) that is only glue sealed. In the example above, energy costs per shift, incl. compressed air, came to approximately \$5,000 for the TopLoader, compared with \$12,000 for the Blister machine.

Enabling monomaterial packaging

Dividella has built up an impressive reputation across the global pharmaceutical industry for the quality and effectiveness of its NeoTOP TopLoad cartoning machines. This success has been established on a holistic approach that recognizes that machine and pack design go hand in hand.

The TopLoading concept also recognizes that pack design, construction and appearance form significant added values for manufacturers, meaning that each pack deserves to be treated as a unique entity supported by optimized handling and a complete packaging design.

Therefore, Dividella's packaging designers are accustomed to working in close co-operation with the customer's marketing departments to determine detailed specifications for individual packs and carton loading.

Dividella is thus able to address TCO and TCP concerns at multiple levels:

- The high-quality engineering of cartoners
- The flexibility and integration of modular design concepts
- Innovative package design expertise
- Extended machine capabilities allowing for wider choice of materials and formats
- User friendliness in operation

About Dividella

Dividella AG, a member of the Korber Medipak Systems Group, specializes in developing and manufacturing packaging machinery for the pharmaceutical industry with specific expertise in packaging requirements for parenteral products. Based in Grabs in the Canton of St. Gallen in eastern Switzerland, Dividella counts 20 of the world's largest pharmaceutical companies among its clients, including the entire top ten.

For four decades, Dividella has provided innovative and highly effective solutions for secure and flexible handling and packaging of pharmaceutical products. Its patented top-loading systems form the basis for solutions that have continually evolved to provide the most up-to-date, patient-friendly and environmentally responsible solutions for parenteral packaging.

Dividella provides complete secondary packaging solutions for medicinal products that can be difficult to stack, such as needles, injector pens, vials and syringes. Its top-loading solution enables product handling with extreme care and safety. Dividella patented feeding systems guarantee that all products are handled with appropriate care while maintaining high output.

Target Sectors

- Pre-Clinical Research
- Drug Discovery
- Drug Delivery
- Clinical Trials & Studies
- CRO, CMO, CRAMS & CDMO
- Formulation & Ingredients
- RA & Compliance
- Manufacturing & Production

Images:



Some 16 billion tonnes of plastics go into the world's oceans every year