

Newsletter

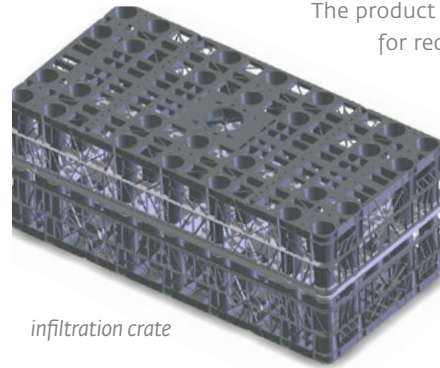


In this number: Dyka - Design for recycling, BITO-Lagertechnik - Stack and nest container
U-turn - We are raring to go!

Dyka - Design for Recycling

For years BPO has worked at sustainability by minimizing the use of materials for products. Mechanical and functional requirements are met using the minimal amount of raw materials. But, by making a product suitable to be made of recycled material we can take the environment into account even better!

Recycled plastic is still often seen as suitable only for relatively simple and crude products like roadside posts, but not much more. However, if the material stream can be kept relatively pure, the recycled material can be as good as new virgin material. For instance, BPO developed a new flower container for Flora Holland, which is made predominantly of reground material of the old version flower container, meaning that only a very limited amount of virgin material is needed.



infiltration crate

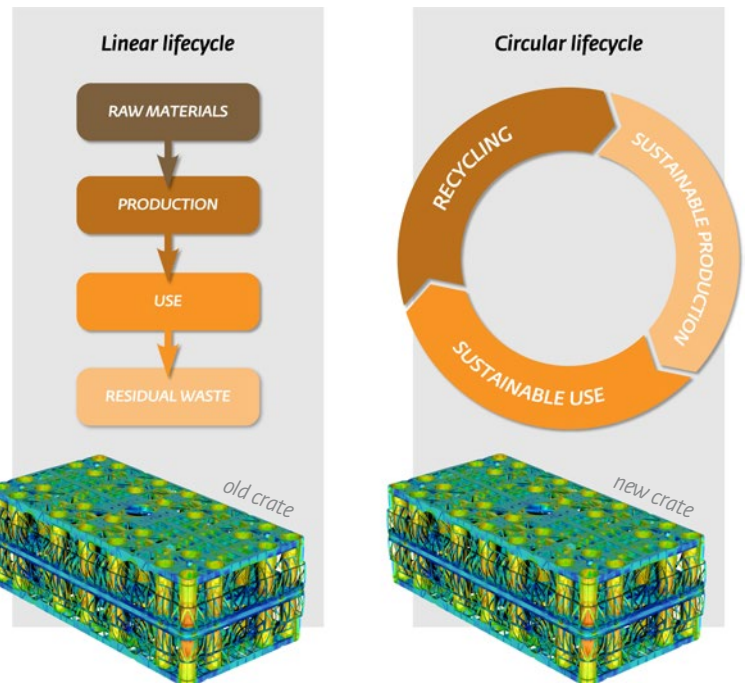
Finally, it was also possible to incorporate several smart constructive improvements, so the product functions even better than originally thought possible.

The product is made in black, this being an ideal color for recycled material. White plastic cannot be made from recycled plastic streams if there is even a little amount of colored plastic mixed in the stream. Also, the new product is almost always stronger than the existing product because the spread in properties of the recycled material is taken into account. The product is dimensioned so that it still meets all requirements even if the material is at the lower end of its range of properties.

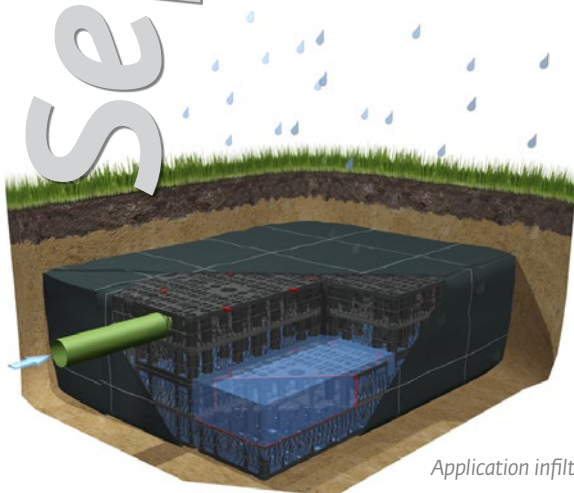
Another great example is the infiltration crate developed for Dyka. This product was originally designed by BPO and was so successful on the market that a new mould had to be made. A straight copy of the existing product would have been a logical way to go, but the existing product was made using a special new material for these kinds of constructions. Another, recycled, material that was available is somewhat weaker for long term loads. However, this can be compensated by using slightly larger wall thicknesses. This increases the amount of material and the cycle time, but the recycled material is cheaper per kilogram. A feasibility study showed that it would be possible to make a redesign for recycled material that has the same long-term strength without increased costs compared to the existing version.

All in all, it gets more and more interesting to think about making your product (partly) of recycled material and to think about if an existing product can be the raw material for the same or a new version of your product after finishing its lifetime. This way the nice property of plastic, that it can be used again and again if done intelligently, can be used optimally. Thereby we are helping the environment by decreasing landfill or incineration and by reducing the need for new fossil raw materials.

Differences in lifecycle infiltration crate



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Application infiltration crate



we know how

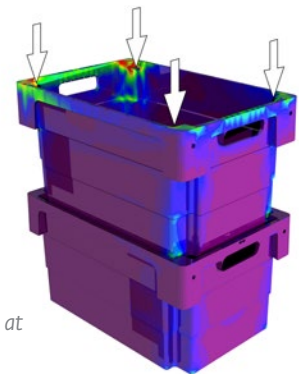
BITO-Lagertechnik - U-turn stacking bin

Often it is important for containers to not only be able to stack on top of each other, but also to be nested compactly when empty. A nice principle to be able to achieve this is a so-called stack and nest container. These containers can nest into each other, but when turned 180 degrees in the horizontal plane they can be stacked on top of each other.

Stack and nest container U-turn

The goal for this container was to realise a maximum content volume at given maximum outside dimensions. The content volume of these boxes is always a little less than of boxes that do not need to be able to nest, because the side walls need to be angled towards the inside. This is to prevent the containers to get stuck in each other while nested. This new box does not have angled side walls, it has four straight walls that are divided into three segments with a step in between. This means that the content volume can be about 20% larger than in a container with sloping walls. It is important that the wall thickness is as thin as possible, on the one hand to prevent the boxes of tangling during nesting, on the other hand to be able to have the large content volume.

BPO has optimised this construction in such a way that the stacking strength meets all requirements, while the container has little wall thickness and can be nested efficiently. The most critical load case for these types of boxes is when they are stacked with heavy contents inside. The containers rests on only four points of the



Stress simulation at stacking load

container below, where the force is not transferred straight downwards, but to a point that is offset. During the optimisation process this load transfer was the focal point. With this optimisation it was important to keep the wall thickness as little as possible, using strong and stable geometric shapes as much as possible. Higher wall thicknesses create longer cycle times in production, increasing costs. They may also lead to warpage of the product, because of shrinkage differences between thicker and thinner parts.

Next to the optimisation of the strength, the moldflow was analysed and optimised. The injection points and process parameters were developed to be able to have fast cycle times and as little warpage as possible. Also, during the moldflow optimization it was taken into account that the required clamp force would not be too high, so that the container can be produced in a standard injection moulding machine that is already in the portfolio of BITO-Lagertechnik.

The container has been launched successfully and it can be used for all kinds of applications. It can also be bought via the webshop of BITO-Lagertechnik (www.bitocom.nl).

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Nested container



Stacked container

We are raring to go!

During the corona crisis lockdown we have experienced exciting times like everyone, but thankfully we were able to work from home. It has been heartwarming to see that our clients kept finding their way to us unabated! Since June our office in Delft has been partially staffed again and at the office we apply all required precautions concerning COVID19. We are keeping our distance, disinfectants and sanitizing products

are available and meetings in our largest meeting room are maximized at six persons. Do you want to meet us in person at our office in Delft? This is possible again now with the precautions in place. We trust to be able to give you our excellent service at the same level as before. Curious to find out what we can do for you? Go to www.BPO.nl for an overview of our services.

