
OTTER
Future + One Material One Product + Supermarket of the Future + One

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UdK Berlin
Design and Social Context

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In Cooperation with:

BASF

INHALT

CONTEXT

The following project was created as a merged design project in the classes ‚Supermarket of the Future‘ and ‚One Material One Product‘.
By merging the two, the project has a material and production context as well as an social context. The technical constraint is the use of a single high-performance plastic from the BASF portfolio. The design of OTTER shows a relevant use of Ultramid in a product sector where otherwise many textile and hard plastics as well as metal components are mixed in product designs, making recycling impossible. In the context of the supermarket of the future and the present, the design shows how mobility and transport of shopping can be facilitated in a sustainable way by bicycle.

SUPERMARKET OF THE FUTURE

One and two-person households in Berlin go shopping on average 4 times a week, which corresponds to one purchase every 1.5 working days. On average, only 7 products are purchased, with a median of 7.5, meaning that hardly any large purchases are made. (https://orgprints.org/id/eprint/38504/1/Schlussbericht_14NA025_final.pdf)

My own observations confirm these data, in city centers the vast majority of people go shopping only with a basket and not with a shopping cart. Many customers bring their own transport containers such as jute bags or backpacks to the market to transport purchases home, the repacking takes place at the checkout or at the self-checkout.In the foreseeable future, the self-checkouts could be expanded by scanning while shopping or by checkout via NFC. A transport container that can be used for collection in the store and for further transport would therefore become all the more practical.

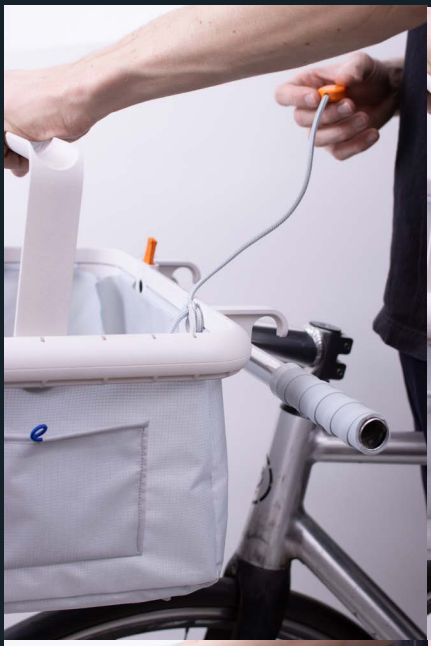
OTTER

Ortlieb Bags

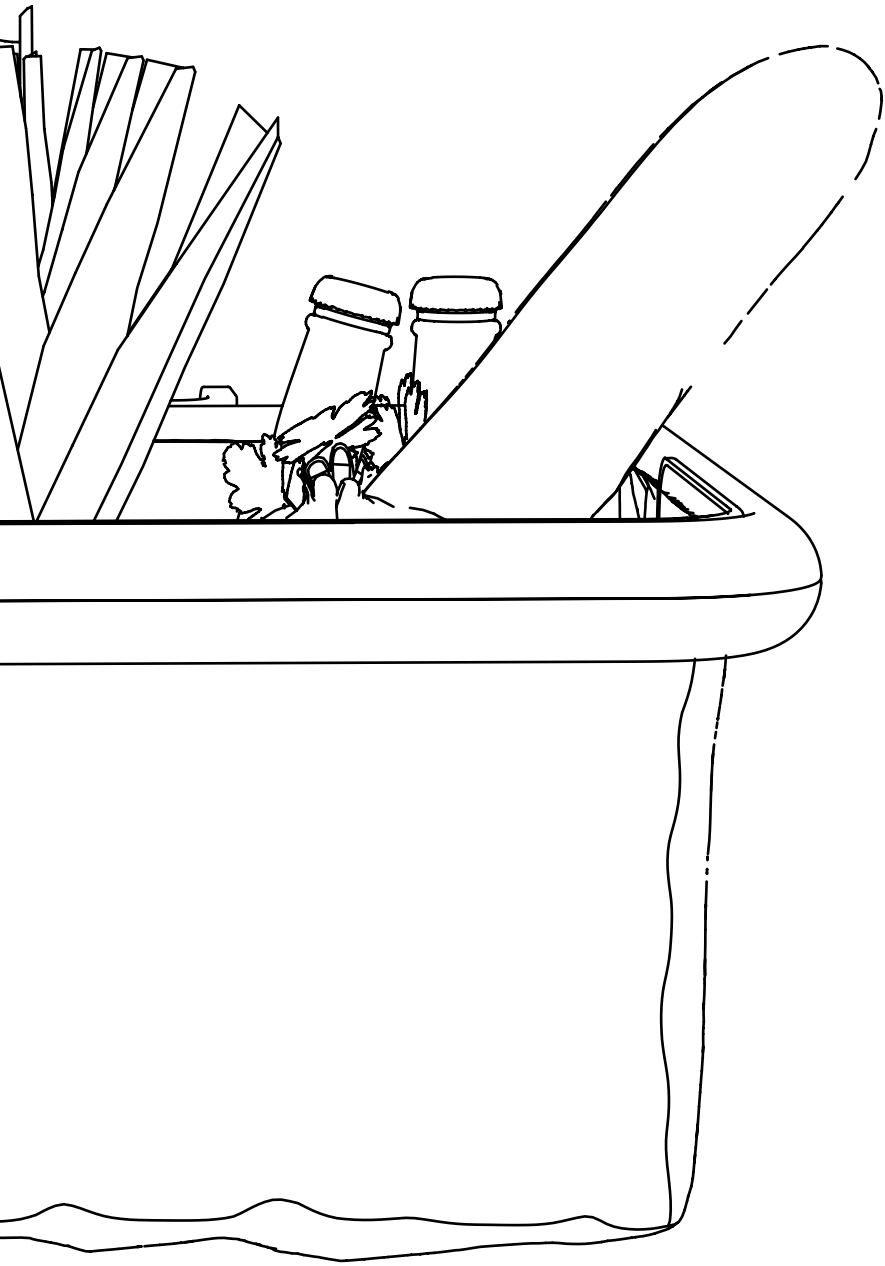
Reisenthel Basket

Otter is a basket for shopping and attachment to the bike.
The bike basket shows a new, flexible typology of transport containers and combines the advantages of other products. A fixed frame serves as a base and brings together the attachment points to the bike with the handle and the basket / bag. The volume is approximately the same as a standard shopping basket. The filling space has approximately the dimensions 350mm x 280mm x 170 mm (about 17 liters).
The basket is hung on the handlebars and secured against twisting downward with a rope that is guided along under the stem. The load of the purchase is thus converted over the handlebar as a pivot into a tensile force which is carried by rope. The integrated Fid-Lock mechanism lets the rope snap into position easily and can be released by pulling with one and.
The handle is integrated and locks in the vertical position when carrying.
Ripstop makes the bag foldeable, but has a certain inherent rigidity.
There is an additional pocket on the side for smartphone or wallet.
and basket could still be expanded or closed at the top witha simple add-on. The bottom is stiffened and has holes for water drainage.

OTTER IN USE





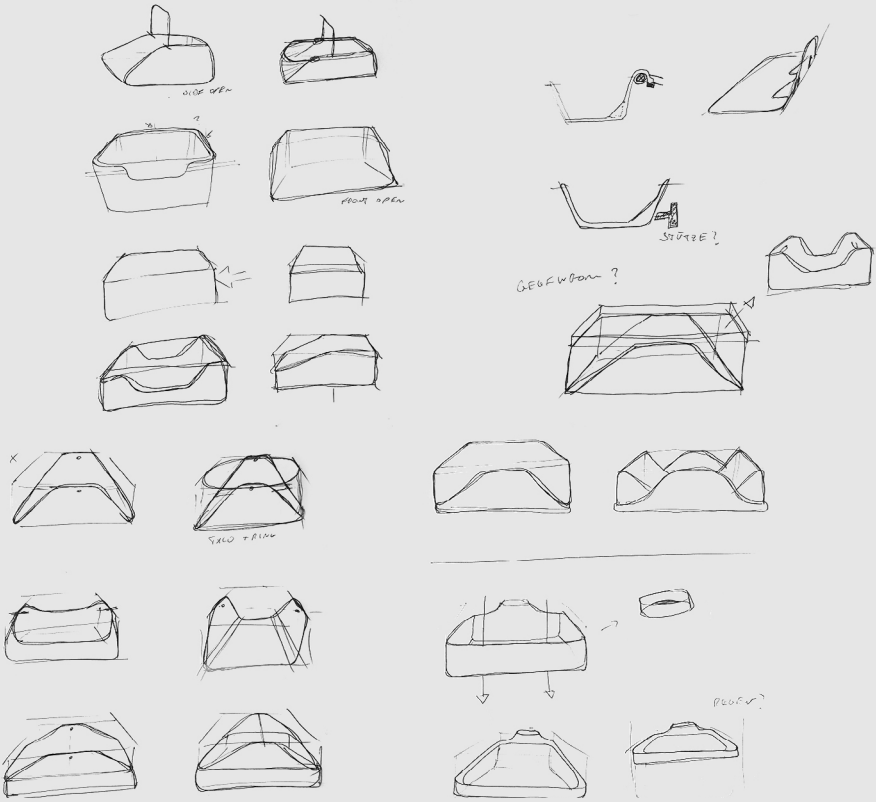
IMPACT

On the one hand, the design links shopping with the key issue of mobility, and on the other hand, the One Material approach brings the sustainability of the product itself into focus. Otter facilitates shopping by bicycle and replaces several objects that are necessary for the process of shopping with it. Although shopping is one of the most common mobility activities in everyday life besides commuting, there are only few transport containers that are specially designed for this purpose. Otter in particular offers the possibility of attaching groceries to your bike with your transport container without the need for the bike to have special technical features and devices. By using only polyamide and the repairability and replaceability of all individual parts, a new direction of sustainable product development is shown.

PROCESS

After evaluating variants as sketches in an iteration matrix, mockups of different sizes and carrying handles, as well as with different attachment points were created. The goal was also to cover a wide range of bicycle handlebars. Bicycle handlebars range from 22mm to 32mm in diameter. A finalized version of the basket would take 32mm as the standard and taper the diameter with inserts. Prototype I was built for 22.2mm.
CAD drawings were used to form some iterations of mounting widths, rope anchors, and ribbing for the piping, and some of these were tried out in FDM 3D printing as 1:1. Various fabric patterns were evaluated that could be made from nylon in this or a similar way. Prototype I has a frame made of laser-sintered nylon and ripstop fabric as the basket. The rope clip is an integrated Fid-Lock® component that has been somewhat customized. Fid-Lock® also offers custom development of components. The Fidlock closure on the prototype is only rated to 30kg, but could be modified for much higher breaking loads. The closure on the prototype shows that it is possible to easily connect the rope to the frame and adjust the length.
The frame of Prototype I was manufactured from nylon PA12 using the SLS process. This material has a tensile strength of approx. 46 MPa. A tensile strength of up to 200 MPa could be achieved with glass fiber-reinforced Ultramid® in injection molding.


211125
KEDER DETAIL



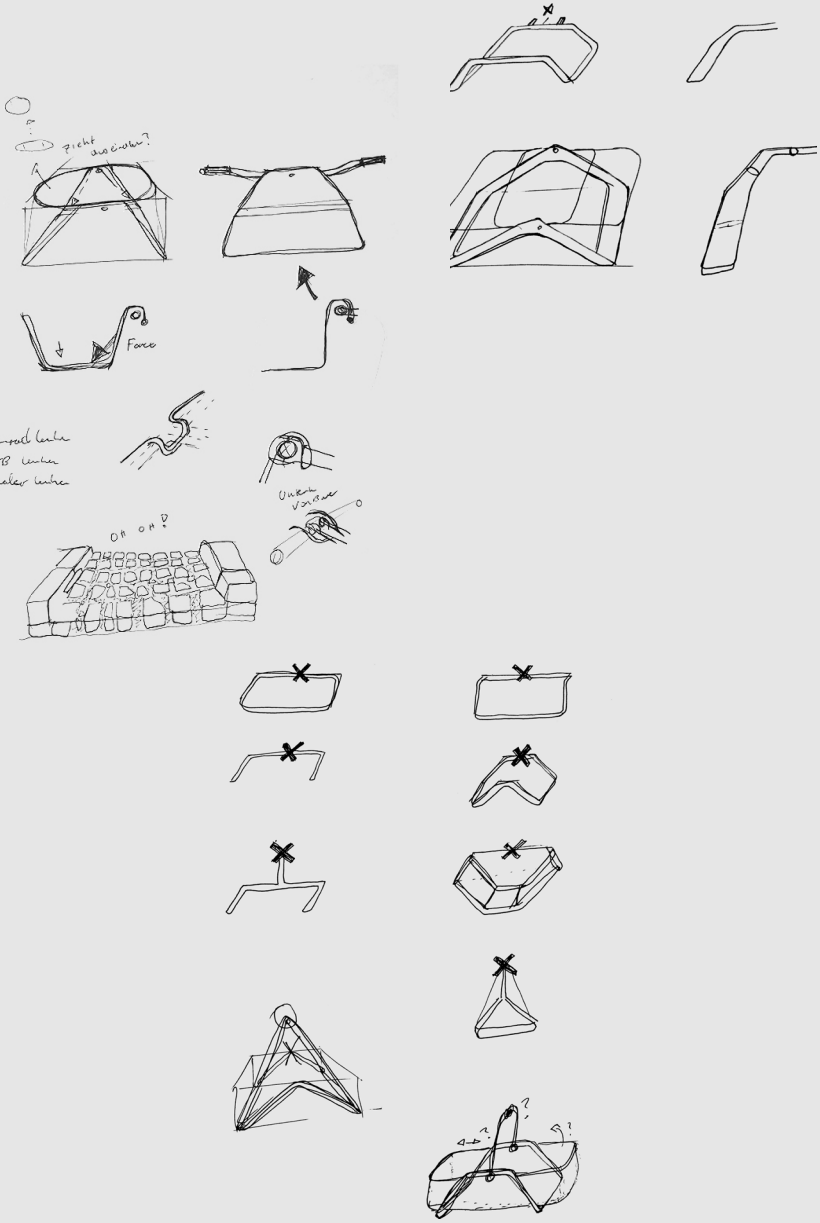
BORDSTEIN

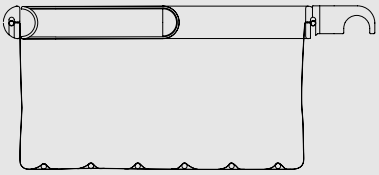
150mm

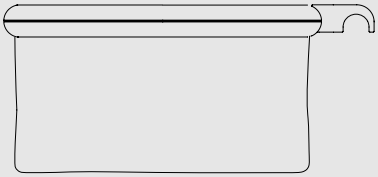
F=m·a

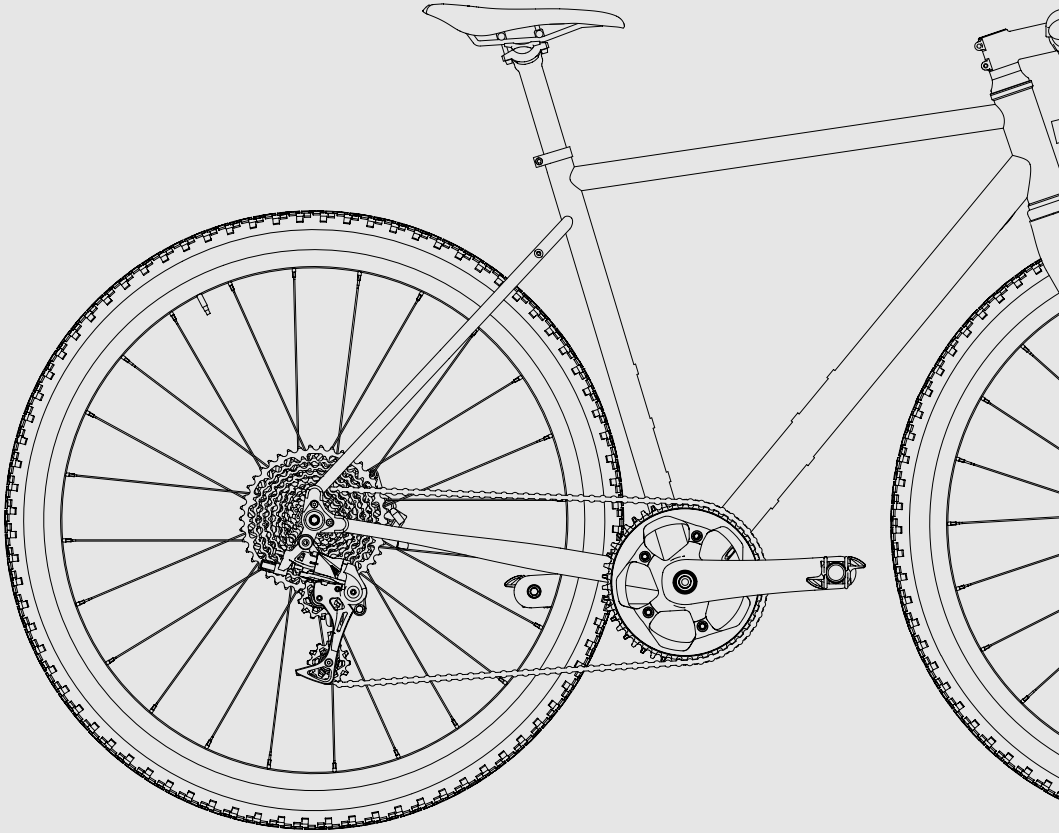
≙ 98

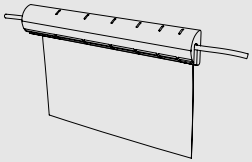
DREH. MAX.

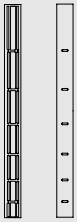

Force
OR OR?

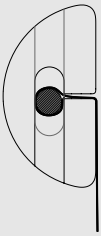


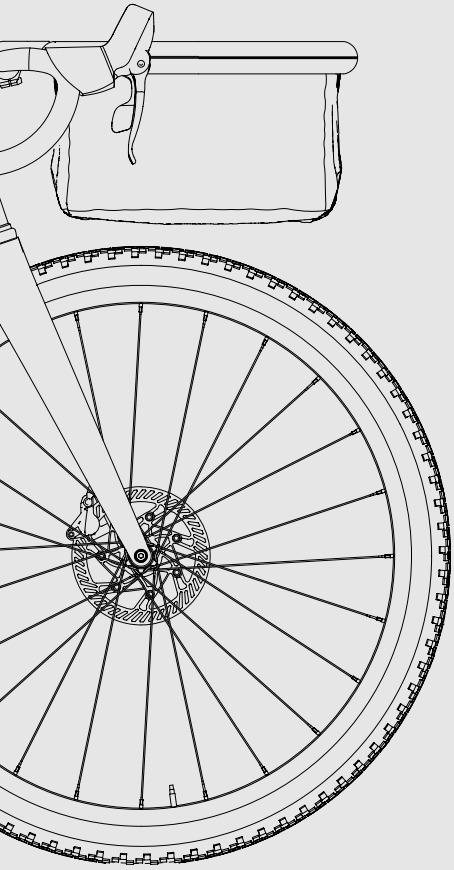


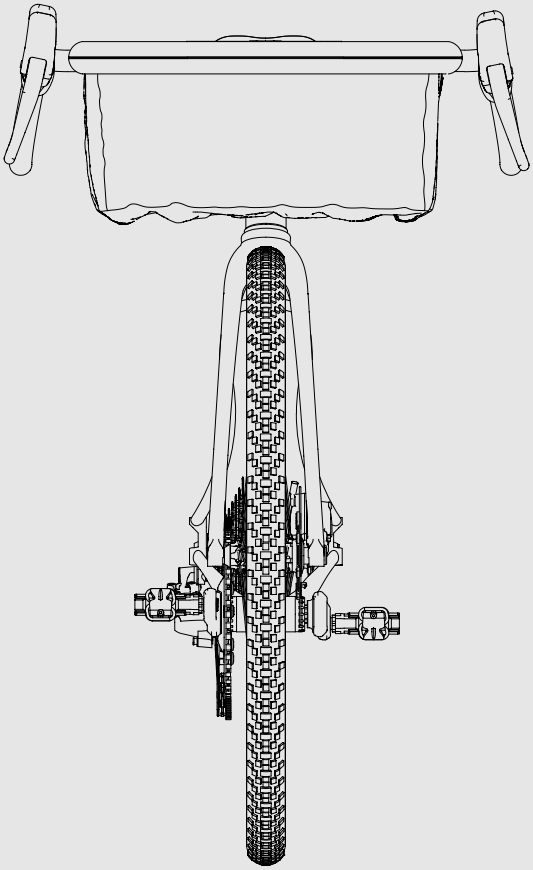


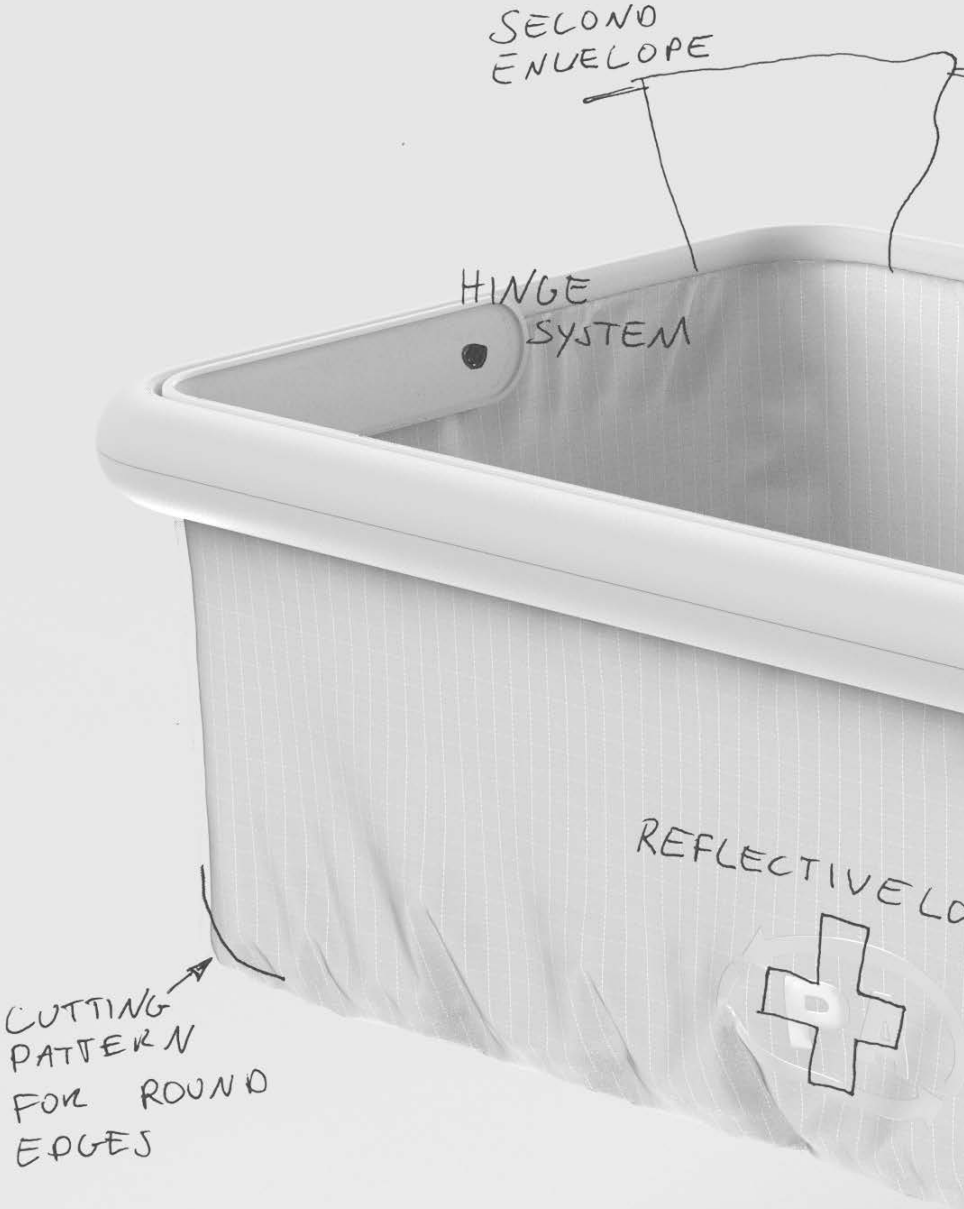






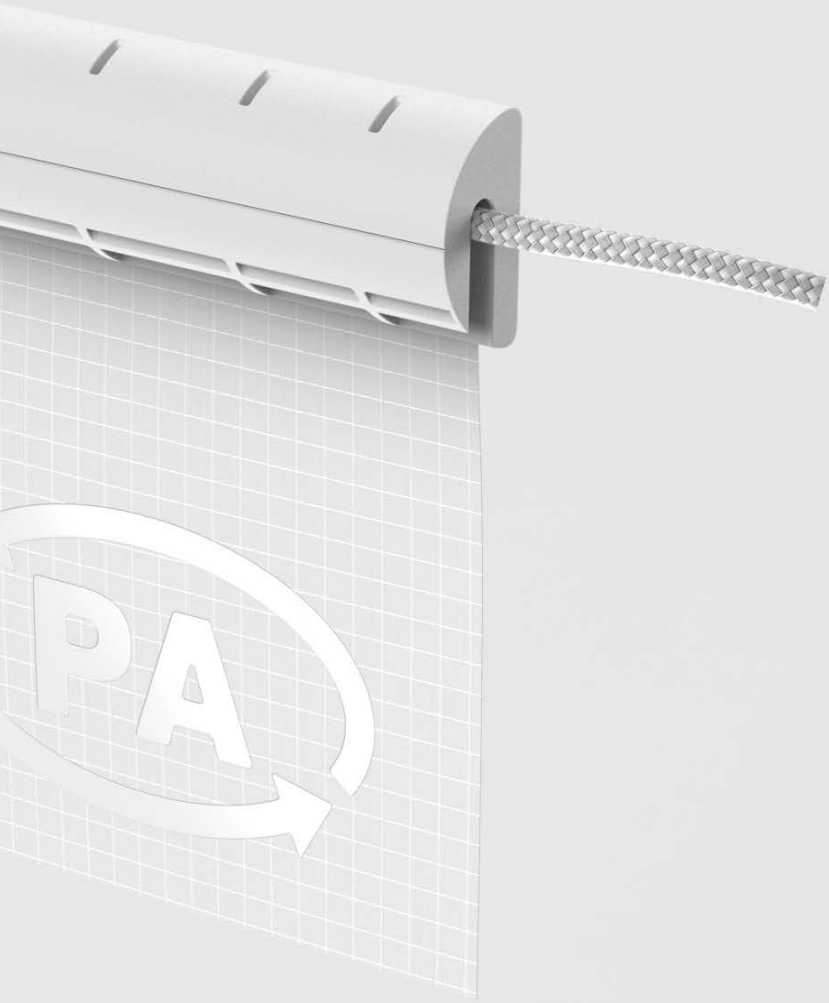





SECOND ENVELOPE
HINGE SYSTEM
REFLECTIVE LO
CUTTING PATTERN FOR ROUND EDGES


GUIDE + TENSIONER
FOR ROPE
ADD
SIDE POCKET

ONE MATERIAL ONE PRODUCT

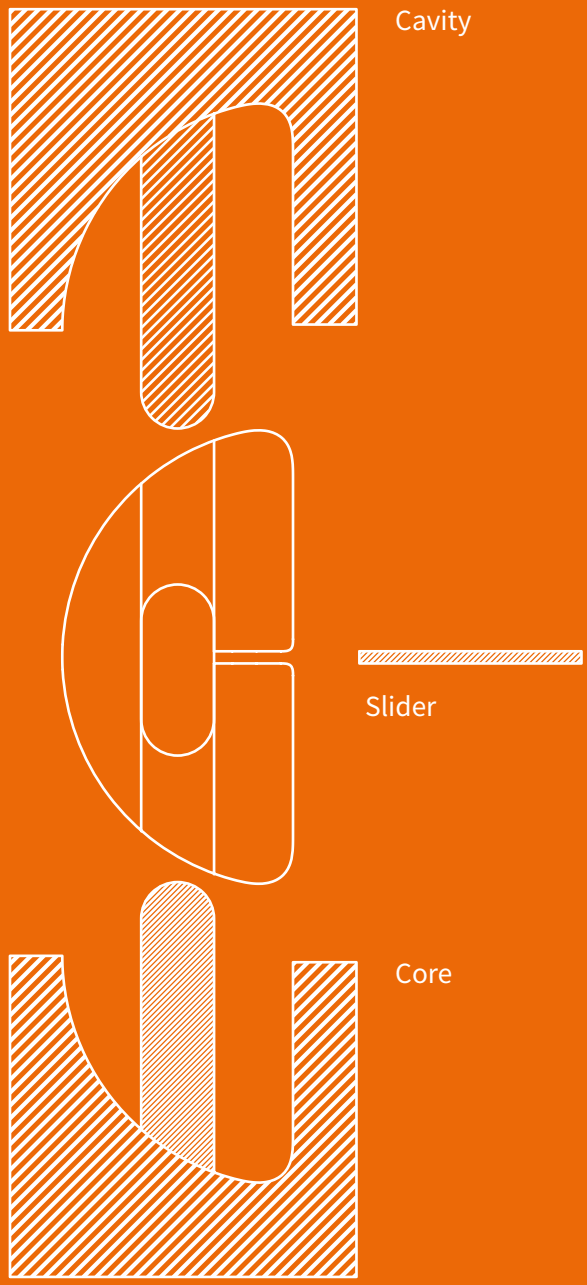

PA

To enable a mono-material construction, a variety of clamp and push-fit connections as well as a keder connection were used.

The frame main component is a fiberglass reinforced injection molded recycled Ultramid®. The bag is made of polyamide ripstop fabric, the reinforcements at the bottom are injection molded or extruded parts made of Ultramid®, the rope at the closure and in the keder connection is woven from polyamide fibers, and the small parts at the closure and the handle are also injection molded parts made of Ultramid®.

The keder connection in the frame allows the fabric to be connected to the frame without adhesive or similar. The frame geometry was designed in such a way that the „tunnel“ for the cord of the keder connection can be made removable. Only the slot through which the fabric is inserted must be made by a slider in the tooling or by milling after injection molding. The other components can also be produced in two-sided demoldable form using the injection molding process.

A Fid-Lock® closure was „hacked“ for the quick-release fastener of the tensioning rope. This lock contains a stainless steel screw and a magnet that can be easily removed. With the exception of these two components, all OTTER parts can be made of Ultramid®(polyamide).


Cavity
Slider
Core

market of the Future + One Material One Product + Supermarket of the