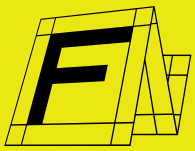

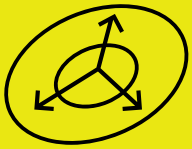

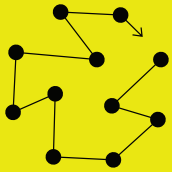

nextwave

CURRENTS OF CHANGE: NEXTWAVE PLASTICS STORIES OF IMPACT

Innovating Product Design

CASE STUDY 05

05.18.2022

Innovating Product Design

Using ocean-bound plastic isn't simply about substituting materials. It's a chance to reimagine products and packaging.

Ocean-bound plastic can pose a somewhat paradoxical design challenge: to fundamentally rework a product without the customer noticing. You would never know by look or feel that a Humanscale chair or a Shinola watch contains plastic that was once sandy, dirty, and at risk of ending up in the sea. All you - the buyer - know is that it works well, and it looks good.

The designer's magic lies in restoring value to this abandoned material by using as much of it as possible in desirable products and functional packaging. Members of the NextWave Plastics consortium achieve this feat with a combination of collaboration, creativity, and perseverance.

Humanscale launched the first ever task chair made with recycled fishing nets back in 2018, and then again in 2021. With its Path chair, launched in April 2022, Humanscale set a new standard for integrating ocean plastic. Each Path chair integrates nearly 10 pounds of upcycled ocean plastics, including recovered fishing nets and ocean-bound yogurt cups. This and other aspects of the design mean Path is certified climate, water, and energy positive, yet uncompromising in its ergonomic function or aesthetic.

"Our persistent approach to sustainable design inspired our team to pull together and make this ambitious vision a reality," said Jane Abernethy, Humanscale's chief sustainability officer. "Our sustainability team worked tirelessly with our design, engineering, quality, purchasing, supply chain teams, and the suppliers themselves, to make Path the most sustainable task chair on the market."

TREK BICYCLES

> *"JUST BECAUSE THE PROPERTIES AREN'T THE SAME DOESN'T MEAN IT'S NOT GOING TO WORK."*
>
> -NICK ABBATIELLO, SENIOR ENGINEER FOR SUSTAINABILITY AND CIRCULAR MATERIALS AT DELL TECHNOLOGIES

FAMILIAR PRODUCTS, UNCHARTED TERRITORY

For Oliver Campbell, a distinguished engineer at Dell Technologies supporting the company's sustainable packaging efforts, working with ocean-bound plastic is an opportunity to rethink standard approaches.

"It lets you go back in and fundamentally ask questions about your entire design paradigm—not just the material aspect of it but, hey, do I still want to design this the same way?" Campbell says.

Working with packaging partner company Veritiv, Dell is beginning to replace conventional plastic protective bags for its non-woven bag made with ocean-bound plastic. Previously, Veritiv worked with Dell to create molded trays made of 50% ocean-bound plastic and 50% recycled high-density polyethylene (HDPE) plastic for laptops and accessories.

Customers unboxing products with these materials probably won't sense that anything is different, but the environmental impact is significantly lower. Through packaging, Dell has increased its use of ocean-bound plastic ten-fold since 2017, meeting a commitment under the United Nations Sustainable Development Goals nearly four years early.

"I always assume the existing material specifications are at the top end of the spectrum from a requirements point of view," says Nick Abbatiello, a senior distinguished engineer for sustainability and circular materials at Dell Technologies. "Just because the properties aren't the same doesn't mean it's

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>
> - BRANDON LITTLE, VICE PRESIDENT OF DESIGN AT SHINOLA

not going to work. It just means we need to identify where that lower limit is."

Ocean-bound plastic requires both design and manufacturing creativity to be adapted for certain purposes. Shinola went through several tests for its Sea Creatures watch, which contains ocean-bound plastic in its strap and case.

"There are so many points in a watch that require a lot of strength, and they're small," says Brandon Little, vice president of design at Shinola. "You have such a small space that you're working with, but there's so much pull on it on a daily basis, as people take it on and off their wrist."

That need for strength had to be factored into both the design and the manufacturing process. Shinola's product team worked with the company's watch case supplier to manufacture with the right temperature and stabilizers to achieve the functionality they needed.

'LESS IS MORE'

CPI Card Group has a different type of challenge: Its Second Wave cards containing ocean-bound plastic not only have to store sensitive data and function reliably, they must also satisfy the marketing goals of the issuing financial institution.

"From a design perspective, a lot of what we're working to do is help to educate the customers on potential ways to achieve the look and feel of their card," says Megan Bogard, a design manager at CPI. She aims for a "less is more" approach, layering on as little as possible in terms of inks and materials while staying true to the customer's brand and design requests.

Designers also need to keep in mind the recyclability of their end products, avoiding blends of materials where possible. The bicycle company Trek, which uses ocean-bound plastic in its Bontrager Bat Cage Water Bottle Cage and other products, is in the process of creating design guidelines for circularity.

The goal is "to adjust our designs to make sure that the plastic isn't being rendered unrecyclable by the things we're doing to make it perform better," says Courtney Munch, sustainability specialist at Trek.

Sometimes, succeeding with ocean-bound plastic means you might have to let go of a singular idea exactly as you imagined it, explains Little of Shinola. But pursuit of the goal to use ocean-bound plastic produces a different kind of satisfaction.

"If you really want to do it, you'll find a way to engineer or invent something that is interesting and different and still achieves your goal," Little says. "I can guarantee you we could have probably folded on this [Sea Creatures] project a handful of times. We just kept going for it and saying to ourselves, this can be done—just, how can we do it?"

REALIZE YOUR IDEAS

- Be clear on your objectives from the outset
- Design with the product's full lifecycle in mind from raw material sourcing to end-use
- Don't be afraid to rethink an established design to improve sustainability
- Stay persistent with your goals and flexible with the execution
- Keep an open mind throughout the process

Visit nextwaveplastics.org to learn more.

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