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Design Thinking Challenges and solutions

Sustainable product packaging



ADDRESSING TRADE-OFFS AND CONSTRAINTS IN SUSTAINABLE PACKAGING

Sustainable product packaging presents a challenge to design thinking due to its inherent complexity, the need to balance multiple factors, and the requirement to find innovative solutions that align with both environmental and user-centric considerations.

Designing sustainable packaging requires considering a multitude of factors such as material sourcing, production processes, transportation efficiency, recyclability, and end-of-life disposal. Designers must balance these considerations while creating packaging that is functional, visually appealing, and cost-effective.

Exploring the 5 Top Startups Driving Change



Experts in drop-in natural materials, Xampla works with customers to deliver breakthrough plastic replacement products. Xampla's world-first materials are drop-in, high-performance replacements for these plastics. Produced from sustainable, natural feedstocks, they biodegrade completely in both marine and soil environments.

Xampla introduces innovative product offerings, including:

- 1. Soluble Film Wrappers:** These replace the existing PVOH (soluble plastic) utilized by leading home brands for Dishwashing Tablets.
- 2. Edible and Cookable Wrapping Films:** Partnering with Gousto, a recipe box provider, Xampla supplies Edible and Cookable Wrapping Films, a component of their package for crafting dishes like Indian Spiced Carrot & Lentil Soup.
- 3. High-Performance Fragrance Microcapsules:** Benefitting companies in fragrance, home, and personal care sectors, Xampla delivers top-tier High-Fragrance Microcapsules.

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Eco  friendly



Established in 2014, French company Lactips pioneers water-soluble, traceless plastic using patented CareTips technology. Their unique product, derived from milk protein casein, offers biodegradable thermoplastic pellets. Unlike others, Lactips' innovation is 100% bio-sourced, catering to water-soluble, sustainable, and single-use packaging needs in the plastics industry.

Lactips, an inventive packaging startup, showcases a range of pioneering products:

- 1. Water-soluble Packaging:** Lactips introduces a water-soluble opening system for laundry bags, validated by hospital laundries, offering contamination prevention and risk reduction in linen processing.
- 2. Plastic Free Paper:** Providing an exclusive coating solution for items like tea, chocolate, and confectionery, Lactips presents Plastic Free Paper for dry and fatty products.
- 3. Golf Tee:** Lactips offers 100% organic and biodegradable golf tees, eco-friendly alternatives to conventional options for golfers.
- 4. Food Products and Compound:** Edible, nutrition-rich material catering to instant food products aligns with Lactips' zero waste objectives, promoting ease of consumption.

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Crate stands out among packaging startups due to its unique approach to crop waste management. Employing an inventive process, it creates food-grade packaging and furniture materials from agricultural waste and straw panel board, utilizing formaldehyde-free glue. Notably, Craste's patented Fumasolv technology efficiently extracts lignin from stubble, enabling the development of sustainable packaging solutions while minimizing water usage and achieving Zero Level Discharge.

Crate introduces innovative product lines encompassing:

1. **Pulp & Paper** – Harnessing abundant post-harvest agricultural waste, Craste pioneers sustainable alternatives to conventional timber-based paper production, reducing the need for burning.
2. **Particle Board** – Utilizing plentiful agricultural remnants, Craste offers premium particle boards, providing a durable and eco-friendly substitute to the resource-intensive wood industry. Their advanced laboratory technologies enable formaldehyde-free particle board production.

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INVISIBLE^{CO.}

#Invisible develops plastic-free, compostable & biodegradable materials and plant-based resources with R&D teams and engineers to replace plastic. It has designed a bag that fully vanishes in water as part of its quest to combat plastic pollution. The company's solution, designed to replace traditional plastic bags, is non-toxic, biodegradable, and compostable and leaves no trace of microplastics on the earth. Way to go!

What kind of innovative products are offered by #INVISIBLE?

- #INVISIBLE offers a special product called #INVISIBLEBAG. It's a bag that can dissolve in water and break down naturally. It's made from a mix of materials like Polyvinyl Alcohol, starch, glycerin, and water. Unlike regular plastics, it doesn't cause tiny plastic bits and can disappear quickly in hot water (80°C or higher) and slowly in cold water. It was tested carefully and shown to break down by more than 85% in 90 days in a landfill. Plus, it's compostable according to US and EU standards.

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