Resortecs,
Recycling made
Easy.

From Waste to Profit:
outdoor jackets designed for disassembly.

About us

Resortecs is a design-for-disassembly company leading the textile circular transition with **Smart Stitch™ & Smart Disassembly™** – heat-dissolvable stitching threads and thermal disassembly systems that make recycling easy.

Challenge

In the sportswear & outerwear industry, the complexity of separating the different components of multi-material, multi-layer outdoor jackets make manual disassembly an expensive option without enough ROI, while mechanical disassembly is not even possible to perform. This is why many hold the assumption that designing for circularity represents costs without financial advantages.

In this case study, we showcase that using active disassembly to make multi-material multi-layer outdoor jackets designed for circularity is a short-term investment with competitive returns in the long-term.

Important data points and industry values used in this business case can be consulted in Resortecs' From Waste to Profit Report. Available for download via **bit.ly/from-waste-to-profit.**

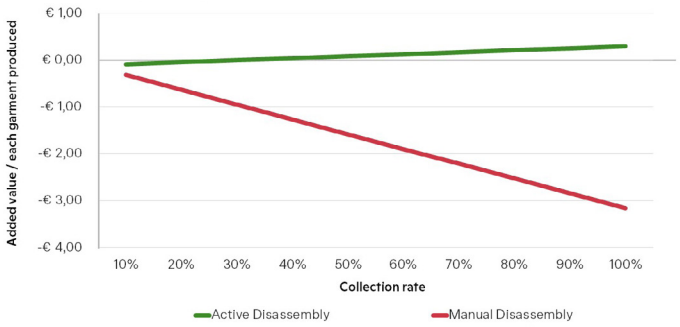
Approach

- In this case study, **the cost of disassembly** is compared with:
  - the value of sorted textile materials (available as feedstock for recycling)
  - the equivalent CO_2 offsetting costs avoided.
- **Manual and Mechanical Disassembly** (i.e. shredders) costs are calculated per disassembled volume (€/ton input products).
- **Active Disassembly** (i.e. Resortecs) costs are calculated based on the Smart Stitch™ investment (€/km of thread) and the Smart Disassembly™ process (€/ton input products).
  - The cost of Smart Stitch™ is incurred per textile product produced, while the cost of disassembly is only charged on the amount of textile products collected and disassembled.
- This is why, in the case study, the value generation is expressed along with **the collection rate**: the percentage of the total production that has been collected and disassembled for recycling.

Results

- For multi-material multi-layer outdoor jackets, Active Disassembly outperforms both mechanical and manual disassembly.
- With a collection rate of 30% or higher, Active Disassembly starts generating efficiency-driven profits with a maximum net profit of €0.30 per jacket.
- Manual and mechanical disassembly, on the other hand, represent a cost that increases with the collection rate in every possible scenario.

ROI of Disassembly Processes per Textile Product
with feedstock (i.e. sorted textile material) at current value



30%
collection rate
for profit generation

€0.30
maximum net profit
per jacket produced

Insight

Currently, around 15% of textile products get downcycled and around 30% of post consumer apparel is collected. These figures illustrate that the 15-27% collection rate necessary for financial benefits can easily be achieved by brands[1].

Learn more

Download the LCC report

Resortecs' life cycle cost analysis: "From Waste to Profit - Maximizing Textile Circularity with Design for Disassembly".

Looking ahead

As a result of the growing demand and decreasing availability, the feedstock value of polyester destined for recycling is expected to to increase to 70% of the cost of virgin raw polyester.

In case the feedstock value increased:

- Mechanical disassembly remains a cost in every scenario;
- Active Disassembly outperforms manual disassembly as from a 3% collection rate,
- Active Disassembly generates financial profits as from a 23% collection rate, with a maximum net profit of €0.44 for each jacket produced.

Outdoor jackets

with current Polyester feedstock price, i.e. 50% virgin price

4% VS MANUAL DISASSEMBLY

30%

with increased Polyester feedstock value, i.e. 70% virgin price

3% VS MANUAL DISASSEMBLY

23%

Product collection rate % at which Smart Stitch™ & Smart Disassembly™ outperforms other best performing Disassembly process

Product collection rate % to achieve financial profit with Smart Stitch™ & Smart Disassembly™

Questions? Get in touch!

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1. A New Textiles Economy: Redesigning Fashion's Future - Ellen Mac Arthur Foundation.