



DESIGN FOR WASTE MINIMIZATION

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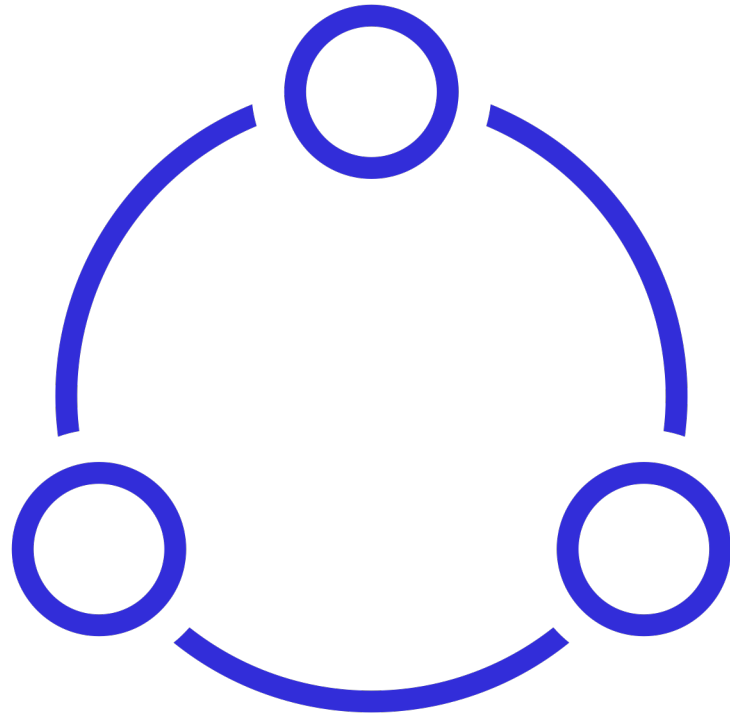
CIRCULAR ECONOMY OF TEXTILES

- LAB x Telaketju project – Business from Circular Economy of Textiles
- In the Product Design work package we have researched design through recyclability, remanufacturing and longevity

CIRCULAR ECONOMY OF TEXTILES: NINE R'S

		STRATEGIES	
Circular economy  Increasing circularity  Linear economy	Smarter product use and manufacture	R0 Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product.
		R1 Rethink	Make product use more intensive (e.g. by sharing product).
		R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials.
	Extend lifespan of product and its parts	R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function.
		R4 Repair	Repair and maintenance of defective product so it can be used with its original function.
		R5 Refurbish	Restore an old product and bring it up to date.
		R6 Remanufacture	Use parts of discarded product in a new product with the same function.
	Useful application of materials	R7 Repurpose	Use discarded product or its parts in a new product with a different function.
		R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality.
R9 Recover		Incineration of material with energy recovery.	

- Ellen MacArthur Foundation: Circularity and Nine R's



CIRCULAR DESIGN

In Circular Design, waste and pollution are designed out, products and materials are kept in use for as long as possible, and where natural systems are regenerated.

DESIGN FOR CIRCULARITY

- Even 80% of the product's environmental impacts are locked **at the design stage**.
- In sustainable and circular design process a designer **observes the whole life cycle of a product**.
- There are also some sustainable design strategies **to ensure waste minimization** already at the design stage.
- A designer should also understand **the processes of recycling** both in clothing and textiles.
- When it comes to clothing, the recycling process includes not only the main material (textile), but **also the other components** such as zippers, buttons, elastics and finishings.
- **A designer must design for disassembly**; the components need to be separated in the beginning of the recycling process.

DESIGN FOR CIRCULARITY

- A designer should prefer the **materials that are recyclable in current recycling systems**, such as mono materials.
- Mono material strategy alone is still too weak starting point **for holistic circular design**, since a designer must still consider the clothing's use over the other aspects.
- A material choice is successful from both circular and sustainable point of view only **when it serves the use of the product**
- **The reuse, recycling or remanufacturing opportunities need to have realistic perspectives** in the present or at least in the future.
- A designer must primarily design **for a real need and for use. These aspects are the most relevant in circular design.**
- The greenhouse gases of the clothing industry would decrease even 44% if the clothes were worn two times longer than they nowadays are.

DESIGN FOR WASTE MINIMIZATION: REMANUFACTURE

- **REMANUFACTURING** means using discarded material or parts of the discarded product in a new product with the same function OR in different function with a higher quality.
- The main principle is to remanufacture discarded products for the new users.

DESIGN FOR WASTE MINIMIZATION: UP-CYCLING

- **UP-CYCLING** is the transformation of materials into products of equal or higher quality.
- In fashion, this means prolonging the life of waste textiles through creativity.

DESIGN FOR WASTE MINIMIZATION: RECONSTRUCTION

- **RECONSTRUCTION** is a form of up-cycling and is the process of making new clothes from waste formed of previously worn garments or preformed finished clothing products. This process involves first deconstructing garments and then reconstructing the waste materials into new designs.

DESIGN FOR WASTE MINIMIZATION COURAGES TO CREATIVITY

- In our Telaketju study, we ended up with a conclusion that these waste minimization methods are not limiting the designers creativity, but on the contrary, as these methods can be used in multiple ways, **they definitely allow designers to be even more creative.**

DESIGNER'S CIRCULARITY CHECK-LIST

Design for problem solving

Design for low waste

Design for need

Design for use

Design for recycling

Design for disassembly

Design for regenerate



THANK YOU!

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