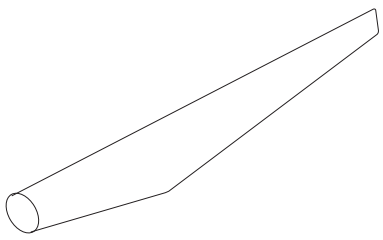
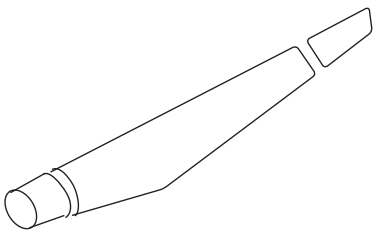
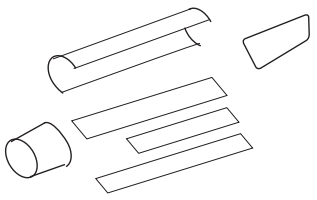
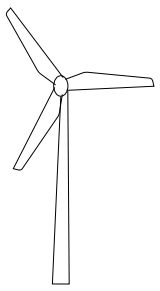
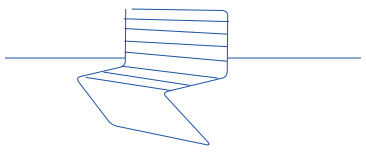
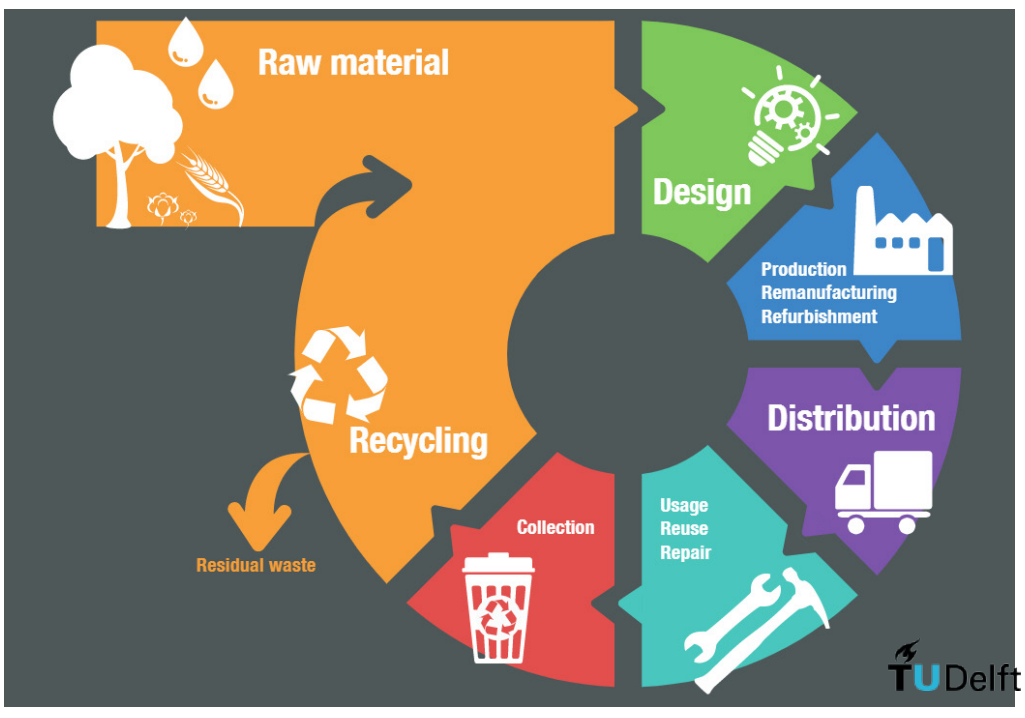
Composites in a Circular Economy: Design research

	Product & component recovery		Materials recovery	
	Product reuse	Structural components	Primary recycling	Secondary recycling
Materials				 
Product examples		 *Bicycle shelter by SuprUse Studios, NL*		 *Bicycle shelter by Conenor, FI*
Design challenges	Upgradability of blade Material durability: •Surface wear •Structural quality	•Information transfer •Quality monitoring	•Separation of structural parts •Fasteners & connections •Quality assurance (structural)	•Materials identification •Materials separation •Reprocessing of composite



Project description

Ecobulk aims to close loop for composite products in a Circular Economy through smart design of new products.
Delft University of Technology is exploring new applications for wind turbine blades. In these explorations, new products are designed using decommissioned blades. The problems encountered in the re-use of these blades can provide insights in how to design composite products that further facilitate reuse.

The table above shows how a blade can be used in different size- and integrity scales. Full reuse preserves most of the initial product value, but is limited to incidental applications. At the other extreme, shredding destroys material integrity and value, but has a wider application potential.

Design challenges have been identified that can be addressed in the design of new composite blades, to improve material recovery.

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