







The circular design checklist for long lasting products

- 1 Check if and why the life cycle phase fits your circular strategy
- 2 Check the fitness for Circular Economy (CE) of your products
- 3 Check for disassembly and serviceability

1

Review the fit with one or more of the circular strategies

	Product requiring less resources, substitute scarce, harmful or high environmental impact resources Resource use & substitution <input type="checkbox"/> Yes <input type="checkbox"/> No	Why?
	Less material required to fulfill the multiple users' requested functionality Optimal use <input type="checkbox"/> Yes <input type="checkbox"/> No	Why?
	Repairing and maintaining products to safeguard optimal functionality Repair Maintain <input type="checkbox"/> Yes <input type="checkbox"/> No	Why?
	Sequential product use for multiple users Reuse Redistribute <input type="checkbox"/> Yes <input type="checkbox"/> No	Why?
	Upgrading and remanufacturing the product to initial or better specifications Refurbish Remanufacture <input type="checkbox"/> Yes <input type="checkbox"/> No	Why?
	Valorisation of end of life waste as high quality materials Open & closed loop recycling <input type="checkbox"/> Yes <input type="checkbox"/> No	Why?

2

Review your current product design

- Use as little material as possible
 - Light weight
 - Miniaturisation
 - Dematerialisation
 - Topology optimisation
- Modular design as enabler for
 - Repairability
 - Serviceability
 - Upgradeability
 - Remanufacturability
 - Recyclability (separation)
- Use no toxic or hazardous materials
- Reduce the number of different materials used in your product
 - Maximize monomaterial solutions
 - Use recycling compatible materials and solutions
- Avoid permanent, non-removable connections (prevent glueing, potting,...)
- Use connection methods allowing easy separation of material fractions
 - For servicing purpose
 - For upgrading
 - For remanufacturing and refurbishing purpose
 - For recycling purposes
- Select recyclable materials and check the below conditions
 - A collection of end-of-life products/components is in place
 - Sorting is possible and performed
 - Recycling processes exist and recycling is performed
 - There is a market for recycled materials
- In case of plastics: select standard materials without additives, layers,...
- Tracking & tracing of materials content (eg. with a QR code) so that identification is easy at end-of-life
- Select materials with recycled content or form (biobased) side streams
 - Assure the quality and traceability of the recycled content

3

Design for disassembly

- Minimise the number of parts (integrate parts)
- Minimise the number of connection types (screws, reversible click connections)
- Group connections types in the same orientation
- Make sure that connections are visible and easily reachable
- Only use standard tools (screwdriver, Allen key, torx, etc.) available at:
 - The remanufacturing site
 - The repair site
 - The maintenancance sites
 - The service site
- Make wearing parts easy to replace
- Make key functional modules upgradeable
- Assure that product status monitoring is possible