

Demonstration Case Studies

The project will specifically address 3 case studies involving examples from 3 different industries:

1 Automotive industry

Designs and materials for Internal car parts will be tested in actual and simulated environments: Micro-Cab H2EV Model in TechnoCentre Coventry University (UK), Fiat Model in CRF (Italy), MAIER's OEM car model (Spain).



2 Construction

New materials and processes will be used to build small structures out of wood and plastic composites. Demonstrators will include service houses for the new Kymring motorsport center in Finland.



3 Furniture

New designs and concepts for office and laboratory furniture will be demonstrated at the Technical University Delft, Cranfield University and Warwickshire Town Hall.



ECOBULK is a group of designers, material and product manufacturers, waste managers and recyclers who, supported by environmental analysts, will develop new circular technologies and strategies in three sectors: automotive, construction and furniture.



Circular Process
for Eco-Designed Bulky Products
and Internal Car Parts



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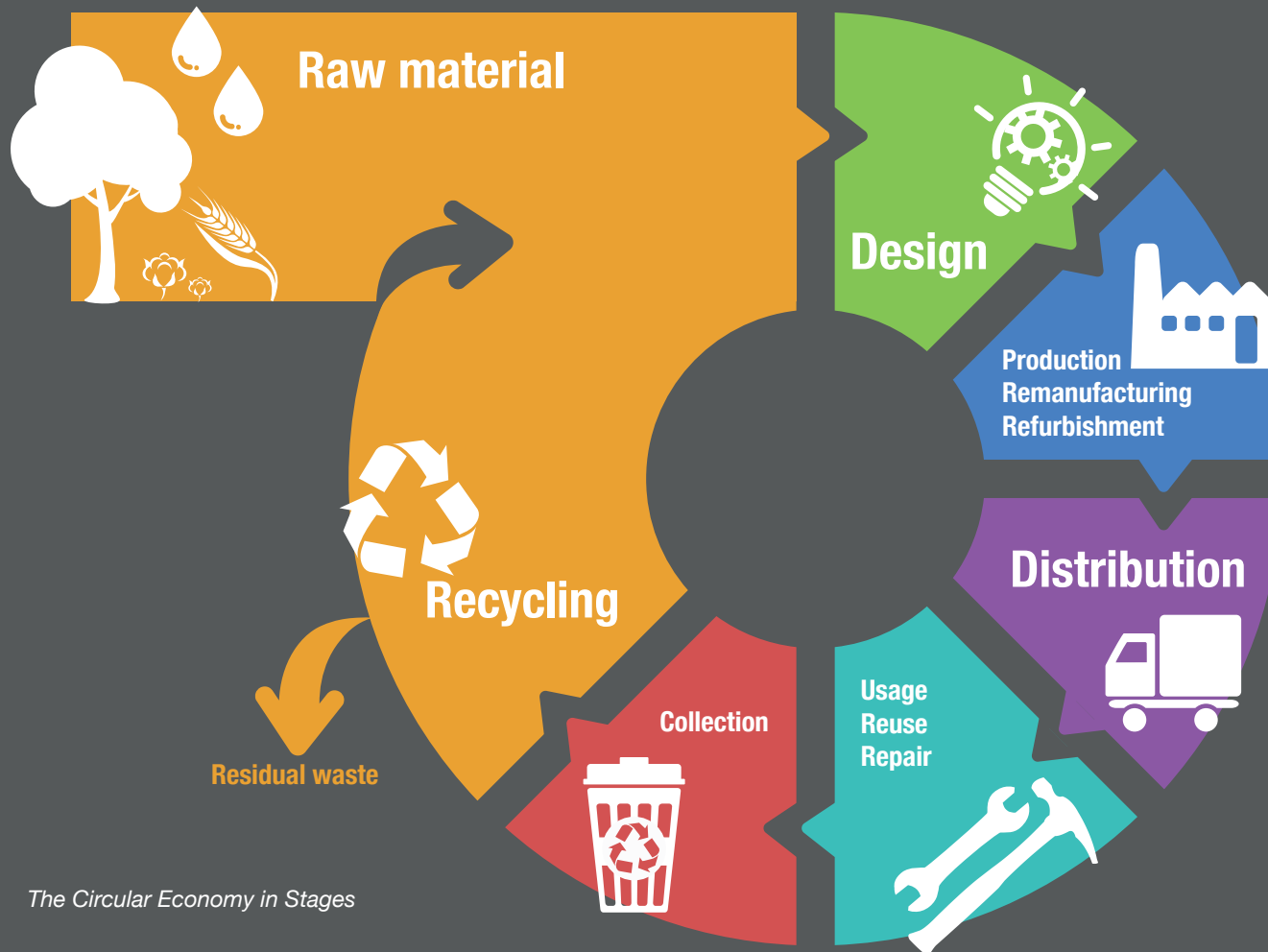


EcoBulkEU

Coordinator: EXERGY LTD (UK)
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Composite materials and products are a fast-growing part of the manufacturing industry. They are strong and light which helps to reduce weight and material consumption. They are also notoriously difficult to reuse or recycle as the loss of quality and value makes it economically unattractive. Composites are thus becoming an obstacle to circular economy models; one that we believe must be tackled from a multi-disciplinary perspective.

ECOBULK is a demonstration project, that aims to show how to “close the loop” of composite products in the automotive, furniture and building sectors. The project will take an integral system approach that will address the different stages of the circular lifecycle and provide solutions that fit well together and can complete the model for real life applications.



The Circular Economy in Stages

Product Design

A circular design framework will be established to promote the re-use, refurbishment and re-cycling of composite products. This, paired with a Circularity Indicator and Materials Database, will help designers to make balanced choices. ECOBULK will produce prototypes for each target sector that will demonstrate how ease of refurbishment and service can allow high recovery of functionality and value.

Materials

ECOBULK will continue to refine the use of industry standard pultrusion, compounding and agglomeration techniques to produce high quality materials from recycled composite sources. Innovative material pre-treatments will improve the quality and properties of the resulting materials.

(Re)Manufacturing

Common manufacturing techniques including injection molding/compression and extrusion will be adapted and improved to suit the use of highly recycled materials. A Quality Assurance System will be used as a feedback loop to a Decision Support System to be used at the design phase.

Logistics (Distribution/Collection)

New product labelling and tracking systems will be deployed and combined with a platform connecting end-users with stakeholders to facilitate the flow of information, products and materials through the product lifecycle, thus enabling optimal reuse and recycling.

Business Models

Circular economy models require new approaches to the delivery and use of products. Incentives will be explored that enable the change in behavior that is required to achieve longer and repeatable life-cycles.

Recycling

The new model will provide means to collect and sort both circular and existing linear materials as sources for remanufacturing. Automated sorting technologies will provide for optimal purity and efficiency. Post-shredding treatments will further purify and ensure the required material qualities for remanufacture.