

Redesigning potted electronic products for repair and recycling

Material Connections



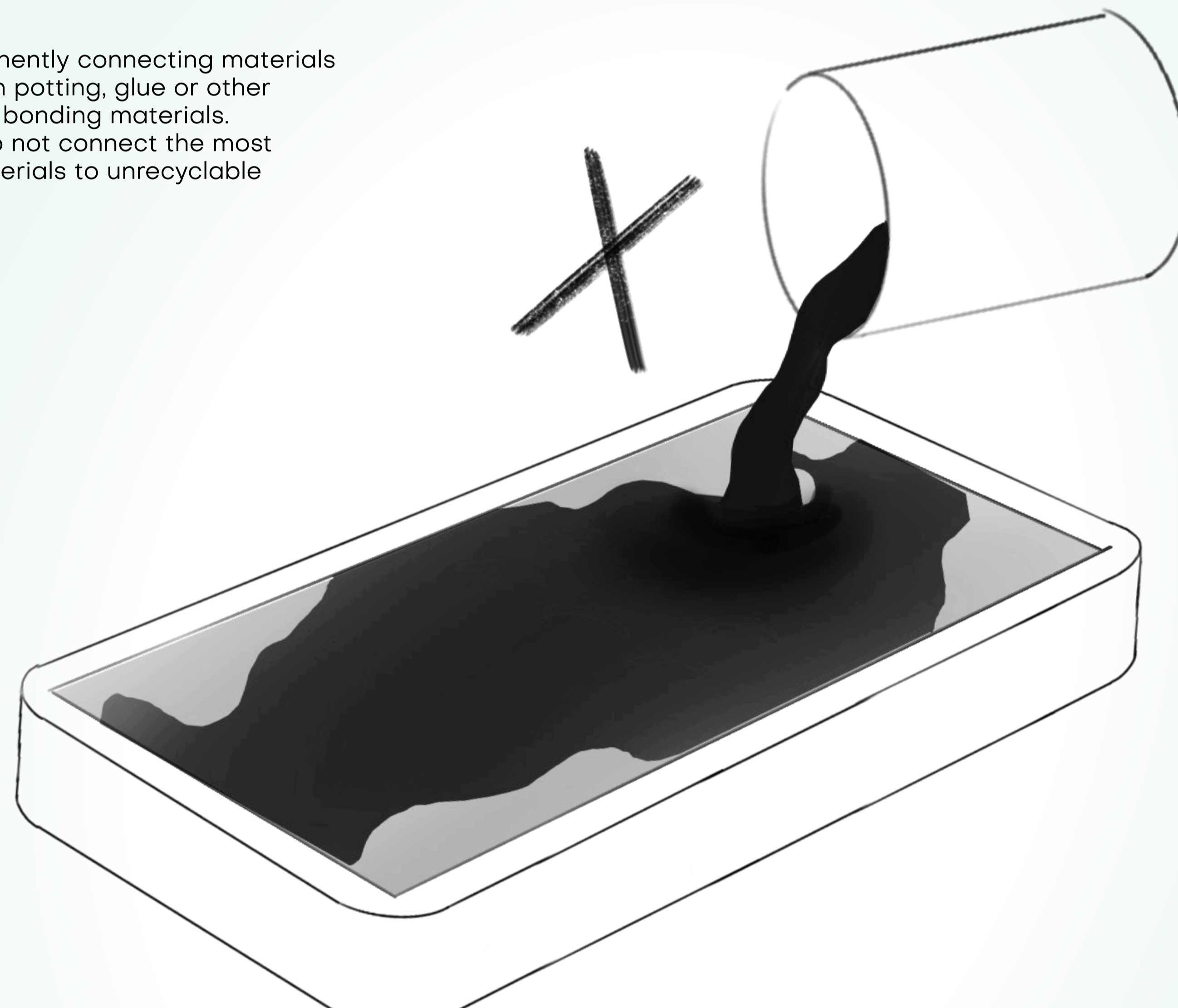
Avoid connecting materials of different types together (eg. plastic with metal, non-ferrous metals with ferrous metals). This prevents them from reaching the right recovery path in recycling.

Avoid permanently connecting materials together with potting, glue or other permanently bonding materials. Especially do not connect the most valuable materials to unrecyclable materials.

Define and Test for Durability

Clearly define the most common and worst case scenarios the product will endure.

Test out your designs in real-life context or through calculations paired with simulations.



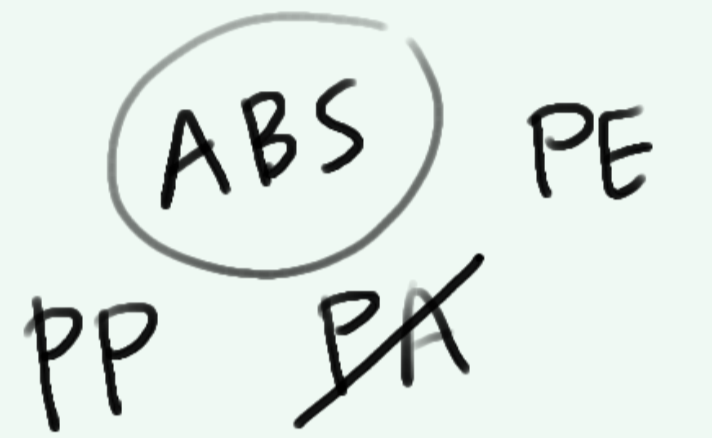
Material Selection

Choose commonly recycled materials, including plastics like ABS, PP, PE, or pure metals. Avoid thermosets and foams.

Avoid contaminating materials with additives or coatings.

Choose materials expressed as recycled-in-practice by recyclers.

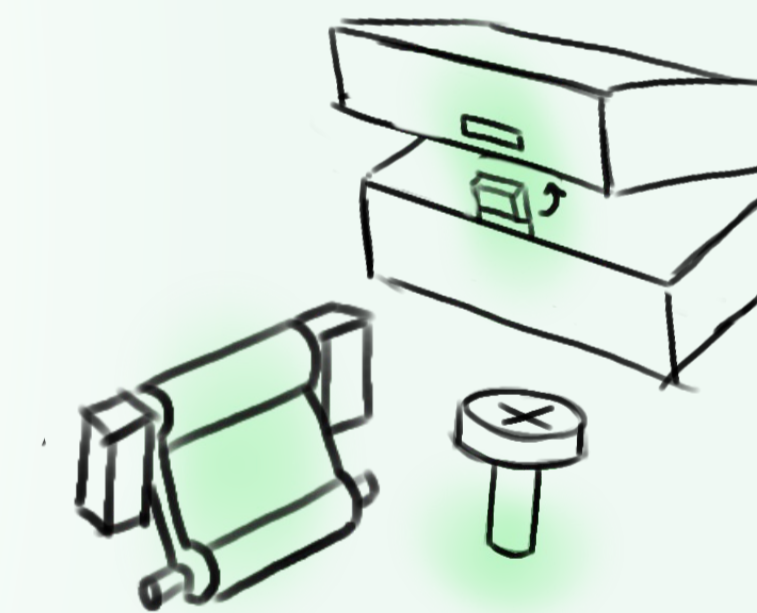
Filter the material selection with durability requirements in mind. eg. water resistance, compressive strength, elasticity



Allowing access to Priority Parts

Choose impermanent housing connections such as snap fits, latches, and screws.

Minimize the steps needed to reach the most valuable parts of the product for repair and material recovery.



Sophie Thomas

Balancing the Repairability and Recyclability of a Mechanically Durable Agricultural Antenna
MSc. Design for Interaction

Prof. Dr. A. R. Balkenende

MSc. D.C. van Dolderen

Department of Sustainable Design Engineering


TU Delft