

Disassembly of solar container electronic products

<div class="df_qntext">Are automated disassembly solutions suitable for a wide range of products?

Industry has initial solutions for the automated disassembly of specific products. These are highly specialized, though, and not applicable to a wider range of products. The substantial engineering required is a particular challenge for automated solutions designed for flexibility.

<div class="df_qntext">Can automation improve electronic waste disassembly?

A research project, iDEAR, with the objective of automating electronic waste disassembly started at Fraunhofer IFF in February 2023. This is intended to make it easier to recycle resources and to close material cycles. Automation makes disassembly processes more scalable in times of skilled labor shortages. We now have the first promising results.

<div class="df_qntext">What is automated disassembly?

Automated solutions, such as robot-guided disassembly, are one option to recover valuable materials efficiently and cost-effectively and simultaneously to counteract the shortage of skilled labor. Industry has initial solutions for the automated disassembly of specific products.

<div class="df_qntext">Do all parts of a product need to be disassembled?

Not all parts of a product need to be disassembled in practice. Partial disassembly is more efficient for removing hazardous parts and accessing valuable components compared to complete disassembly 10. Wang K noted that dismantling firms often maximize profits through partial dismantling 11.

<div class="df_qntext">Can robots disassemble end-of-life electronics?

Specific methods and technical skills are being developed in the iDEAR research project to enable the disassembly of end-of-life electronics by robots. The biggest challenge is the wide variety of end-of-life electronics model types and conditions based on their life cycles.

<div class="df_qntext">Should designers optimize key component disassembly during maintenance or recycling processes?

Whether optimizing key component disassembly during maintenance or recycling processes, designers should prioritize key component optimization to streamline redesign efforts. This approach enhances design efficiency and the practicality of solutions.

In other words, robust technical growth and market expansion yield high-end and short-lived electric/electronic durables, leading to a significant increase in the amount of waste ...

Measurement(s) consumer electronic product o bill of materials o material type Technology Type(s)
Disassembly o weighing o characterization Factor Type(s) product category o ...

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A B S T R A C T We explored a novel design-for-recycling method for encapsulated printed electronics in an injection-molded package that improves disassembly at End-of-Life (EoL). To this end, a non ...

In this paper, we present a technique for analyzing the design efficiency of electronic products, in order to study the effect of end-of-life (EOL) disassembly and disposal on the environment. The design ...

Designing mobile electronic products for easy disassembly is crucial for promoting resource recycling. However, many current approaches overlook the need to consider the ...

In particular, the present invention is related to device and method for disassembling solar cell module effectively. A solar cell module may change the light energy of sunlight to the...

Almost all end-of-life possibilities-upgrade, re-use, recycling of materials-require some form of disassembly. Despite the high standard of automation for the assembly of electric and ...

Human - Cobot collaborative disassembly are promising solution to overcome the uncertainties without compromising the flexibility and the rate of disassembly operation. The Smart ...

A principal process during the remanufacturing of worn-out or malfunctioning products is disassembly that enables the dumping, cleaning, repair or replacement of components as desired. Products ...

Disassembly has been widely accepted as a disadvantageous end-of-life activity, but with increasing pressures from directives, such as waste on electrical and electronic equipment, and with increasing ...

Meanwhile, the world is coping with a surge in the number of end-of-life (EOL) solar PV panels, of which crystalline silicon (c-Si) PV panels are the main type. Recycling EOL solar PV panels ...

We explored a novel design-for-recycling method for encapsulated printed electronics in an injection-molded package that improves disassembly at End-of-Life (EoL). To this end, a non ...

Cycle economy as a paradigm for industry in the 21st century depends on the economical and ecological treatment of limited resources. The objective is to achieve more use with ...

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