Automatic disassembly of lithium battery device

What information do I need for a lithium ion battery disassembly?
If a disassembly of the modules down to cell level is planned in the future,further information about the cells,e.g.,design (pouch,prismatic,cylindrical),weight,and dimensions,are required. As mentioned before,lithium-ion batteries are labelled with a "Li-ion" symbol.

How is battery disassembly performed?
Battery disassembly is,therefore,currently carried out manuallyand without the support of robots . The disassembly process is usually performed by multiple qualified workers . ... The structural design of the battery system and the joint connections are of decisive importance for the effort required for a disassembly task .

How to design a battery disassembly system?
The design of the disassembly system must consider the analysis of potentially explosive atmospheres (ATEX) 1 of the area around the battery pack and, if necessary, adopt tools enabled to work in the corresponding ATEX zone.

What is the disassembly process of lithium-ion traction batteries?
Disassembly Process of Lithium-Ion Traction Batteries The disassembly of lithium-ion traction batteries after reaching their end-of-life(EoL) represents a promising approach to maximize the purity of the segregated material .

How difficult is it to automate battery disassembly?
However, the current lack of standardisation in design remains a significant barrier to automating battery disassembly . Additionally, the uncertain conditions of end-of-life or damaged EVBs add to the complexity of executing the disassembly process effectively.

Is robotised electric vehicle battery disassembly possible?
Analysis of emerging concepts focusing on robotised Electric Vehicle Battery (EVB) disassembly. Gaps and challenges of robotised disassembly are reviewed, and future perspectives are presented. Human-robot collaboration in EVB processing is highlighted. The potential of artificial intelligence in improving disassembly automation is discussed.

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Due to the vigorous development of the electric vehicle industry, electric vehicle batteries (EVBs) as large-scale electric storage devices, have been widely applied for energy supplement because of their outstanding characteristics of small size, high voltage, and energy density [1].With increasing concerns regarding environmental issues and limited supplement of ...

In this paper, a robotic disassembly platform using four industrial robots is proposed to automate the non-destructive disassembly of a plug-in hybrid electric vehicle battery pack into modules. This work was conducted as a case study to demonstrate the concept of the autonomous disassembly of an electric vehicle battery pack. A two-step object ...

The exponential rise in demand for lithium-ion batteries (LIBs) in applications that include grid-level energy storage systems, portable electronic devices and electric vehicles, has led to ...

An effective lithium-ion battery (LIB) recycling infrastructure is of great importance to alleviate the concerns over the disposal of waste LIBs and the sustainability of critical elements for producing LIB components. The End-of-life (EOL) LIBs are in various sizes and shapes, which create significant challenges to automate a few unit operations (e.g., ...

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o Easy removal and replacement of batteries from devices at the end-of-life o Increasing the recycling efficiencies for lithium-ion batteries of 65% (from 2025) and 70% (from 2030) and material recovery rates for individual battery components (e.g.,

Automated Disassembly of Battery Systems to Battery Modules Anwar Al Assadi * a,, Thomas G ¨ otz a, Andreas Gebhardt a, Oliver Mannuß a, Bernd Meese a, Johannes

This paper addresses the development of a flexible robotic cell for the fully automated disassembly of battery modules from battery systems. The paper presents all required tools and...

In order to realize an automated disassembly, a computer vision pipeline is proposed. The approach of instance segmentation and point cloud registration is applied and validated within a...

The rapidly growing deployment of Electric Vehicles (EV) put strong demands on the development of Lithium-Ion Batteries (LIBs) but also into its dismantling process, a necessary step for circular economy. The aim of this ...

o Easy removal and replacement of batteries from devices at the end-of-life o Increasing the recycling efficiencies for lithium-ion batteries of 65% (from 2025) and 70% (from 2030) and ...

Automatic disassembly of lithium battery device

In order to realize an automated disassembly, a computer vision pipeline is proposed. The approach of instance segmentation and point cloud registration is applied and validated within a demonstrator grasping busbars from the battery pack.

Abstract: The rapid shift towards electric vehicles (EVs) demands effective end-of-life strategies for lithium-ion batteries (LIBs), necessitating examining recycling ...

1. highlight the need for automated disassembly of large lithium ion battery systems due to critical characteristics (e.g. high weight, high voltages, high disassembly time and costs, etc.), 2. assess automation potentials for disassembly operations of large scale lithium ion battery systems on the basis of a structural ap-proach, 3. identify ...

In this paper, a robotic disassembly platform using four industrial robots is proposed to automate the non-destructive disassembly of a plug-in hybrid electric vehicle battery pack into modules. This work was conducted as ...

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