Laser marking and disassembly of battery pack

What technological challenges are facing the battery pack disassembly process?
In addition to the still comparatively small quantities of battery pack returns to be recycled at the current point in time,there are a number of technological challenges with regard to full sensor-based component detection and automationof the battery pack disassembly process.

Where should a battery pack label be located?
A safe localization for the label on the battery pack could be the lid of the pack housing,as this is usually located between the vehicle floor and the battery pack and thus is mainly protected from environmental influences. Challenges for the implementation of the label exist regarding the following aspects:

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 discharge a battery before disassembly?
For a controlled discharging before first step of disassembly, the specific connector models of the high-voltage plug and low-voltage plug, the CAN Connections, the necessary current flows for the battery management system (e.g., 12 V), as well as the specific release commands must be given by the OEM.

What are the parameters of a battery pack?
One of the general parameters of the battery pack is the discharging information. For safety reasons,it is recommended to discharge the battery pack before the first step of disassembly (see Section 2.2). The battery pack is connected to the electric vehicle via a high-voltage (HV) and a low-voltage (LV) plug.

How do you design a battery pack?
When designing a battery pack,it is important to weigh different parameters against each otherto acheive a suitable design. It is therefore significant for these tradeoffs to have a valid foundation to stand on. One tradeoff that needs to be accounted for is comparing safety of the battery against its weight.

The Audi A3 Sportback e-tron Hybrid Li-ion Battery Pack was selected as the case study in our research in order to verify the reliability and effectiveness of the proposed model. After the description of the EVB pack and its components, the disassembly process of the battery is detailed. Calculation assumptions are then defined and the case ...

With the wide application of new electric vehicle (EV) battery in various industrial fields, it is important to

establish a systematic intelligent battery recycling system that can be used to find ... Expand

Many production approaches are making use of the benefits of laser technologies. It connects battery cells to form modules or packs. It ensures tightness and crash safety when joining...

battery pack. The sequential order of the individual process steps and the subordinate partial disassembly tasks can vary depending on the system design [13-15]. In most system ...

For this purpose, this paper performs a compact benchmark analysis of different separation technologies to identify initial potentials and challenges for laser-based ...

For this purpose, this paper performs a compact benchmark analysis of different separation technologies to identify initial potentials and challenges for laser-based disassembly of automotive battery packs.

The BAIC and BYD battery packs exhibit lower disassembly costs (US$50.45 and US$47.41 per pack, respectively), compared to the Peugeot 208 and Nissan Leaf (US$186.35 and US$194.11 per pack ...

If you are wondering how to remove cells from lithium-ion battery packs, the first answer is "Very carefully." A BMS protects a battery pack (and the user) from 99 percent of things that can cause fire and serious injury. When you are breaking down a lithium-ion battery pack, you are basically dealing with the other 1 percent. There is no BMS ...

Adding a part to a vehicle means it must be assembled as well as disassembled which results in a need for a product that is optimal for an assembly-line. A literature study is therefore ...

Battery tab welding. Battery can welding. Battery pack assembly. Battery marking. Electrode cutting. For each battery application and type of battery manufactured, AMADA WELD TECH offers a production solution: resistance and laser welding, micro TIG welding, laser marking, laser surface cleaning and laser cutting.

Adding a part to a vehicle means it must be assembled as well as disassembled which results in a need for a product that is optimal for an assembly-line. A literature study is therefore conducted in this project to improve the understanding of methods including modularisation as well as Design for Assembly and Design for Disassembly.

With the wide application of new electric vehicle (EV) battery in various industrial fields, it is important to establish a systematic intelligent battery recycling system that can be used to find ...

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...

battery pack. The sequential order of the individual process steps and the subordinate partial disassembly tasks can vary depending on the system design [13-15]. In most system concepts, such as that of the Audi e-tron 50, the battery pack cover has to first be removed before the electrochemical state of the battery pack can be determined

Semi-destructive disassembly technologies will be key to developing efficient disassembly processes for end-of-life automotive traction batteries. Laser-based separation technologies have emerged as a promising emerging technological approach.

To address these challenges, EWI recently investigated the use of an emerging laser cleaning technology to determine its effectiveness on the bond quality in UWB joining of aluminum ...

Web: https://reuniedoultremontcollege.nl