Karlsruher Institut für Technologie

GAMI Global Advanced Manufacturing Institute

Invitation

15 Years GAMI Celebration and Grand Opening of Remanufacturing Technology Innovation Center

Time: 9:30-17:30, Tuesday, October 17, 2023
Location: Suzhou, SIP, Yue Liang Wan Road 10, Wisdom Center, Building A, 3rd Floor Conference Hall

Language: English (Chinese translation)
Entry Fee: Free of charge
Target Group: Representatives from Industry, Universities, Public and Governmental Institutions


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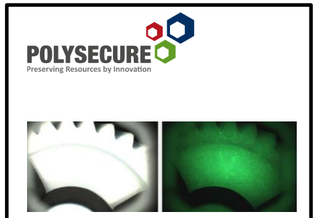
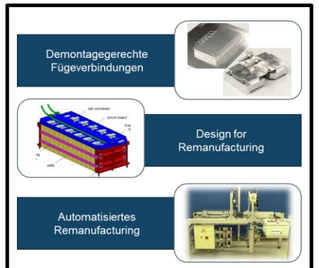
Digital Twin and
Virtual Commissioning
of screwing processes

Robotic Quality
Camera Inspection

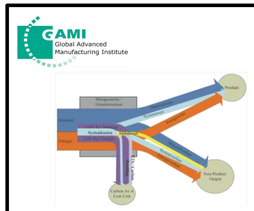


Traceability & Pairing
of gears



Battery Remanufacturing

Autonomous
Material Transport



Material Flow Cost
Accounting

Highlights

An innovative concept was developed for the reuse of hardware in production. This concept focuses on a flexible workstation, that scales robotic solutions as needed and accommodates both humans and robots. Most changes in assembly processes can be digitally managed, maximizing efficiency and paving the way for advancements in remanufacturing.

A robot-guided camera aims to take over human tasks in the initial assessment during remanufacturing. To achieve this, data fusion from different point clouds is necessary for a comprehensive evaluation of incoming components. Artificial intelligence methods allow for the detection of deviations from the desired state, such as missing or damaged components and rust.

In remanufacturing, pairing can be used to combine manufacturing deviations and ensure functionality. This process is crucial for remanufacturing, accounting for wear and different component states. Product-integrated traceability allows for storing and retrieving product properties as needed.

A disassembly station for battery stacks was developed to demonstrate the potential of remanufacturing in the renewable energy sector. The redesign of the cell connections was essential for remanufacturing the battery stack.

Automated Guided Vehicles (AGVs) are vital in remanufacturing due to their ability to enhance process flexibility and efficiency. Their adaptability allows for individual routing based on the specific refurbishing steps required for each product. Remanufacturing faces the central challenge of product routing complexity, as each item may require unique processing steps, and newly acquired information during these processes might change the routing.

In the circular economy, MFCA helps companies identify where materials are wasted, enabling strategies to reduce losses and reintroduce waste into valuable processes, decreasing costs and environmental impact. Specifically, for remanufacturing, MFCA aids in understanding and managing costs, identifying inefficiencies, and suggesting improvements, making remanufacturing more economically viable.

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About GAMI

GAMI provides a platform to facilitate Sino-German research and innovation programs related to Smart Manufacturing. Our unique Industry 4.0 Demonstration and Innovation Center as well as the Artificial Intelligence Innovation Factory serve as a high-level training facility for future production managers as well as an incubator for Sino-German entrepreneurship.

With our university background we provide our partners with advanced methods and concepts to reach operational excellence. Our goal is to deliver individual strategies and smart solutions in production and supply chain management in order to create a long-term and sustainable benefit.

GAMI – Global Advanced Manufacturing Institute
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