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mts

SECOND LIFE

AUTOMATION

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DISCHARGE TECHNOLOGY & SECOND-LIFE SOLUTIONS FOR HIGH-VOLTAGE BATTERIES

Handling used high-voltage batteries requires safe, reproducible and scalable processes – from condition assessment and second-life applications through to targeted discharge and preparation for recycling.

With the Modular Test System (MTS), Baumann Automation offers a flexible platform for the automated diagnostics, evaluation and further processing of HV batteries.

DIAGNOSTICS

Diagnostics form the foundation for all subsequent steps in the second-life or recycling process.

- Standardised diagnostics based on an EOL MTS tester
- Secure communication with various battery management systems (BMS), including certificate and protocol handling
- Extensive experience with different CAN variants
- Expandable to include additional test and safety functions

Result:

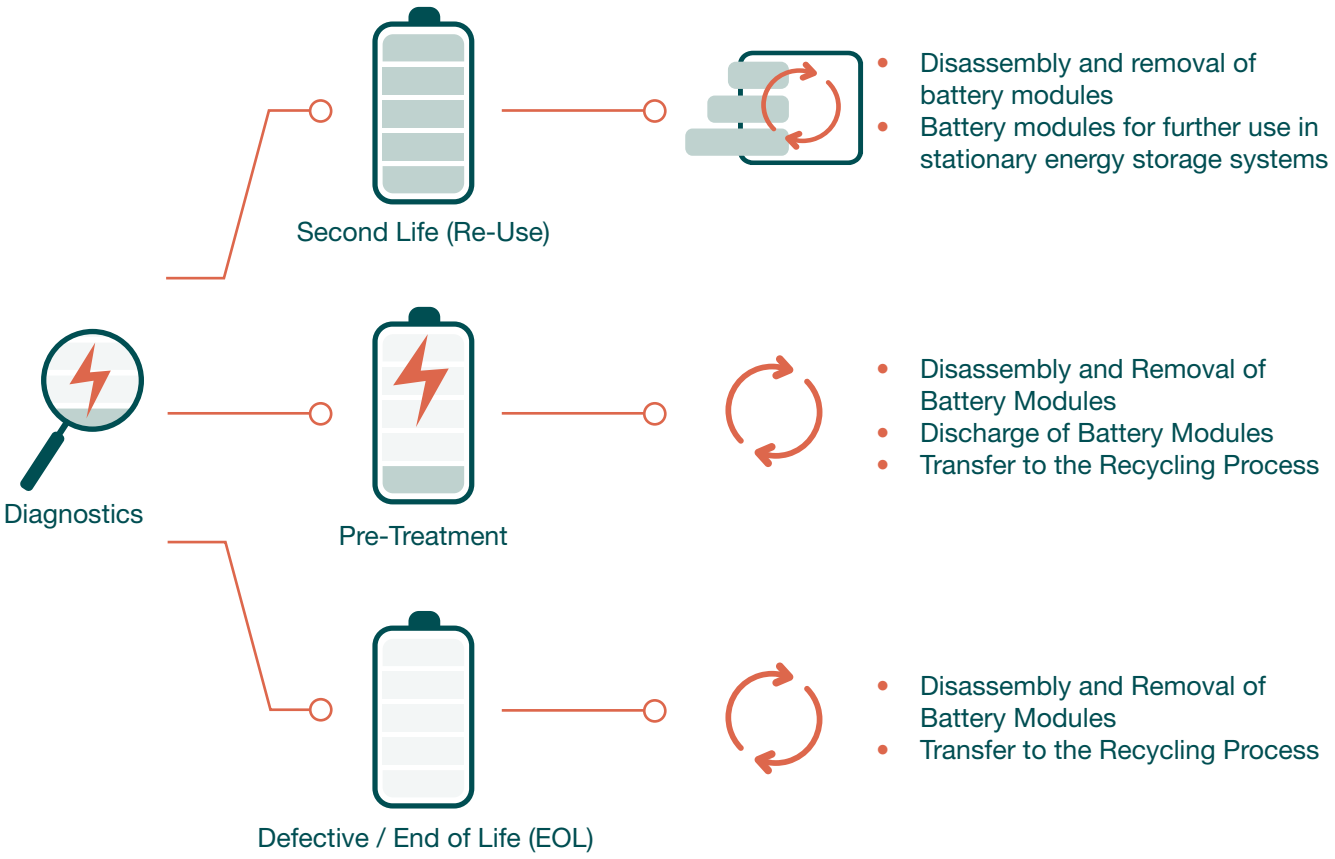
A reliable assessment of the battery condition as a sound basis for decision-making regarding re-use or pre-treatment.

THERMAL & SAFETY-CRITICAL TESTING

Safety is a key focus throughout the entire process.

- Thermal testing – contact-based or using a thermal imaging camera
- Continuous monitoring of critical parameters
- Preparedness for exceptional operating conditions

The MTS is designed to integrate even safety-critical scenarios into the process in a controlled and manageable manner.



ADVANTAGES OF THE BAUMANN MTS

- Modular, scalable system
- Flexible adaptation to specific customer and battery types
- Extensive experience in e-mobility, automation and Industry 4.0
- One system for diagnostics, second life, pre-treatment or end-of-life (EOL) applications
- High process reliability and repeatability
- Consideration of emergency scenarios such as thermal runaway

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APPLICATIONS

SECOND LIFE

Following successful diagnostics, high-voltage batteries can be specifically prepared for further use within a second-life concept. The focus lies on battery disassembly and the removal of suitable battery modules.

- Pre-Treatment (e.g. stationary energy storage systems)
- Controlled opening of the battery, taking into account the previously determined condition
- Targeted removal of intact battery modules
- Process steps tailored to design, type and safety requirements
- High degree of automation possible, depending on the application

PRE-TREATMENT / END OF LIFE (EOL)

Prior to recycling, controlled discharge is mandatory.

- Controlled opening of the battery, taking into account the previously determined condition
- Separation of the battery modules from the BMS
- Safe discharge of intact battery modules down to 0 V
- Feeding the stored energy back via an energy sink with grid feedback capability
- Transfer of fully discharged battery modules to the recycling process

SAFETY CONCEPT

Exceptional events are also an integral part of a holistic system design.

- Consideration of emergency scenarios such as thermal runaway
- Integration of appropriate safety measures (e.g. monitored water or sand-based containment solutions)
- Sensor-based temperature and condition monitoring
- Objective: Maximum safety

A scalable, safe and future-ready process enables the continued use of used batteries far beyond their original application. Thanks to its modular design, the entire workflow can be flexibly adapted to different battery types, applications and safety concepts.

BAUMANN RECYCLING SYSTEM

The Baumann recycling system offers a holistic, modular plant concept for the safe and automated processing of high-voltage batteries. From the receipt of sealed batteries with unknown SOC and SOH, through camera-based type and condition assessment, to robot-assisted opening and disassembly, nearly all process steps are consistently automated.

Variant-capable workpiece carrier systems and flexible transport solutions ensure reliable handling of a wide range of battery types. The controlled removal of battery modules enables both safe discharge for recycling and further use in stationary second-life applications.

An integrated safety and emergency concept ensures controlled management of critical operating conditions throughout the entire process.

Baumann MTS

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