

# SECOND LIFE / REUSE OPTIMIZATION OR RECYCLING OF LITHIUM BATTERIES



## SERMA Technologies guides you for each step of the REUSE OPTIMIZATION, SECOND LIFE & RECYCLING

**Batteries Vs. usage / application**  
automotive usage (electric vehicle, bike,...), stationary usage (storage on solar installation,...), technology, ...

### Standardization

Mission profile Study,  
Battery Passport Evaluation.  
Technology Vs Usage match (benchmark)

**Dynamic tests & Support**  
State of Health (SOH) estimation and Embedded in BMS in real time, State of Charge (SOC) validation.

Are your batteries Safe?  
Reusable? How long?  
Can you sell it? Buy it?  
**We help you to decide**

### Static tests

State of Charge (SOC) validation,  
Safety, Physical Vs. Failure prediction.

### & Support

Test plan design Vs. Evaluation and Vs. Model needed.

**Second life**                      **Recycling**

**1. Reconditioning modules/packs for new safe and performant batteries**

### Neutralization service

Overdischarge & Immersion (cell, module, pack).

### & Support

Expertise in safety of battery related installation.

**2. Qualification tests of new products**  
Environmental, endurance, abuse tests

**2. Destruction of batteries into powders (black mass)**  
Mixture, separation, elements to be recycled, reused

### Characterization of materials

Laboratories and access to characterization experts for macroscopic, microscopic and nanoscopic analyses from the surface to the product.

**3. Integration of the new product in your system**  
Modelling, reliability, performance, prediction, Artificial Intelligence

**3. How qualitative is the recycled materials**  
Purity, impurity type,...

**Battery Testing Services**  
Test plan design  
Environmental, endurance & abuse according to standards, qualification and tailored tests.

**Implementation Support**  
Design for Health Monitoring – Prognostic Health Management and associated models (with Artificial Intelligence).

**Engineering & Support**  
Selection of battery technology, Setting Battery Management System (BMS)  
Real time parameters (Prognostic & health management, SOH predictive maintenance).