

RE

BE

LI

ON

OCTOBER 2026

FACTSHEET:
SEMI-AUTOMATIC DISASSEMBLY
AND REUSE OF LEV BATTERIES



Funded by
the European Union

SEMI-AUTOMATIC DISASSEMBLY AND REUSE OF LEV BATTERIES

Enabling second life in Light Electric Vehicles (LEV) batteries

About REBELLION

REBELLION addresses the waste management challenges of lithium-ion batteries from electric mobility, promoting recycling as a sustainable solution to recover valuable raw materials and support circular battery value chains.

Table of contents

• Key insight	4
• Why it matters	5
• What are we developing	6
• How it works	7
• Key benefits	8
• Key figures	9

Key insight

A semi-automatic process to safely disassemble, classify, reuse, and recycle LEV batteries, extending battery life.

SAFE DISASSEMBLY

Semi-automatic tools enable the **fast and safe disassembly** of compact light electric vehicle batteries down to the cell level.

RAPID CELL DIAGNOSIS

A system based on **Electrochemical Noise Analysis** evaluates each cell's State of Health in just a few minutes.

SECOND-LIFE BATTERIES

Recovered cells are reorganised and integrated into new batteries for **second-life applications** with lower energy density requirements.

SMART AUTOMATED PROCESS

Robotics, software, and computer vision automate cell handling, monitoring, classification, and integration into new batteries.

ENERGY RECOVERY SYSTEM

End-of-life batteries are safely discharged to **recover residual energy** before final recycling processes.

Why it matters

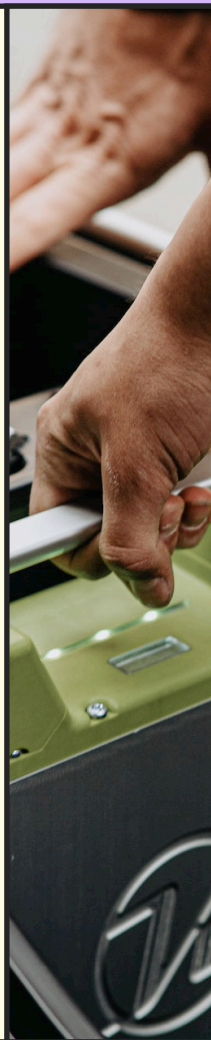
More and more electric bicycles, scooters, and motorcycles are on the road. Their batteries are often replaced when they still retain around 80% of their original capacity. Until now, most of these batteries were sent directly to recycling. However, they can still have a second life in applications that require lower energy density, extending their useful life by at least five more years and **reducing environmental impact**.

Reusing before recycling means less waste, fewer critical materials extracted, and a **more responsible use of energy**.

What are we developing

Light electric vehicle batteries are highly compact to withstand vibrations, impacts, and to provide maximum range. This makes them difficult and potentially dangerous to disassemble, and they are not designed to be taken apart. The REBELLION Project is developing a **semi-automatic line** that enables:

1. Disassembling batteries down to the cell level quickly and safely.
2. Classifying each cell and determining its real State of Health (SoH).
3. Building new second-life batteries using recovered cells.
4. Safely discharging exhausted batteries, recovering their remaining energy to charge other batteries.



How it works

From diagnosis to reuse: EV cells safely recovered for second-life batteries.

1

SAFE BATTERY DISASSEMBLY

Safe disassembly with insulated tools and PPE to protect cells and operators.

2

CELL CLASSIFICATION

ENA measures each cell's SoH in minutes with minimal energy consumption.

3

BUILDING THE SECOND-LIFE BATTERY

Robots and software sort, monitor, and assemble reusable battery cells.

4

DEEP DISCHARGE FOR RECYCLING

Controlled deep discharge recovers energy and enables safe battery recycling.

Key benefits

A scalable, automated process for safe disassembly, SoH classification, recycling, robotic reconstruction of LEV cells.

SAFE DISASSEMBLY

Battery packs are dismantled with **insulated tools** and dedicated safety systems to protect operators and preserve reusable cells.

RAPID CELL ANALYSIS

Electrochemical Noise Analysis technology evaluates each **cell's SoH** in minutes with low energy use and reliable classification results.

SECOND-LIFE ASSEMBLY

Recovered cells are sorted, monitored, and assembled into new battery systems using **robotics** and dedicated **software**.

AUTOMATED WORKFLOW

Disassembly, testing, reconstruction, and discharge are integrated into a process with **minimal human intervention**.

LOWER WASTE IMPACT

Cell reuse and energy recovery reduce waste, extend battery life, and support a more **circular battery ecosystem**.

Key figures

Efficient reuse and recycling of LEV batteries through advanced disassembly and energy recovery processes.



1200 battery
cells
disassembled
per day

HIGH-THROUGHPUT REUSE

Up to 1200 battery
cells per day can be
disassembled and prepared
for second life.



>80% of
battery
energy
recoverable

ENERGY RECOVERY POTENTIAL

More than 80% of
battery energy can
potentially be extracted
before recycling.



RE

BE

LI

ON

SEMI-AUTOMATIC DISASSEMBLY AND REUSE OF LEV BATTERIES

Discover more at:

[REBELLION-PROJECT.EU](https://rebellion-project.eu)



Funded by the
European Union.

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.