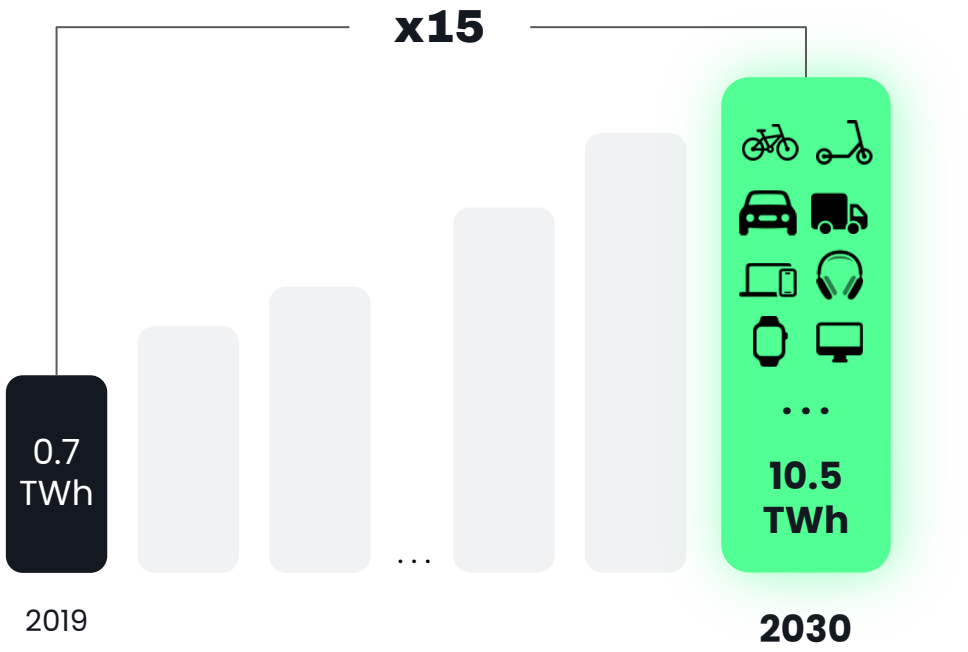
WE MAXIMIZE THE VALUE OF EACH BATTERY

www.circuli-ion.com

Opportunity

Our economy is being electrified



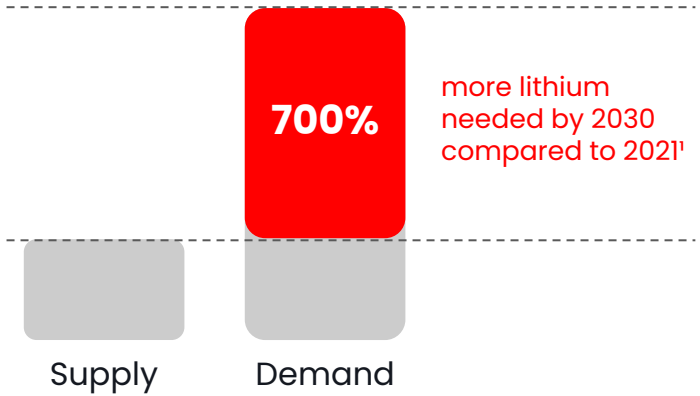
Li-ion batteries in the market

Circular Energy Storage (2020). The lithium-ion battery life cycle report 2021

Problem

Supply is scarce & battery production hazardous

Limited supply



Socio-environmental challenges

Human rights abuses[2]

Battery Production = CO2 emissions[3]

[1] McKinsey (2022) [2] Bloomberg (2022)

[3] Climate MIT Portal (2022)

Problem

Today’s recycling industry destroys value

Existing recycling process

Battery Pack
932 EUR[1]

Complete destruction of the pack

Black mass
56 EUR[1]

Raw materials

Waste

Impact

1 Low % of raw materials recovered

2 Very energy intensive

3 Destruction of intact resources

[1]*Circular Energy Storage, Example Module Tesla S*

Solution

THE ENABLER TO A CLEAN UP- & RECYCLING

Packs

Automated disassembly

Pure recycling components

- Cells
- Metals
- Plastics

Recycling

Upcycling components

- Electronic parts
- Cells

Re-use

- ESS
- Second life battery packs
- Single cell sales

Solution

BEYOND HARDWARE, WE ARE A DIGITAL UPCYCLER

Scalable software

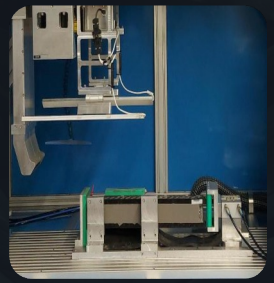
Data

Automated hardware foundation

Battery library | **Diagnostic software** | **Data collection**

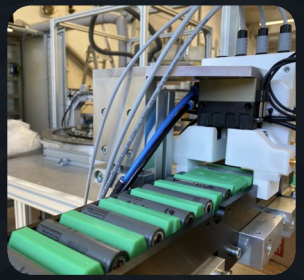
Unit 1
Pre-diagnostic

Unit 2
Opening system



PATENTED

Unit 3
Cell extraction



Unit 4
Cell diagnostic

Solution

Data is the fuel of our business

Internal acceleration

Optimizing own operations

while building biggest used battery data library

Data processing

Computer Vision & AI

machine learning algorithms suggest new opening approaches & higher throughput

External monetization

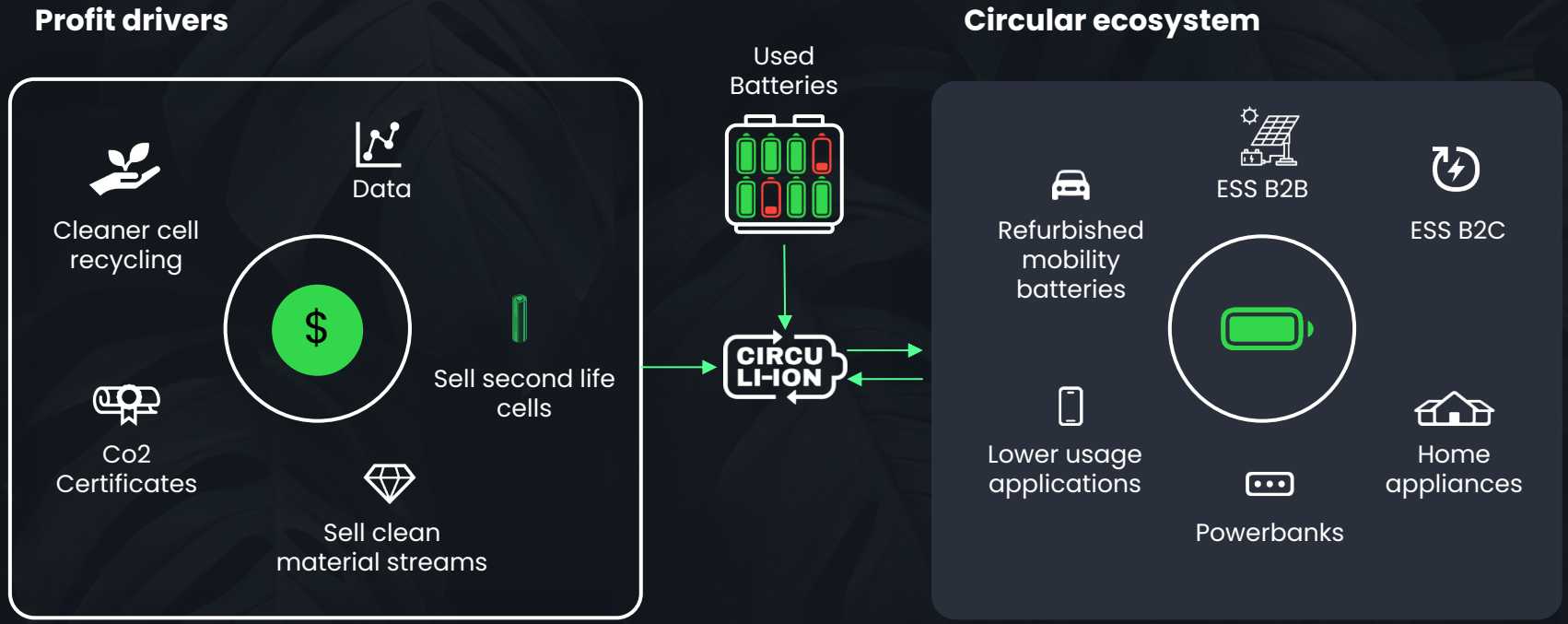
BATDAT

Battery Data: creating largest used battery database sets for customer value add

https://www.circuli-ion.com/getbatdat

Market

WE ARE THE HUB OF USED BATTERY COMPONENTS



Roll-out

Hybrid GTM to win an exponential market

Go-to-market 2023-2025

3. Licensing model (Global)
Rapid global scaling

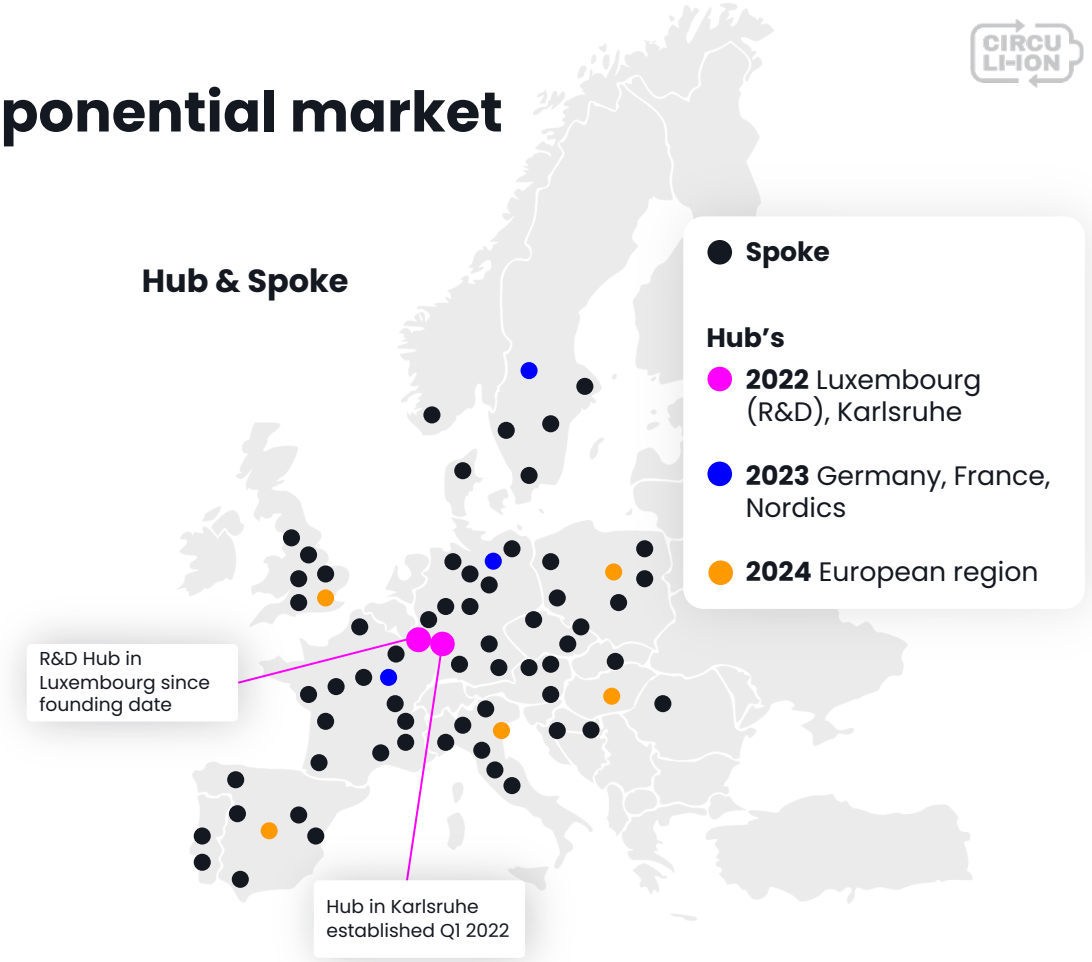
2. Own operations (Hub)
Realise full margin potential in-house

1. MaaS (Spoke)
Quick market entry

Net margin potential

Time-to-market

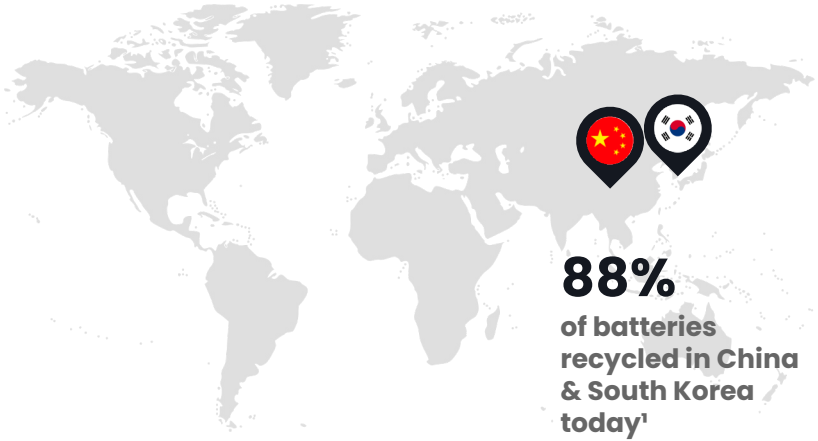
Hub & Spoke



Market

Battery upcycling technology is crucial for the West

Economic opportunity in Europe



88%
of batteries recycled in China & South Korea today[1]

Regulatory frameworks create urgency to act

	End of Life Vehicle Directive [1]	Active
	Battery Directive [2]	Active
	REACH Regulation [3]	Active
	Waste Shipment Regulation[4]	Active
CSRD	Corporate Social Reporting Directive	Active

[1] EU (2021) [2] EU (2022) [3] EU (2022). [4] EU (2020)

Team

BRINGING ACADEMIC EXCELLENCE TO MARKET

Business

Cecilia Wiesböck
Head of Partnerships

Antoine Welter
Co-founder & CEO

Tech

Dr. Xavier Kohll
Co-Founder & CTO

Maxime Allard
Head of Data & AI

R&D Projects

- RWTH AACHEN UNIVERSITY — Diagnostics & Battery Design
- KIT Karlsruher Institut für Technologie — Robotics & Computer Vision
- KU LEUVEN — Automated Sorting & Diagnostics
- uni.lu UNIVERSITÄT LUXEMBURG — Unwelding & Robotics

+ 16 PhDs and engineers

Advisors

FREENOW · ETH zürich · ACCUREC · UJET · Tomorrow · RWTH AACHEN UNIVERSITY

Confidential

Achievements

Upcycling attracts big names early

Paying customers

TIER, ecobat, ECO Electronic Components, BOSCH, voi., GOUACH, äerdschëff, cling, STENA RECYCLING, VOLOCOPTER, HILTI

LOI/MoU

GLENCORE, TIER 1 automotive supplier, REMONDIS, CYLIB, ecobatterien, emr, deppe BATTERIESERVICE, LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY, LIST

Negotiations

+15 clients
in final contract negotiations

Traction

+600k EUR signed revenue

+300,000 cells treated

+6000 batteries processed

Awards & alliances

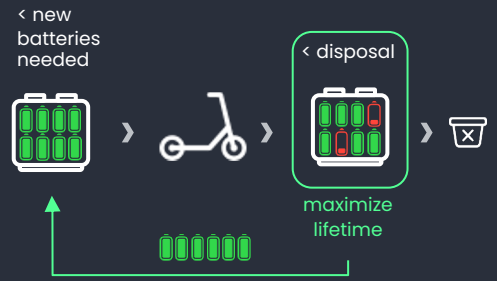
European Innovation Council, RECHARGE, DeepTech Alliance, RAW MATERIALS SUMMIT, TechTour SELECTED PRESENTING COMPANY 2023, team2, FEDIL, CIRCULAR REPUBLIC, future hamburg, elektromobilität südwest, intel, EUROPEAN BATTERY ALLIANCE, EBA250, FIT4 START, UNTERNEHMER TUM, STARTUPAUTOBAHN, ENERGY TECH CHALLENGERS

Company

WE ENABLE A TRULY SUSTAINABLE ELECTRIFICATION

Our Impact

Circu Li-ion battery life cycle reduces the need for new batteries.



Our Goal

Upcycling of **155 million battery cells/year** by 2026, saving **620,000 tons of CO2/year.**

Our Vision

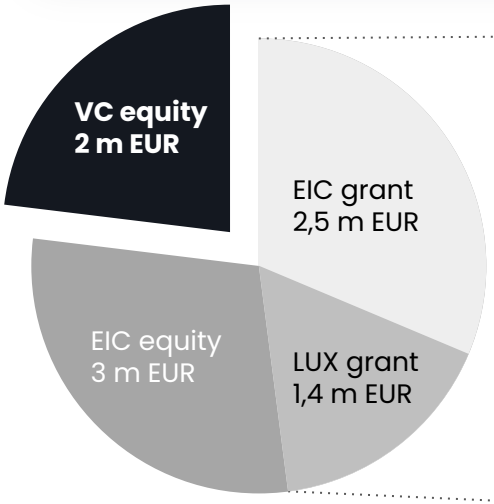
Fighting the climate crisis by maximising the **value of each Li- ion cell** and building the largest **second life cell-level database.**

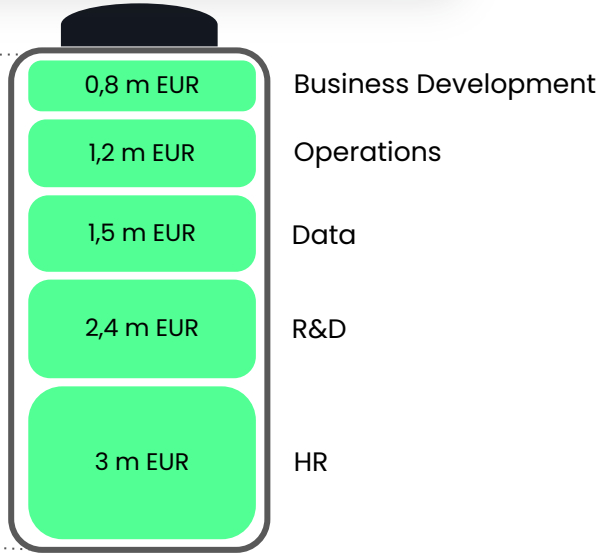
Funding

Our innovations enable substantial grant funding

Confirmed
- EIC Accelerator
- 2,5 m EUR private funding

Pending
4,53 m EUR Grants for roll-out of machines & R&D





LET'S DISCUSS BATTERIES!

Antoine Welter
Co-founder & CEO

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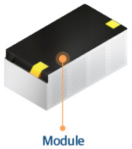
Solution

Fighting labour shortage & unscalable processes

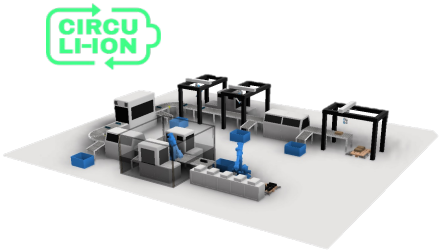
Fully manual process

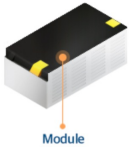


3 h manual time

100 % manual

Including Circu Li-ion process





5 x throughput

30 mins robot time

Trusted OEM Partner

Unfair advantage by closely working with big partners

@ CIRCU LI-ION site

BASF We create chemistry · PowerCo · AKASOL High Performance Battery Systems

- Delivery of batteries
- Analysis in own DCC (data collection center)
- Development of software
- Testing in automotive corner
- Show case clients

EV Development

Flywheel

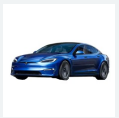
@ OEM / Recycling site

TSR THE METAL COMPANY · emr · deppe RECYCLING SEIT 1900

- Job shadowing
- Pain point identification
- Operator exchange
- Identification of cross selling opportunities

Documentation provided

VEOLIA · AVL · **Tier 1 OEM**



Solution

DETAILED PROCESS FLOW OF OUR BATTERY UPCYCLING TECHNOLOGY

	Unit 1 **Pre-diagnostic**	Unit 2 **Opening system**	Unit 3 **Cell extraction**	Unit 4 **Cell diagnostic**
Step 1	Visual check	Battery Case Opening	Unwelding	EIS Measurement
Step 2	-	Cell Block Extraction	Cell Extraction	Cell Sorting
Step 3	-	Unwelding Preparation	Cell Singularization	Cell Packaging
Step 4	-	-	Cell Surface Control	
State of battery				

Use cases for our CO2-neutral cells

1. **ESS[1]**
2. **New battery pack**
3. **2nd life cells**

[1] *Energy Storage System*

Roadmap

HOW WE BECOME THE LEADING BATTERY UPCYCLER

2021

- Machine concept & market approval
- Go-to-market strategy
  Statis
  client approved
- Team & initial investors

2022

H1-22
- POC at own site
- Built-up team of experts
- Paying pilot clients

H2-22
- Recycling pre-treatment POC

2023

H1-23
- Signed multi-year service deal
- Initiate Car battery project

H2-23
- European roll-out
- Car battery POC

2024

- Licensing of machinery & processes
- Roll-out EV solution


Micro mobility


Power tools


BATDAT 1.0


ESS


EVs


BATDAT 2.0


Headphones


BATDAT 3.0

•••

Data library

Using AI to build the Nr.1 battery library

Learning data

- Opening path images
- More battery packs = more accuracy

Algorithm

- Machine vision algorithm
- AI driven automatic battery detection and classification

OpenAI for Batteries

- Scalable & deployable solution

Partners

Bringing Europe's deep tech from research to commercialization

Simon Mangold
Phd Computer Vision & Robotics

Mark Junker
PhD Electrochemical Energy Conversion & Storage Systems

Prof. Jef Peeters
Computer Vision & Robotics

Prof. Peter Plapper
Material Science & Engineering

Prof. Luis Leiva
Computer Science

Regulations make our business a necessity

	2024	2025	2026	2027	2030	2031
Digital Reporting			Battery passport	Full battery labelling with QR code	Required material recovery rates: Li 70%	Required material recovery rates: Li 80%
Circularity		65% recycling efficiency 35 % Li recovery rate		Recycled material declaration	65 -70 % recycling efficiency 70 % Li recovery rate	
Responsible Sourcing	Comply with supply chain & social risk					
Carbon footprint	Battery carbon footprint declaration with 3rd party verification		Classification into carbon footprint performance	Comply with carbon footprint maximum threshold		

Source: Volta Battery Report 2022

Target clients in the micro mobility market

Vehicles	Sharing / Delivery heavy-duty vehicles	Producers B2C - light-duty vehicles B2sharing - heavy-duty vehicles
E-bike 	GORILLAS, dott, DONKEY REPUBLIC, Swobbee we share batteries, JUMP, BIRD, Lieferheld, Bolt, Wolt, Lime	CANYON, SPECIALIZED, OKAI, RAD POWER BIKES, ONYX
E-scooter 	TIER, voi., JUMP, BIRD, Bolt, dott, Lime, Swobbee we share batteries	UNAGI, WALBERG, OKAI, Segway-Ninebot
E-moped 	felyx, emmy, Swobbee we share batteries, Lime, TIER, ENUU	niu, GOVECS SCOOTER, unu, gogoro

Battery recyclers
clients for end-of-life cells

ARN, emr, REMONDIS, GLENCORE, umicore, eraMET, TES, ecobat, ACCUREC