

Innovation Region Fessenheim Green Batteries and Circular Economy

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**7th Trinational Climate and Energy Congress
Strasbourg, 6th of October 2022**

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Innovation Region Fessenheim – “Green Batteries and Circular Economy”

Agenda



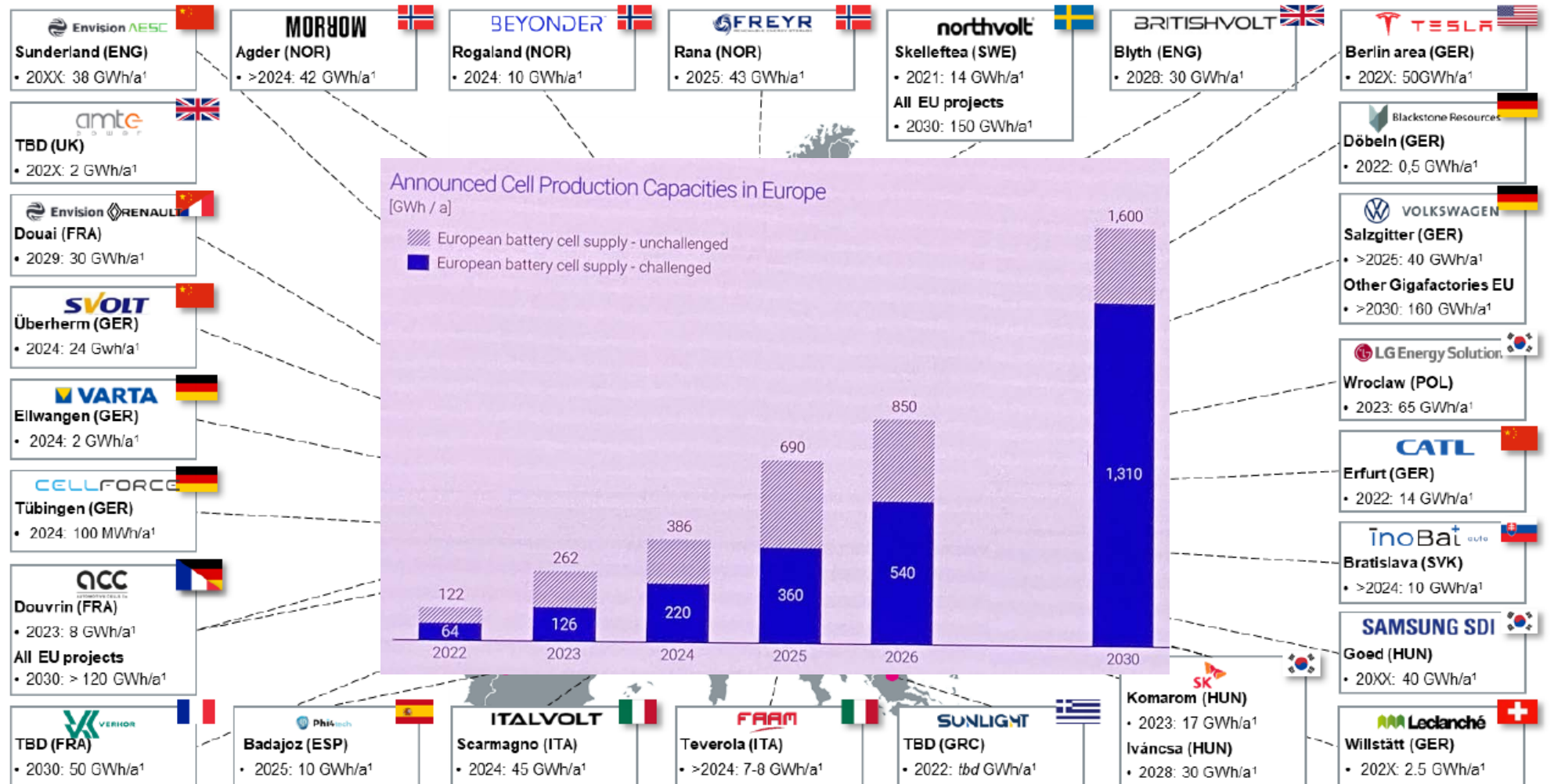
European Battery Landscape

Innovation Region Fessenheim – Concept of Circular Economy for Batteries

Innovation Region Fessenheim – Development of Industrial-scale Projects

Innovation Region Fessenheim – Next Steps

European Battery Landscape – Lithium-Ion Cell Production until 2030



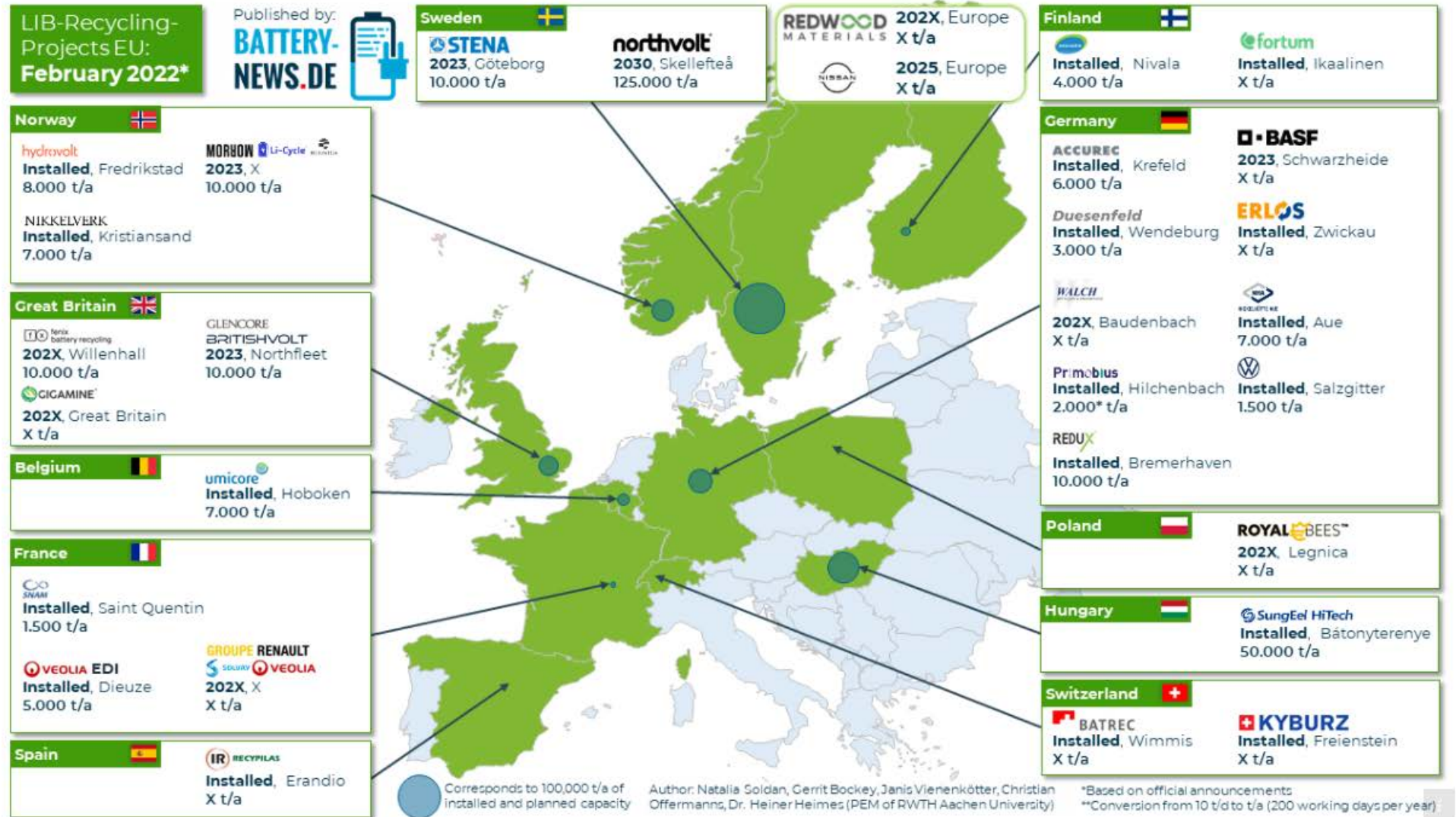
19.01.2022

1 Information based on press releases of companies, reports of major investment banks, newspaper articles and further research (status: 12/2021); Map created with MapChart

Sources:

B. Straube, KLIB, Batterieforum Deutschland, 2022.
M. Hackmann, P3 Group, VDMA; Battery Production of Tomorrow, 2022.

European Battery Landscape – Recycling: Current Situation

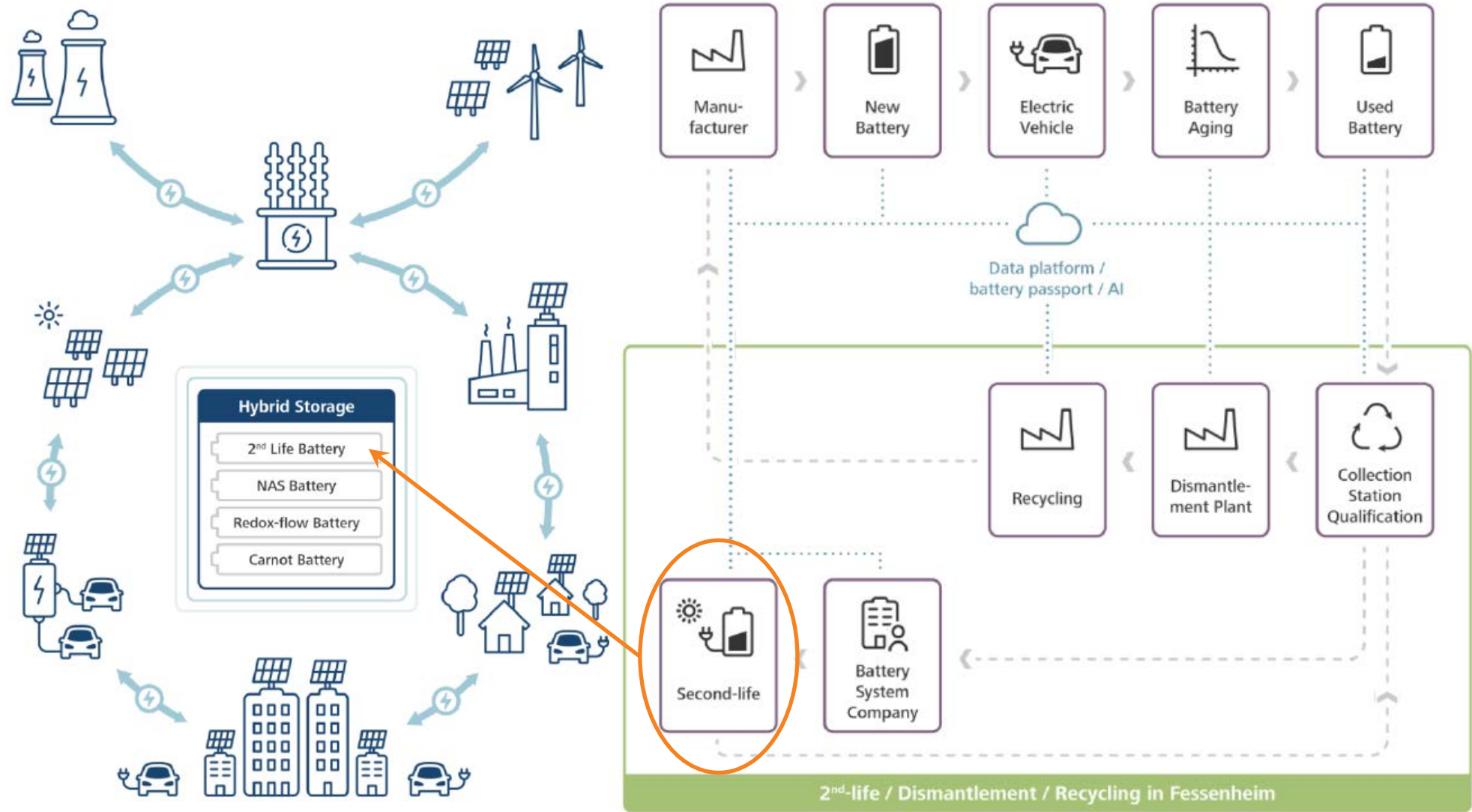


Source: <https://battery-news.de/index.php/2022/02/18/batterie-recycling-in-europa-stand-februar-2022/>

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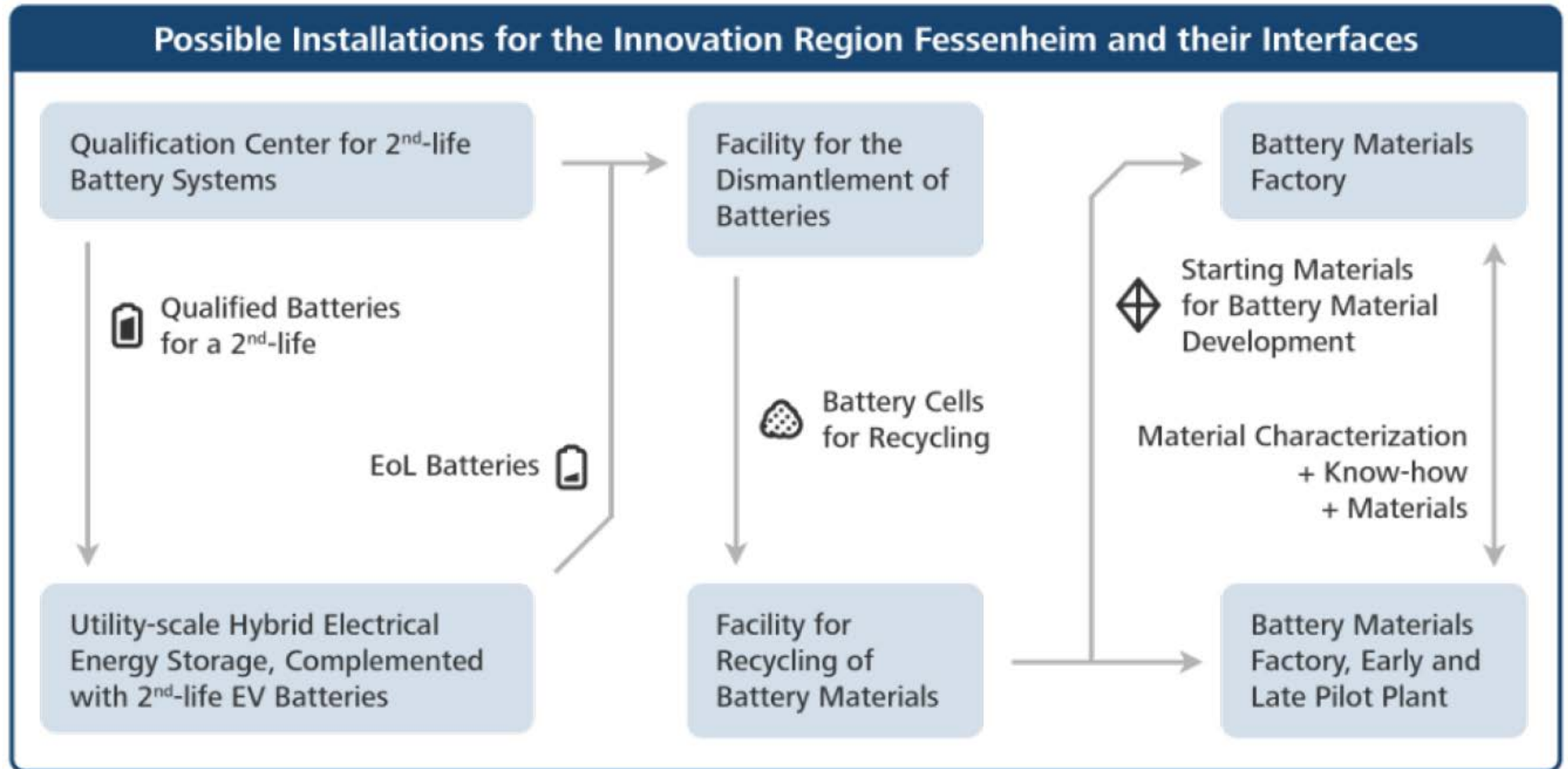
Industrial-scale projects

- Qualification center for used EV batteries
- 2nd life hybrid energy storage (centralized and / or decentralized)
- Dismantling plant
- Recycling plant
- Material production



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Industrial-scale Projects



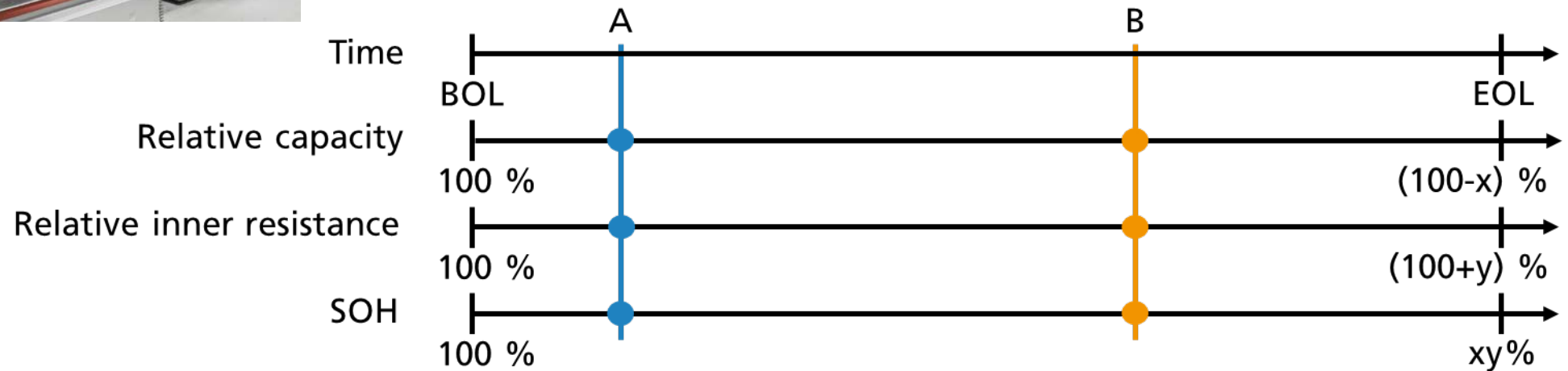
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Qualification Center for 2nd life Battery Systems



Task:

Evaluating efficiently state of used EV battery at point of time B

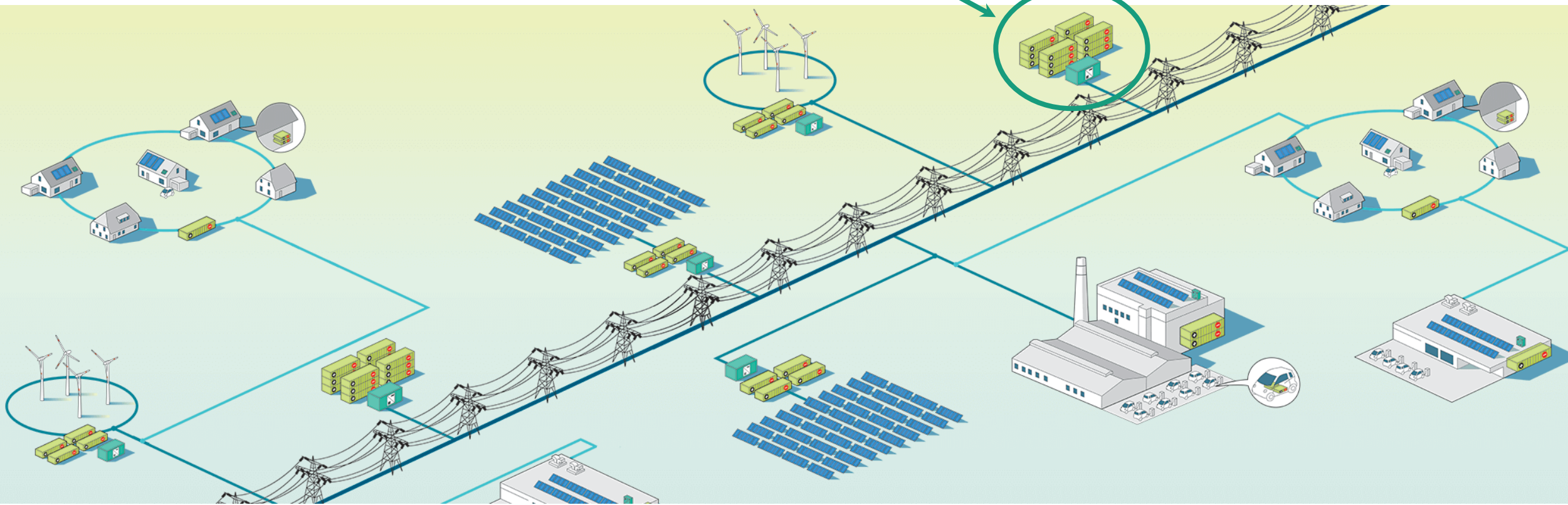


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2nd Life Hybrid Energy Storage

Example of Germany:

- Until 2030: 100 GWh of electrical storage capacity needed
- 65% of this capacity could be covered by large-scale-battery storage systems, installed at shutdown conventional power plants



Sources:

<https://www.ise.fraunhofer.de/en/key-topics/stationary-battery-storage.html>

<https://www.ise.fraunhofer.de/content/dam/ise/de/documents/publications/studies/Fraunhofer-ISE-Batteriespeicher-an-ehemaligen-Kraftwerkstandorten.pdf>

FHG-SK: ISE-INTERNAL


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Dismantling of Battery Packs

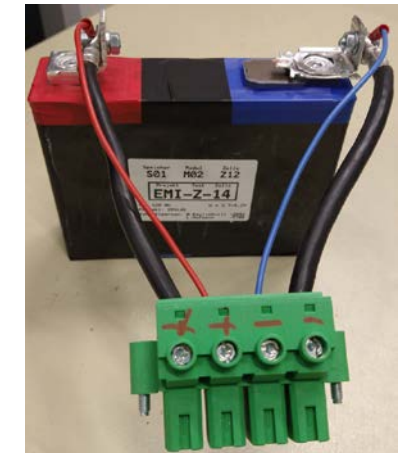


Battery pack



Battery module

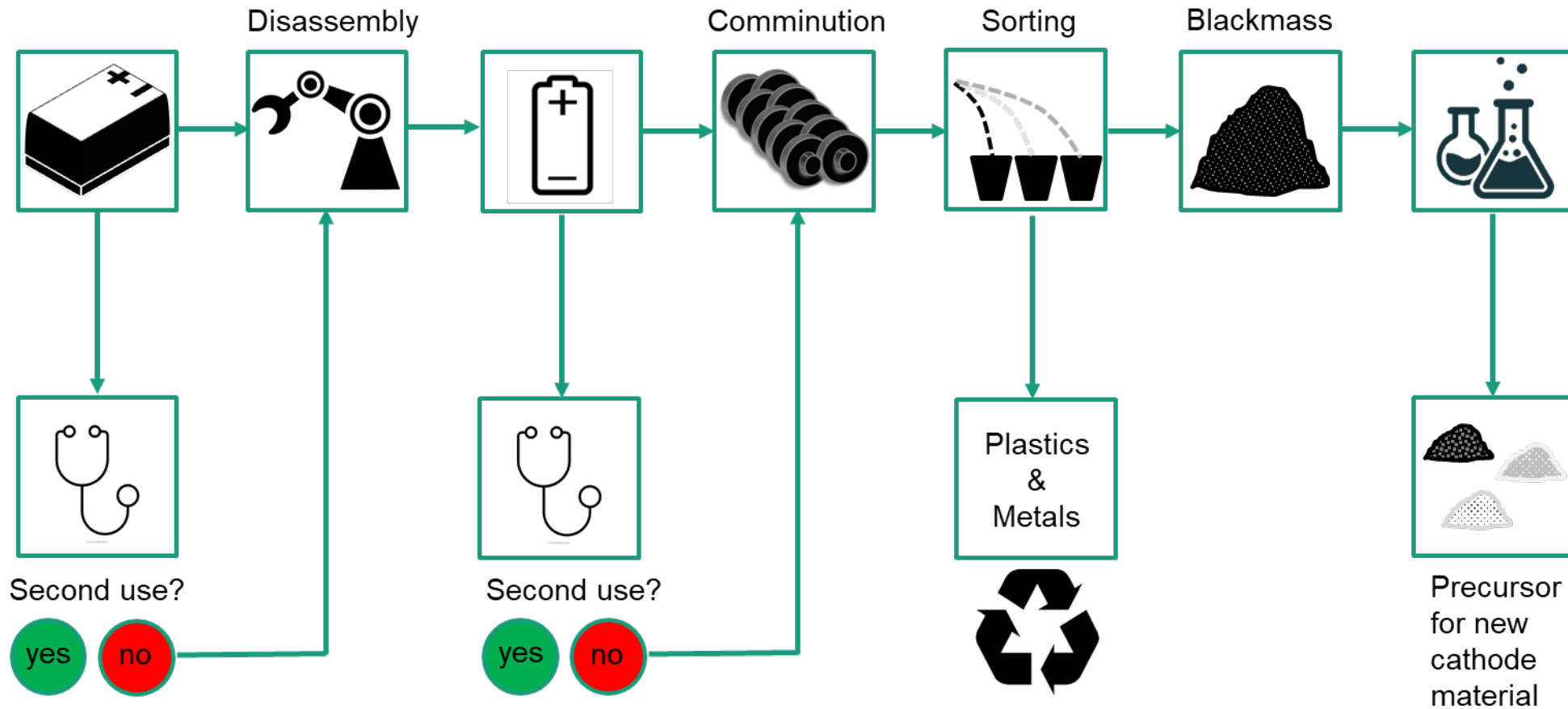
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Battery cell

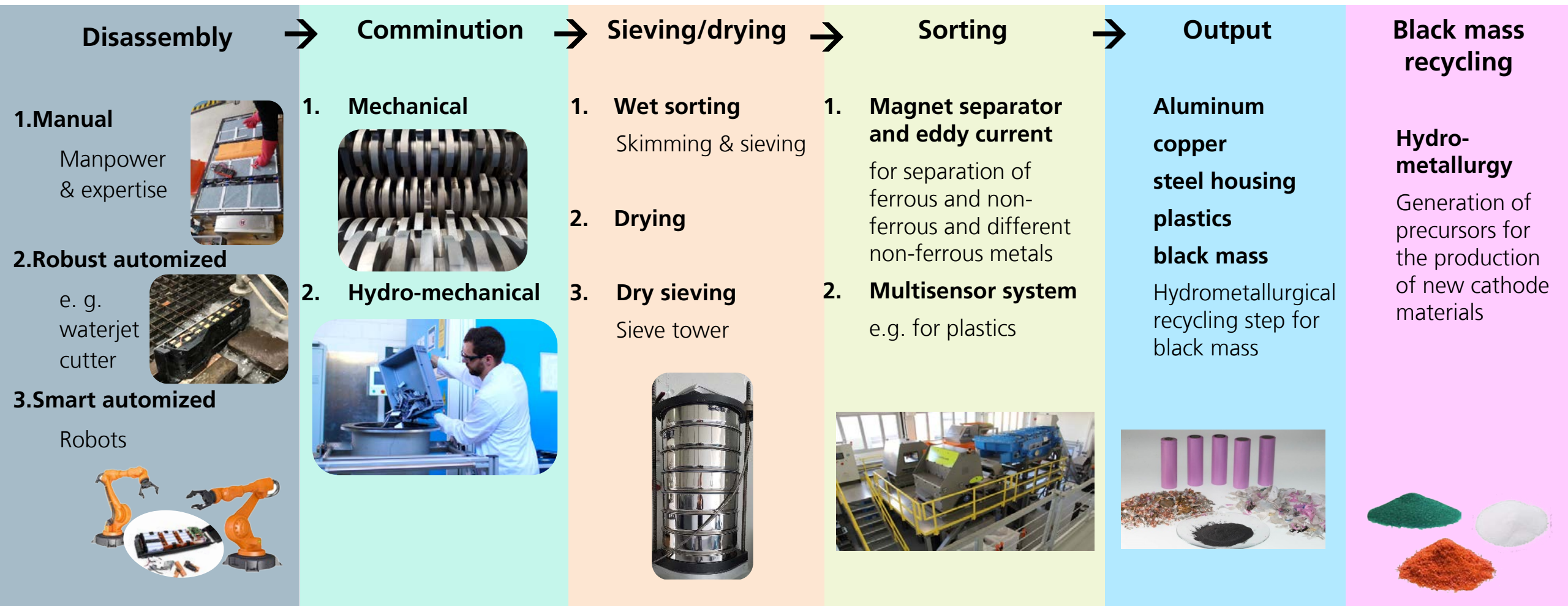
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Industrial-scale Dismantling and Recycling Facility



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New Active Materials for Battery Production

Process for the Synthesis of Cathode Active Materials (CAMs) for Lithium-Ion Batteries

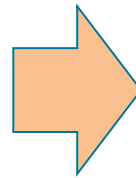
Starting Materials

- New raw materials

OR



- Materials from a recycling-process



Precursor-Precipitation

- Dissolution of the starting materials
- Addition of a precipitant
- Adjustment of temperature and pH-value



Calcination

- Mixing of a lithium-source and the precursor
- Energy intensive heat treatment
- The final product is ready for battery production



Precursor containing nickel, cobalt and manganese



Innovation Region Fessenheim – Next Steps

Support is needed for Development of Industrial-scale Projects

Coordination of technical / engineering tasks

Coordination of economical assessments and business plan development

Coordination of political, environmental and regulatory framework tasks

Clarification of available space for implementation of industrial-scale projects

Acquisition of commitment from key industrial players



Thanks for your attention !!!

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