»Electrifying Synthesis«
From Screening to Scale-Up

ESy Labs

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ESy-Labs GmbH

Team

Dr. T. Gärtner (Co-Founder)
Prof. Dr. S. Waldvogel (Co-Founder)
www.esy-labs.de

Employees:
- 5 Scientists
- 1 Engineer
- 1 Analytical chemist
- 1 Industrial foremen chemistry
- 3 Technicians
- 1 Apprentice
- 1 Office manager

Shareholder:
- Zweckverband Müllverwertung Schwandorf/SRR GmbH
- HighTech Gründerfonds III

Sites:
- Regensburg (headquarters)
- Gernsheim Fluxum

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Solution „Electrifying Synthesis“

Electrosynthesis

Lowering the amount of additional chemicals/reagents up to 90% by electrosynthesis

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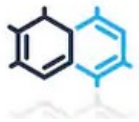
USP of Electrosynthesis

On demand production of toxic or hazardous chemicals

Direct use of **renewable energy**



Metal-free syntheses possible

Substitution of toxic and expensive oxidizers and reduction agents

Innovative reaction sequences and **reactive power adjustable**

B2B and no publishing necessity

Avoidance of chemical waste

Compatible with **medical directives**

Electrochemical **metabolite production**

Problem: How to get access on industrial scale to this technology as a chemical company?

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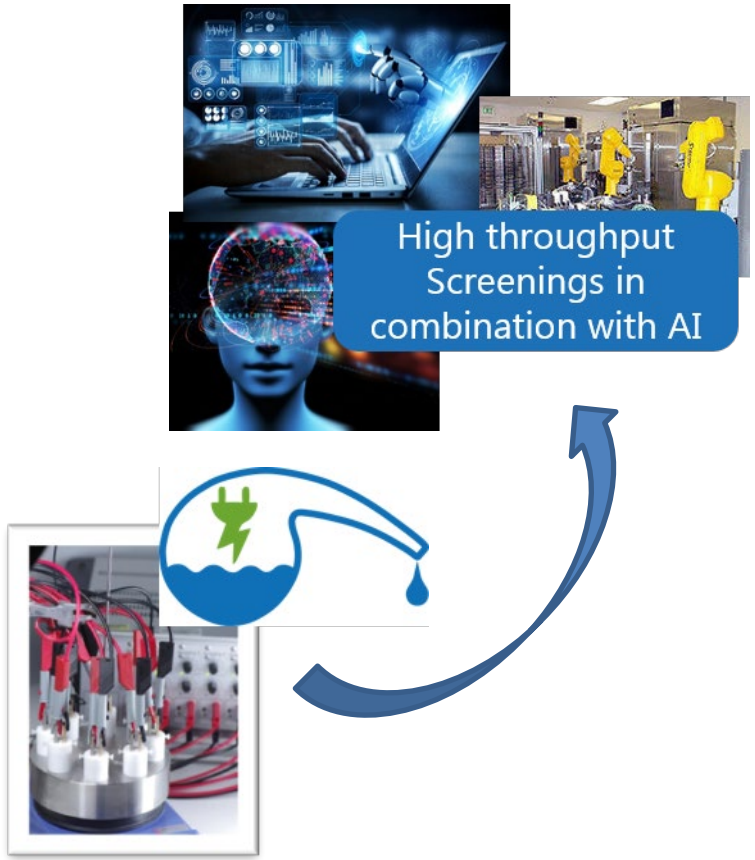
Solution

ESy Screening

- 24/7 development and design of experiments **speeds up development cycles by 95%**
- Increased reproducibility and comparable data as a basis for **AI** and **statistical methods**
- **Reduction of costs** for development with **increasing quality** of the results
- Independent from expertise in electrosynthesis



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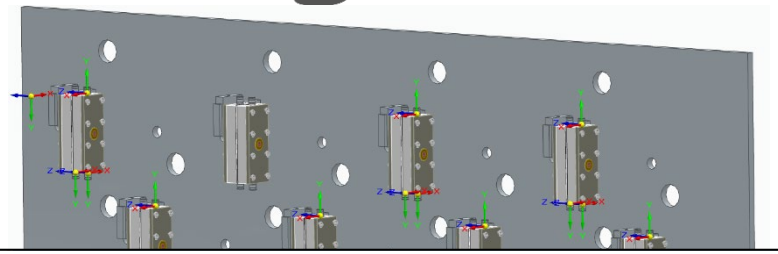
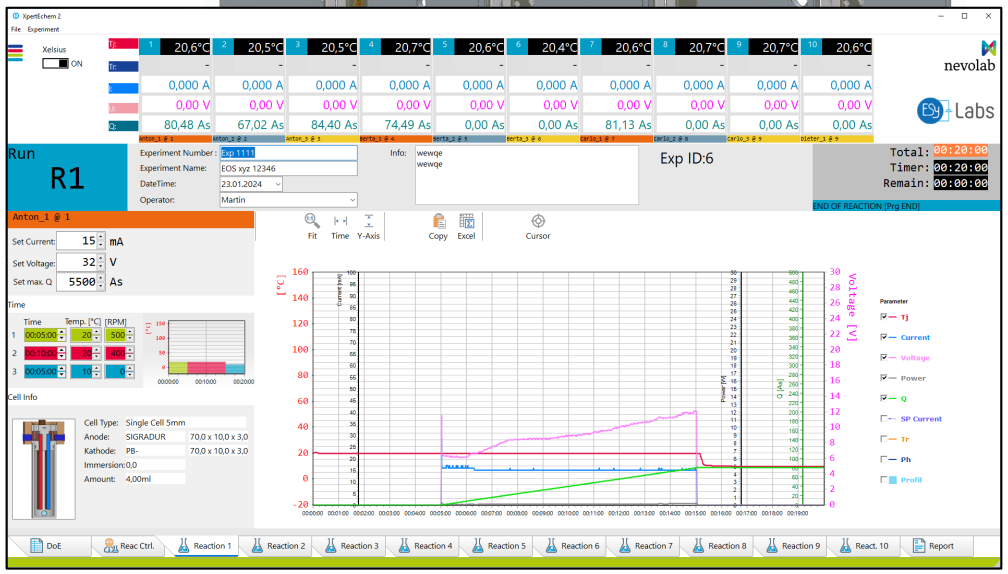
ESy Screening





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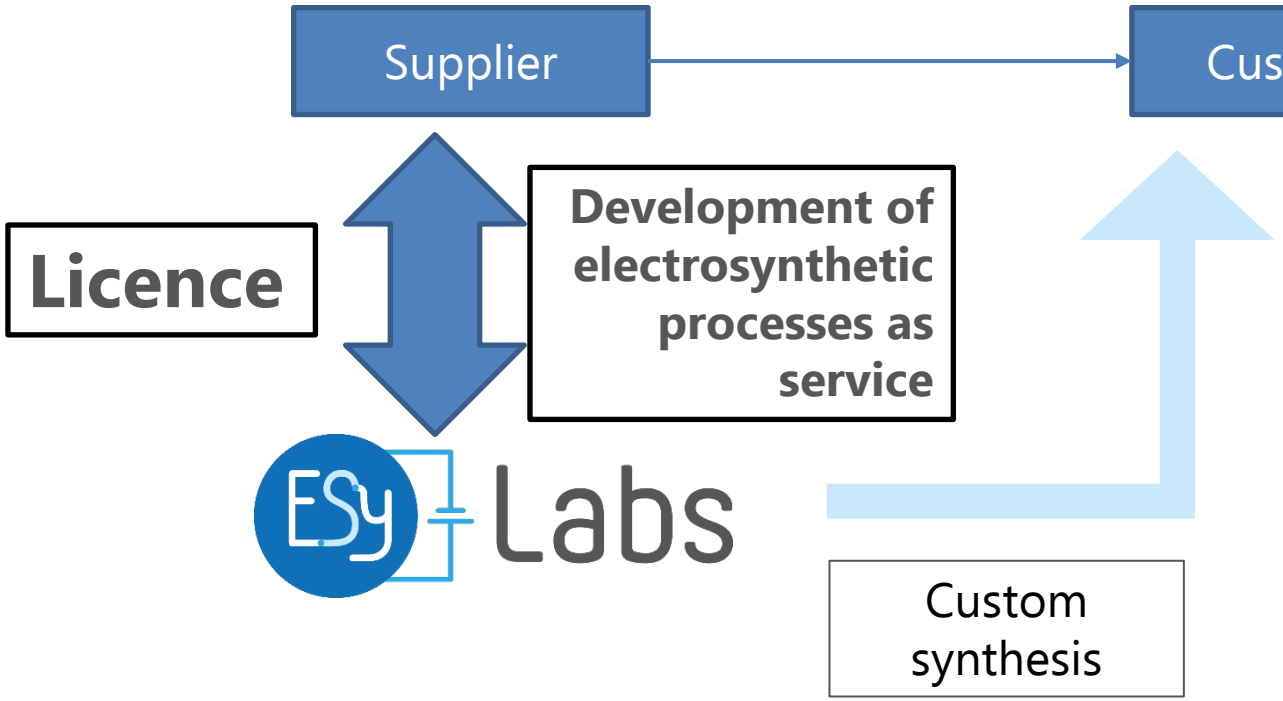
Businessmodel



- At the moment, about **4000-5000 electrosynthetic reactions** are known on academic scale
- Capacity of **~150 process developments** per year is planned to be reached by 2027 with **ESy-Screening**

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Vision „Electrifying Synthesis“

Food and Fragrances

ESy Organics

Nutrition and health care

Agrochemicals

Steel makers

Demonstrators and pilot plants

ESy Factory

Zinc coaters

ESy Inorganics

Waste incineration sites

Producers of renewable energy

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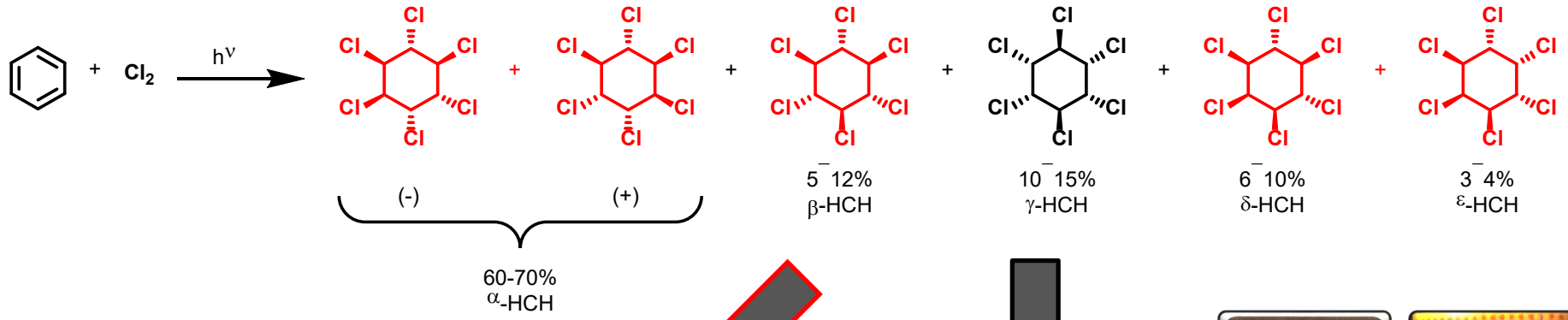
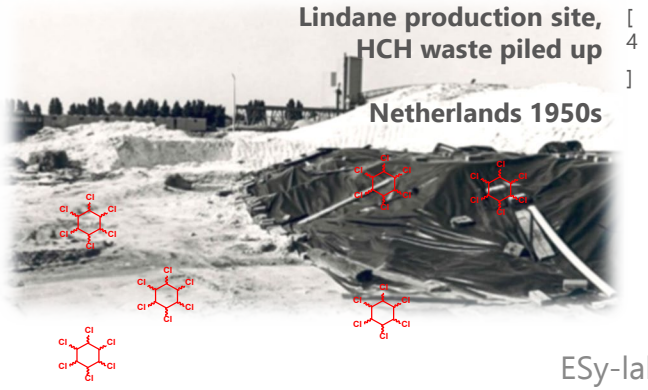
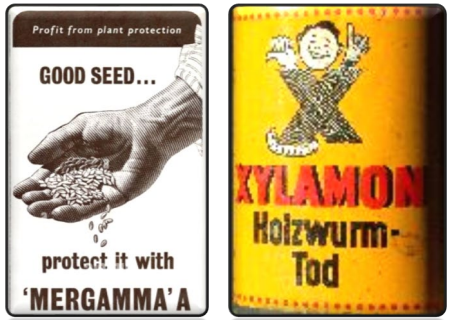
Photochemical chlorination of benzene:



8-12 times as much





<600 000 t of Lindane

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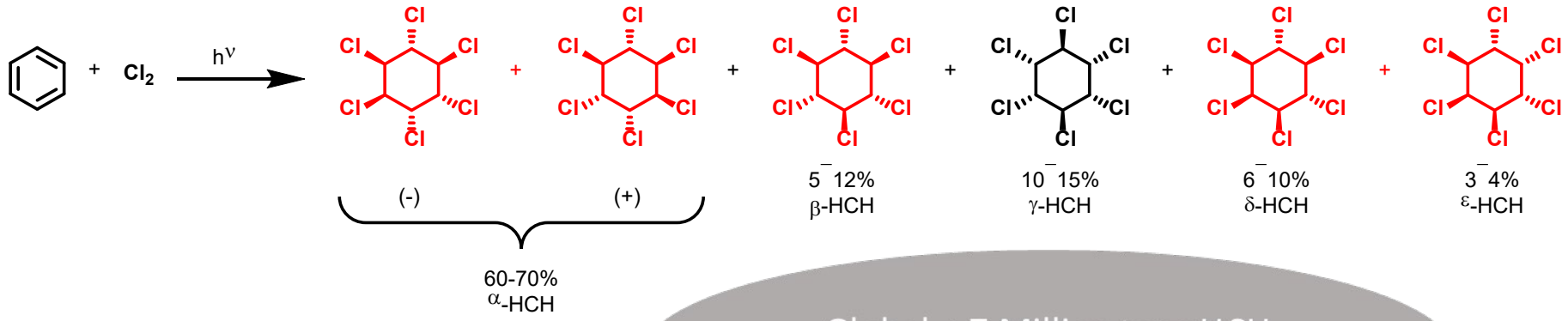
Photochemical chlorination of benzene:

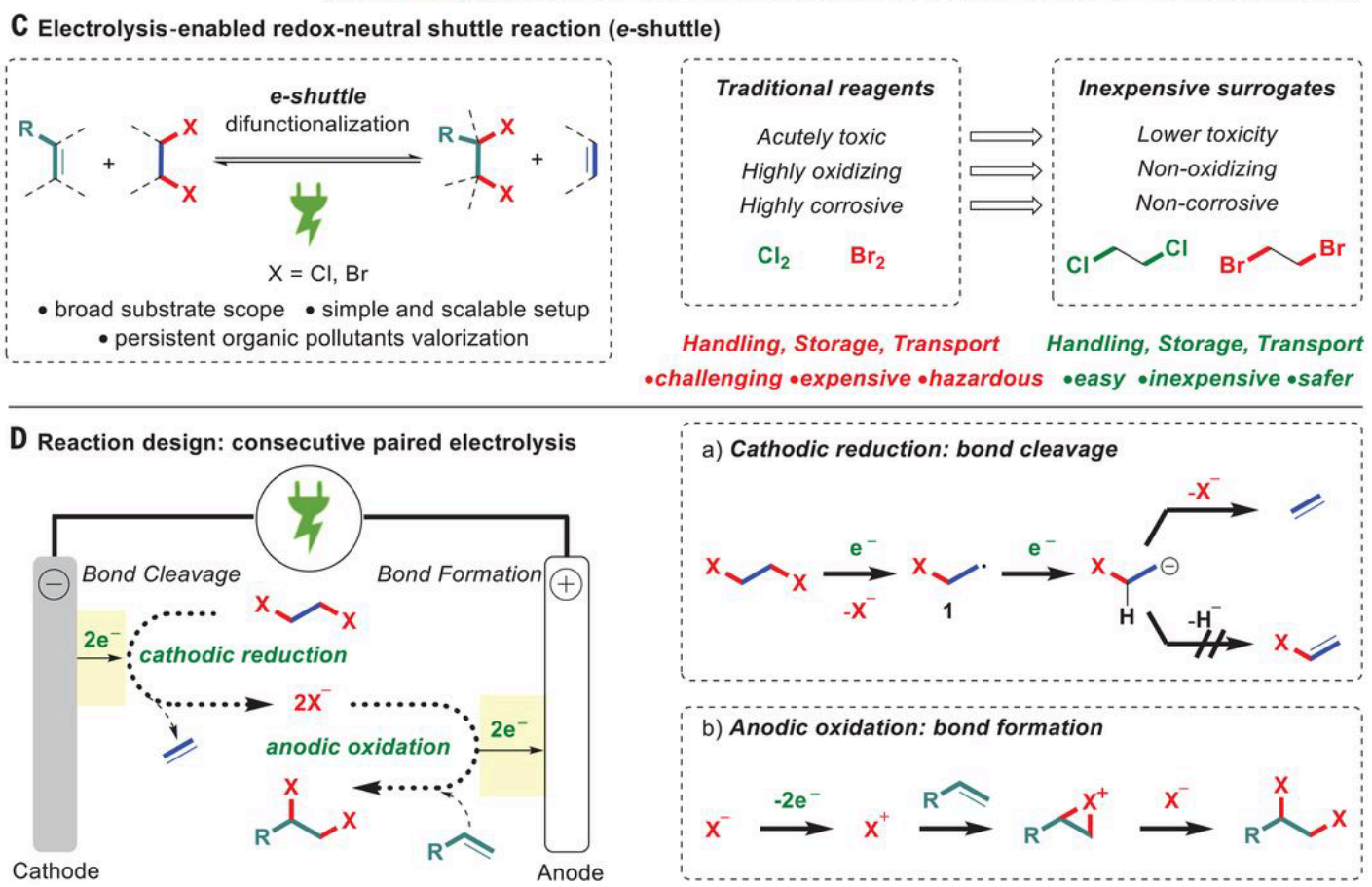


Global: >7 Million tons HCH
Europe: >4 Million tons HCH

1950-2000

HCH was included in the Stockholm Convention on Persistent Organic Pollutants (POP) in 2009 [6]

ETOS - EVALINA



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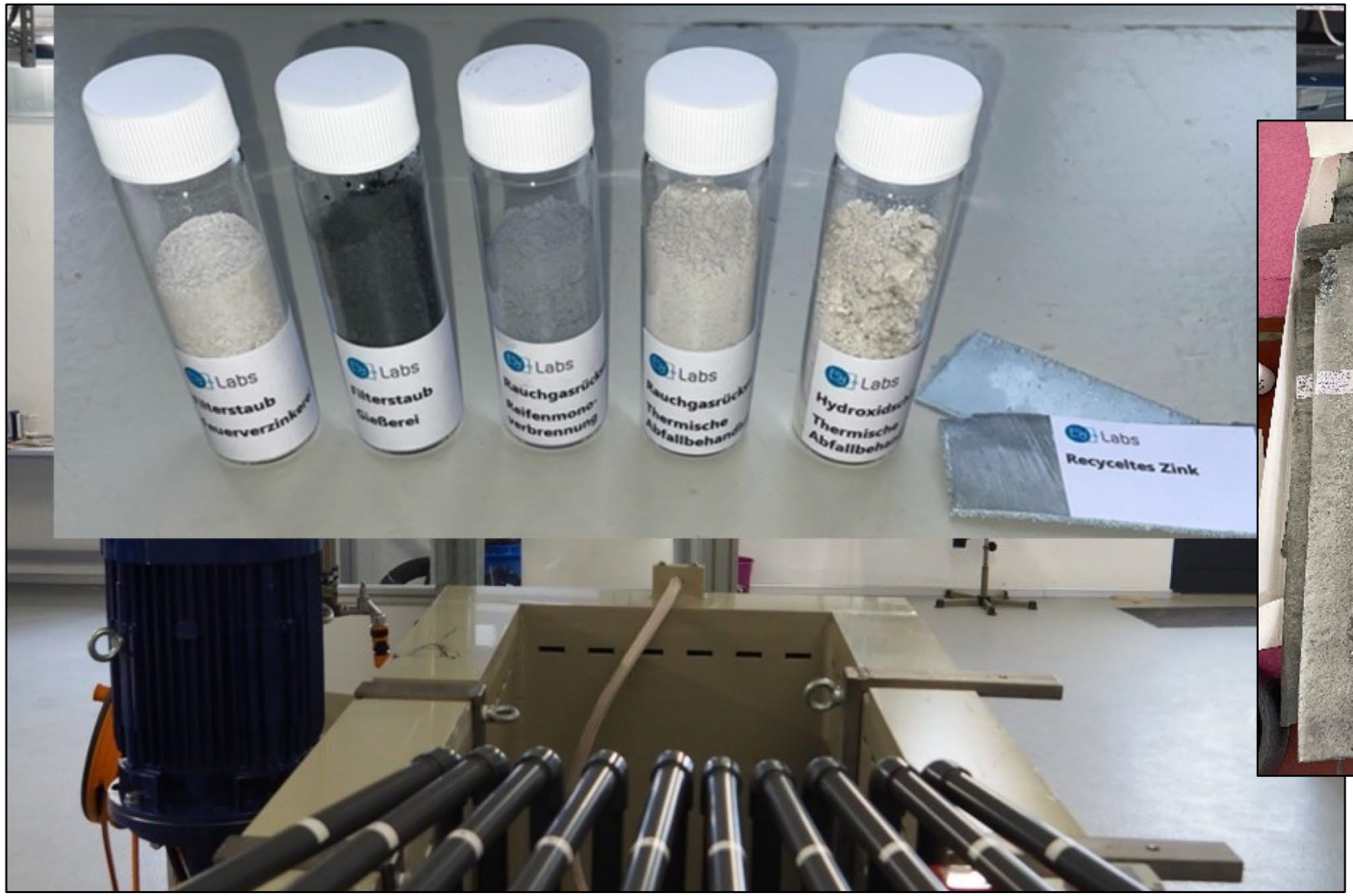
ESy-Zinc

Supported by

eit RawMaterials

Connecting matters

Co-funded by the European Union



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Get electrified