

Calendering Study on PFAS-free, water-based, high-energy electrodes

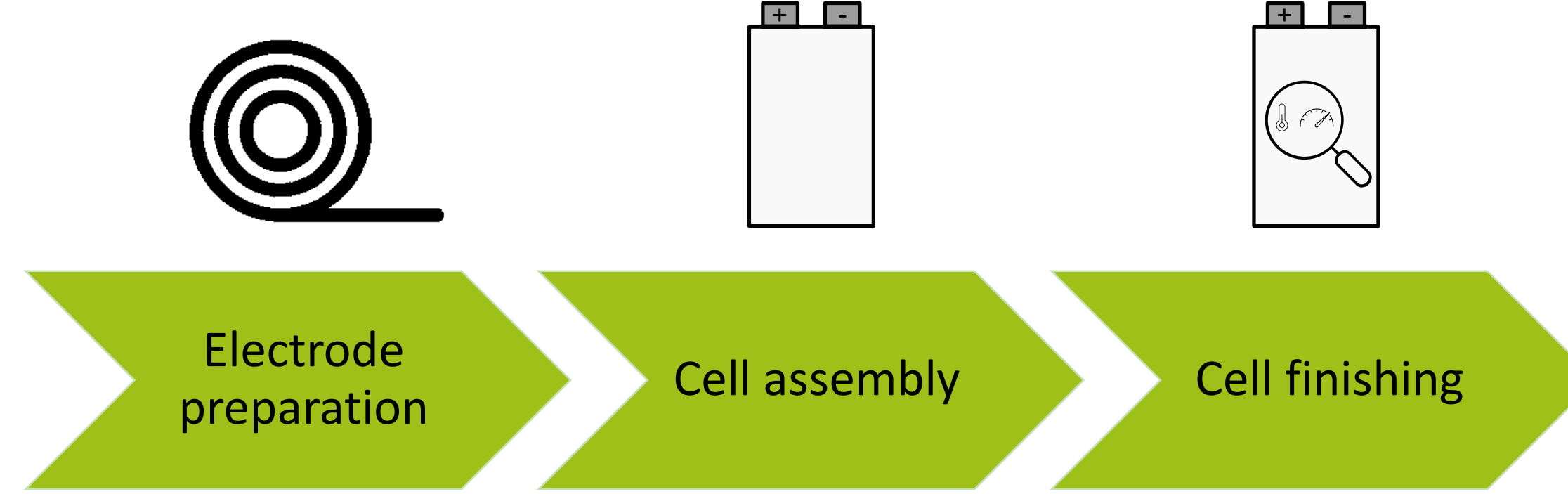
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Cell Chemistry



Technical Data	60 Ah	65 Ah
Cell chemistry	G/NMC	G/NMC
Cycle life (80% DoD)	8,000	7,000

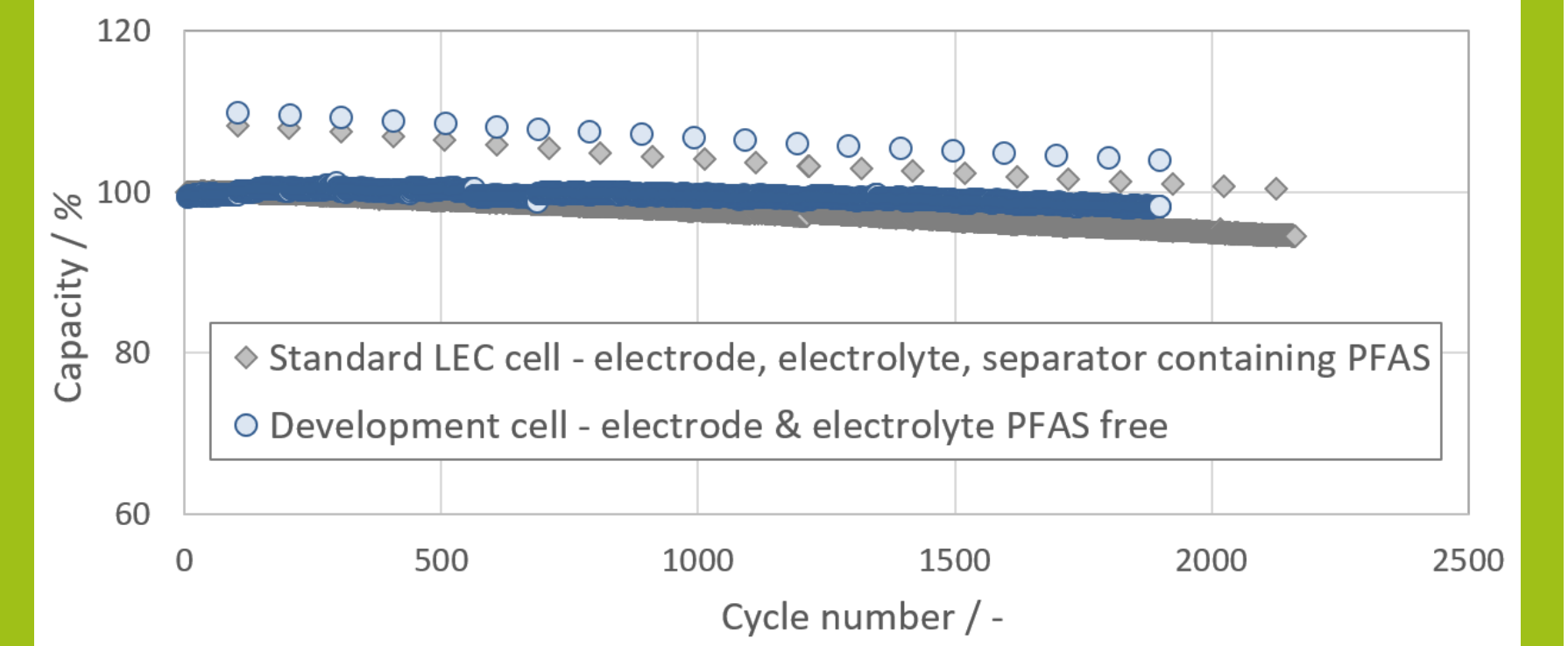
Process chain



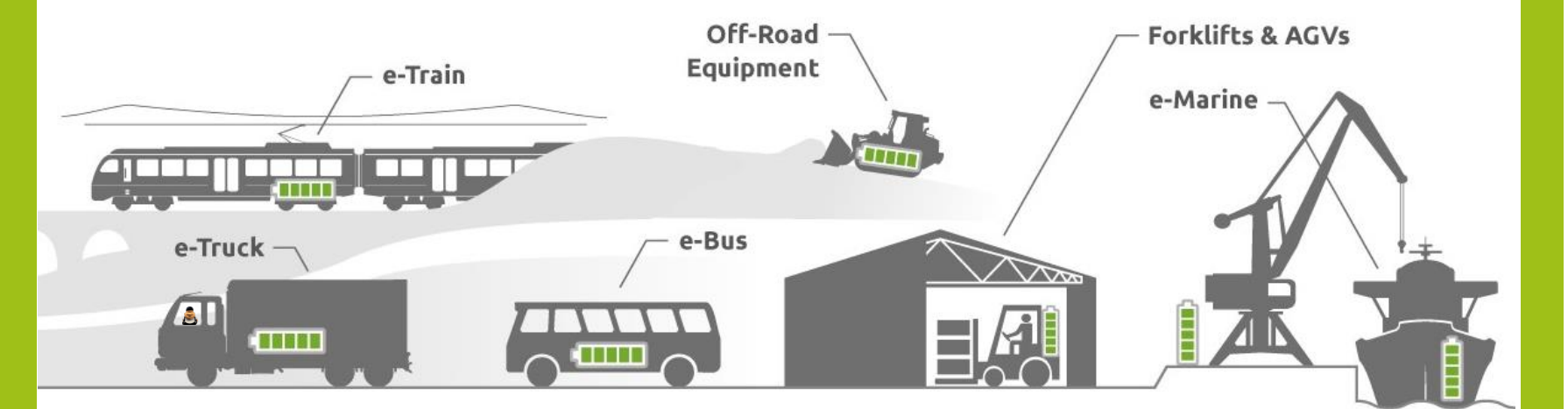
- Electrode preparation***
 - Slurry preparation*
 - Coating and Drying
 - Calendering*
 - Notching
- Cell assembly**
 - Bi-cell assembly
 - Stack assembly
 - Vacuum drying
 - Electrolyte filling
- Cell finishing**
 - Ageing
 - Formation
 - Degassing
 - Quality check

*) focus during the BATMACHINE Project (see below)

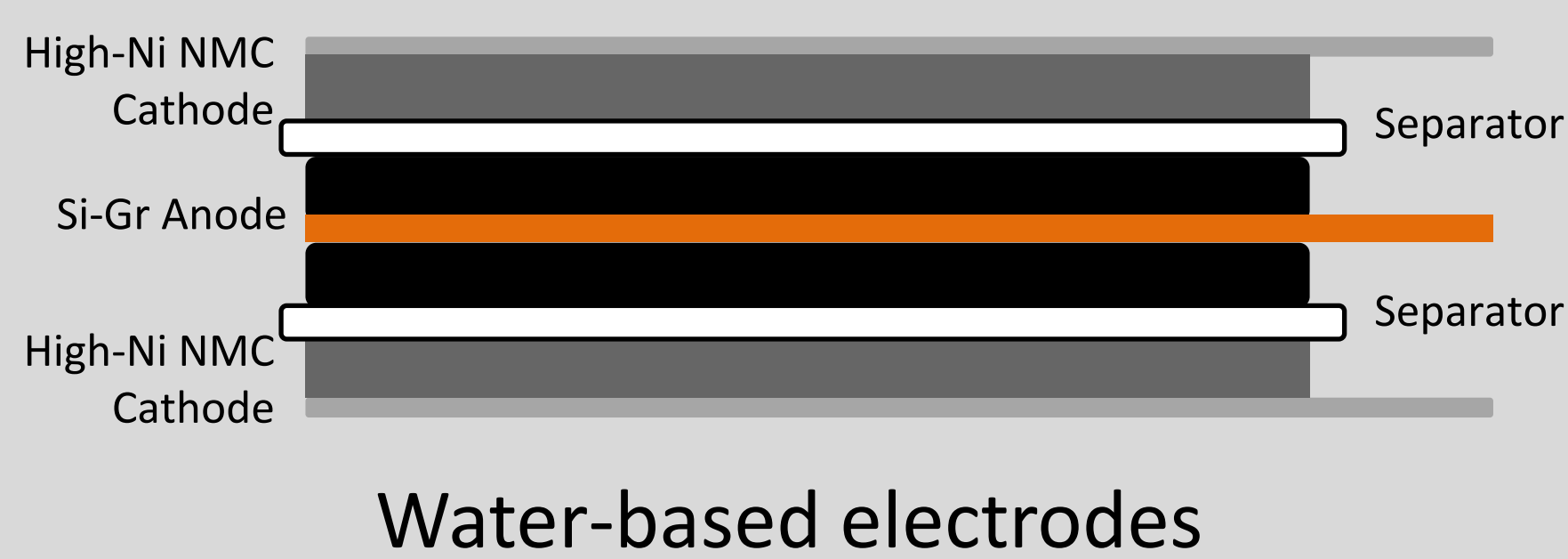
Outstanding Cycle Life



Markets



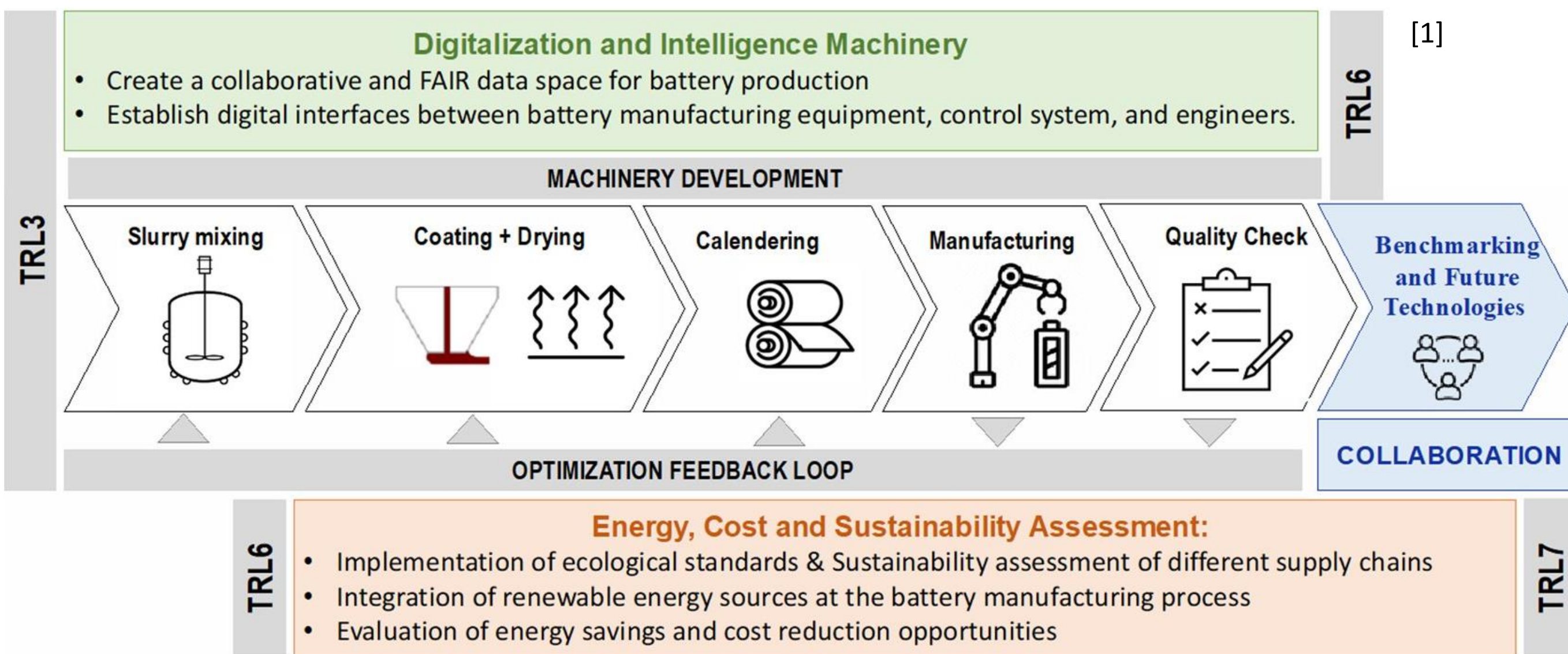
Prototype Cell



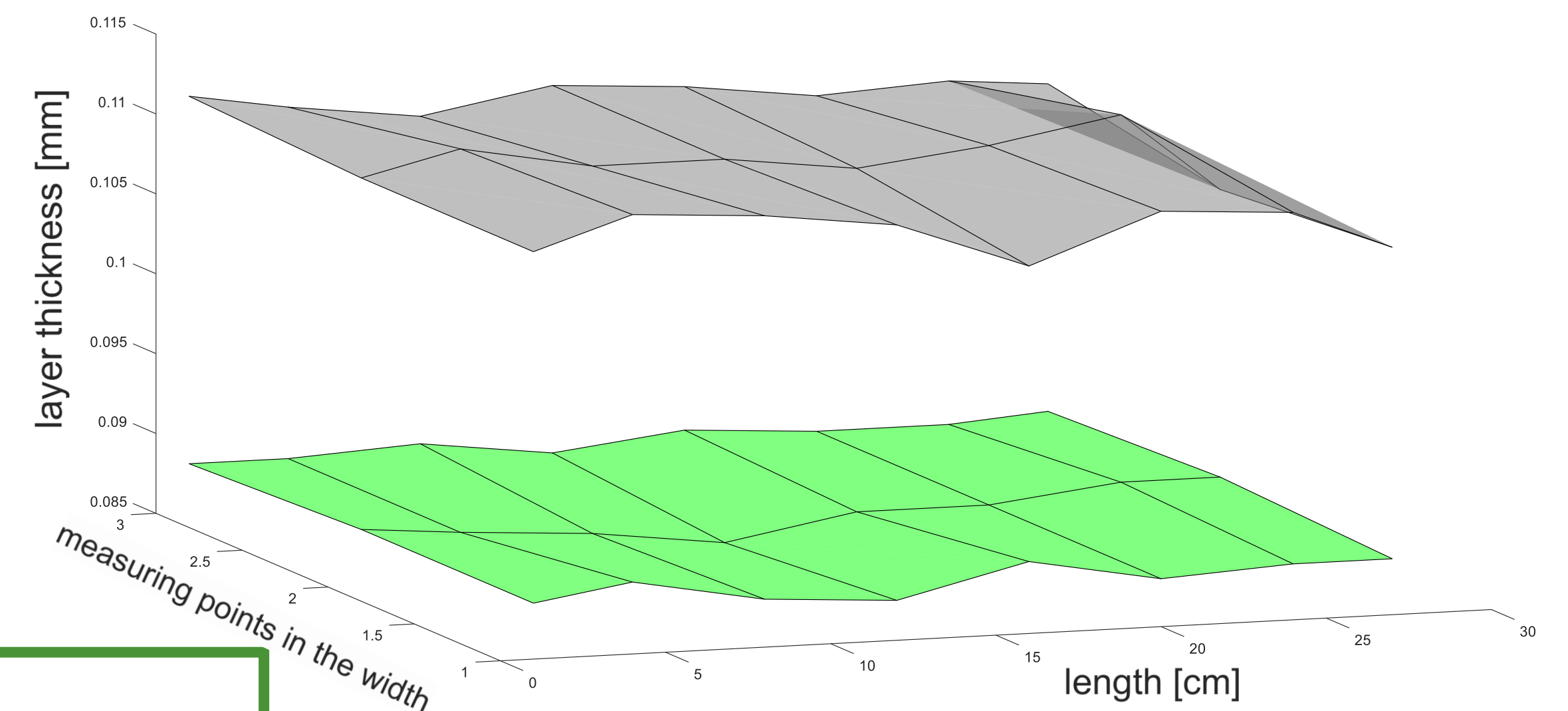
Parameter	Value
Capacity	72 Ah
Energy density	239 Wh/kg 565 Wh/L
Cycle life	1000 cycles (@ 100% DoD, 1C/1C, 80% SoH)

Leclanché Energy Storage Solutions

BATMACHINE

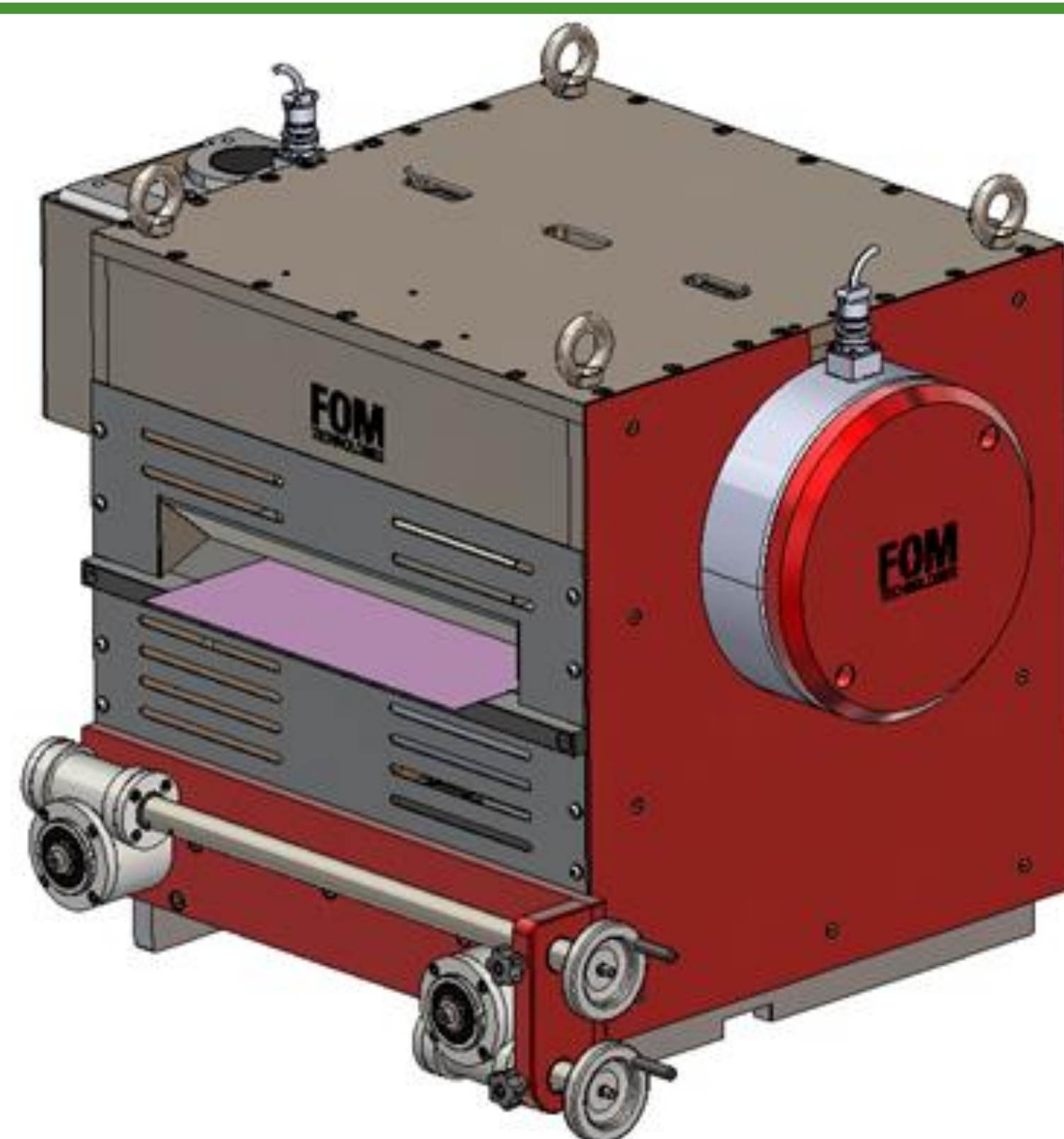


Calendering Studies @ Leclanché



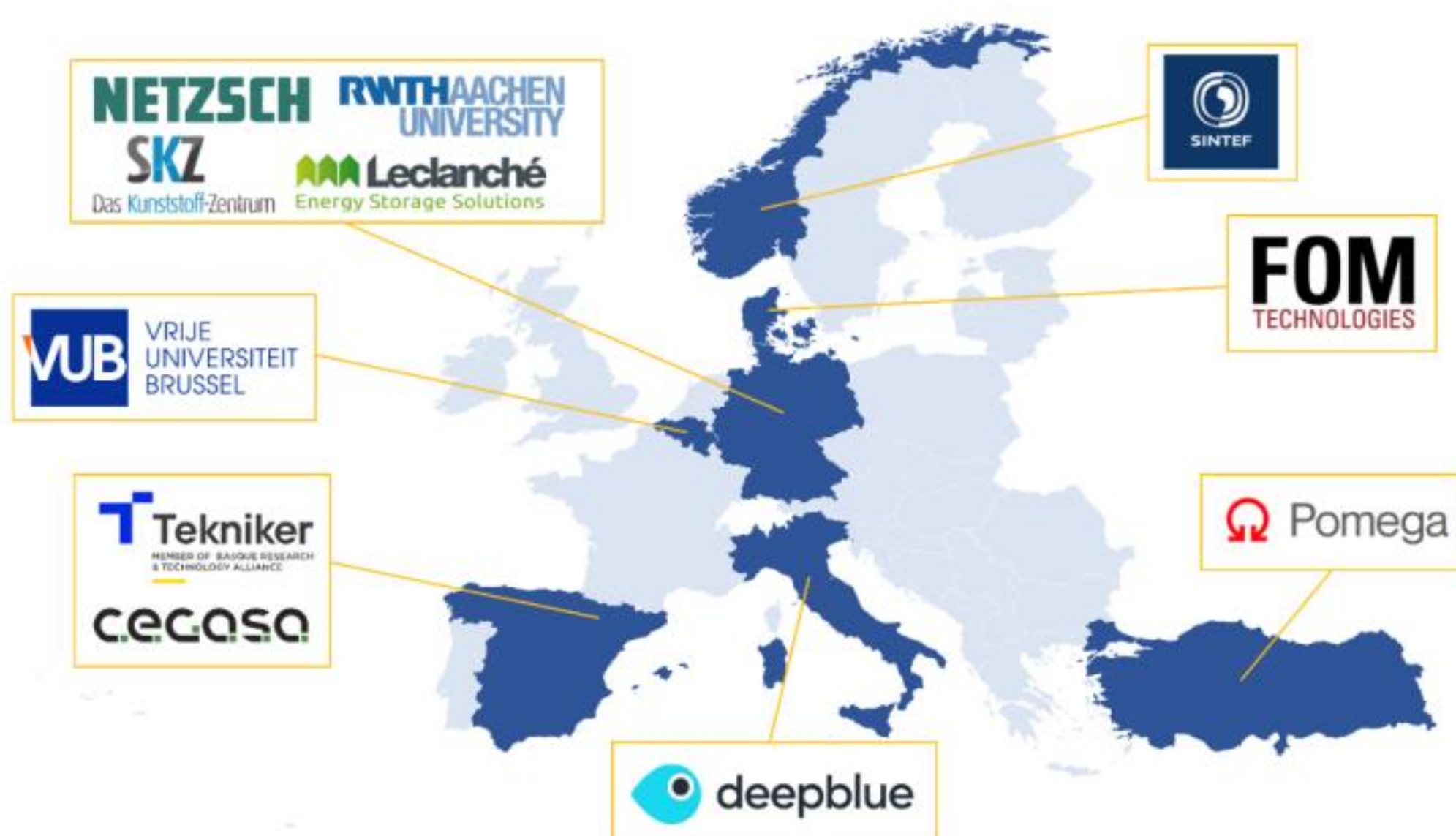
FOM TECHNOLOGIES

Parameter	Value [2]
Calendering speed	0.1 - 2 m/ min
Calendering width	≤ 350 mm
Maximum load per side	20 kN
Substrate	Flexible
Drive unit	Servo motor
Calendering gap adjustment	Manual handwheel
Maximum gap	1.5 mm
Connectivity	Internet and ethernet port



Outlook

- I. Calendering studies on different electrodes
 - i. Anode: Graphite/Silicon based
 - ii. Cathode: High-Ni NMC
- II. Analytics
 - i. Half and full cell tests (C-rate performance)
 - ii. Evaluation of coin and pouch cells
 - iii. Porosimetry (He-pycnometry)
- III. Automatic data export and analysis



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University of Applied Sciences
HOCHSCHULE EMDEN-LEER

FOM
TECHNOLOGIES

[1] BATMACHINE project, funded by HORIZON-CL5-2022-D2-01, the European Union's Research, and Innovation Programme (Grant Agreement no 101104246).
 [2] FOM Calendering Manual. 14.10.2024