



LeydenJar



How high energy density pure silicon anodes are changing industries

From fast charging and high range EV to drone deliveries and electric aviation



**Battery
Tech
Expo**

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Batteries need higher energy density to unlock innovation and sustainability

THE DREAM

Electrifying aviation,
including drones and planes



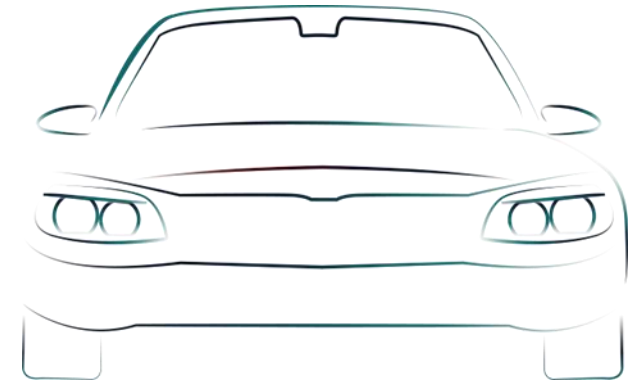
Limited by energy density and
discharge rates

Smarter wearables, phones,
laptops



Limited by energy density

Driving EV without range
anxiety

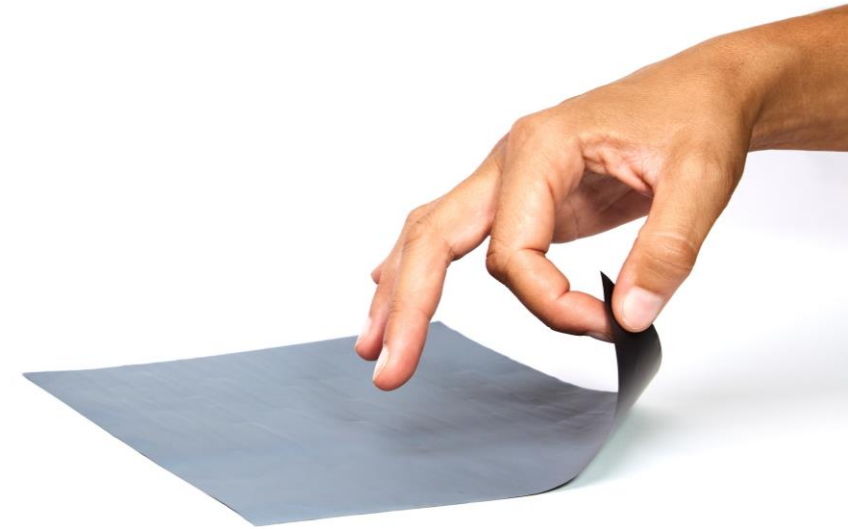
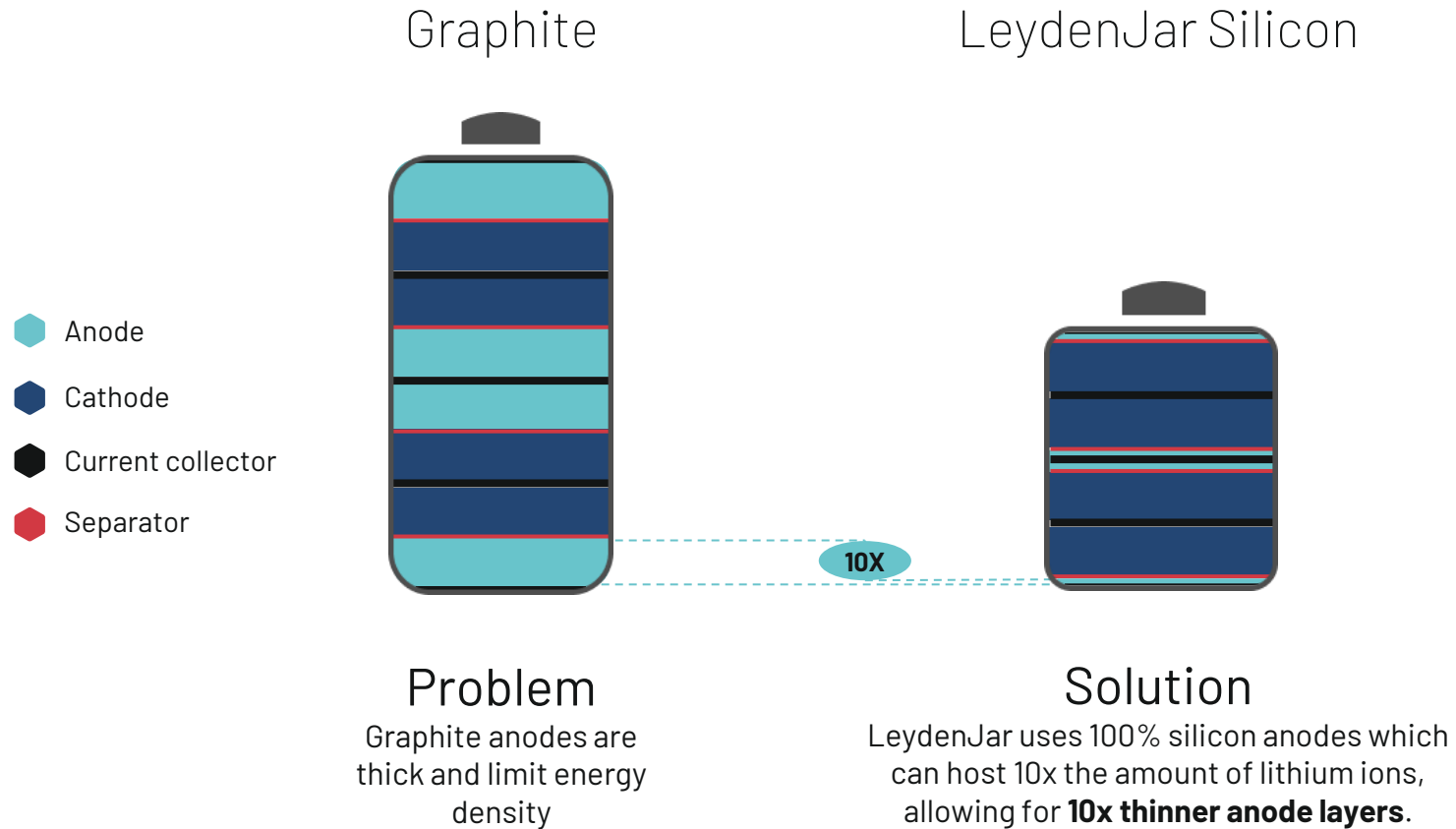


Limited by energy density and
charge times

THE PROBLEM



LeydenJar boosts Li-ion battery energy density by 70% by using 10x thinner anodes





World-leading energy density of 1350 Wh/L, now at 450 cycles

Performance

Energy Density
Nominal, stack level

1350 Wh/L | **390 Wh/kg**

Rate capability
At 25 °C

>5 C



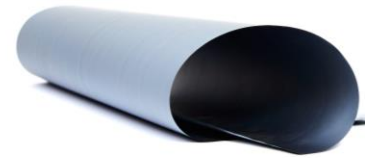
Cell capacity
Pouch

0.1 - 5 Ah

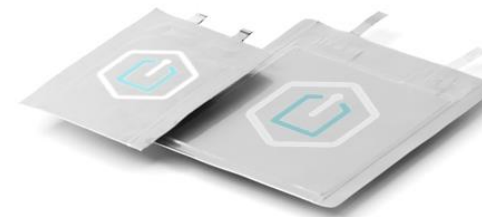
Cycle life
EOL 80%

>450 cycles

Products



Silicon anode foil
Rolls, sheets



Sample cells
0.1 - 5 Ah pouch cells



In 2022 LeydenJar improved cycle life to >450

Cell specification

0.1 Ah pouch cell (single layer)

Testing specifications

25°C

2.5-4.2V formation

3.0-4.2V cycling (0.5C/0.5C)

Anode

Composition - Pure Silicon

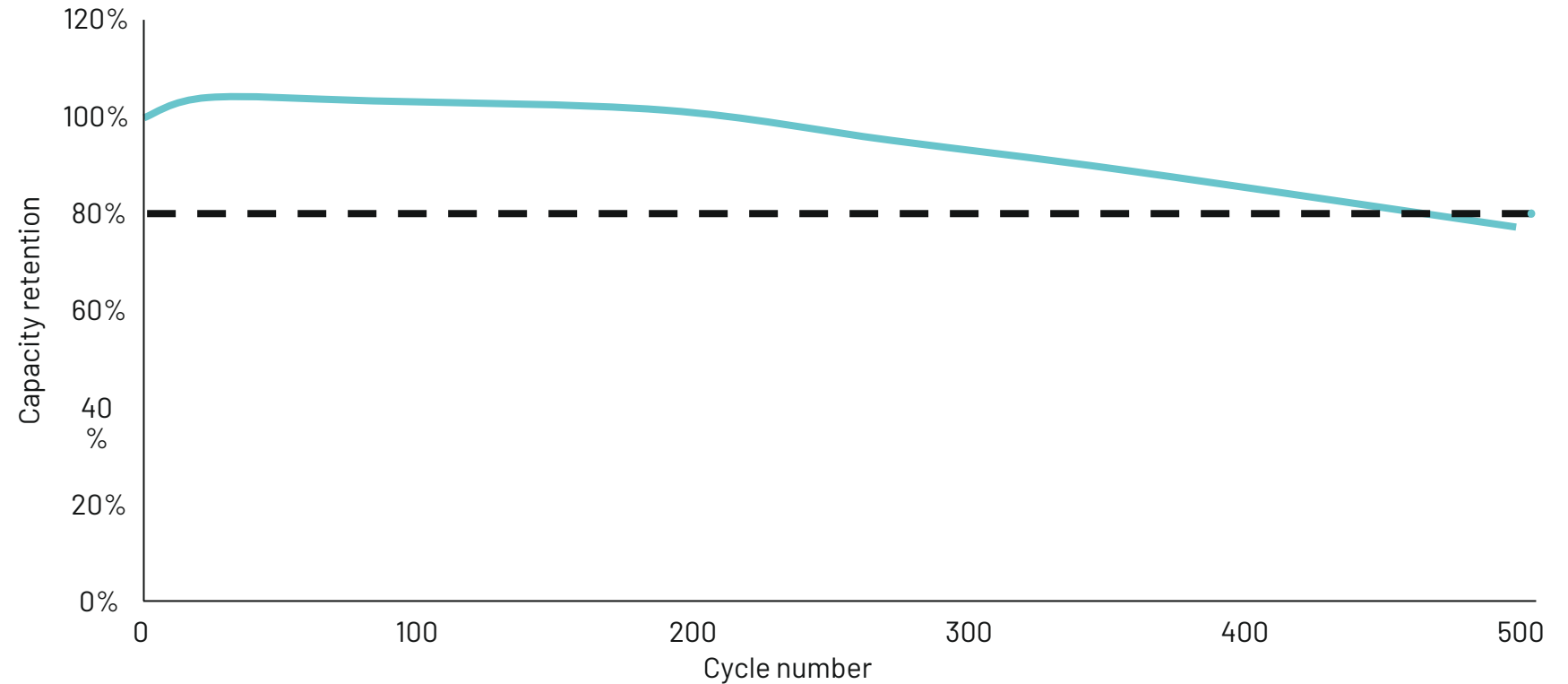
Pristine thickness - 6 μm

No pre-lithiation

Cathode

Composition - NMC 622

Reversible capacity (0.2C) - 3.5 mAh/cm²



Working to improving cycle life to >1,000 cycles through:

1

Anode morphology

2

Cell chemistry

3

Surface treatments

4

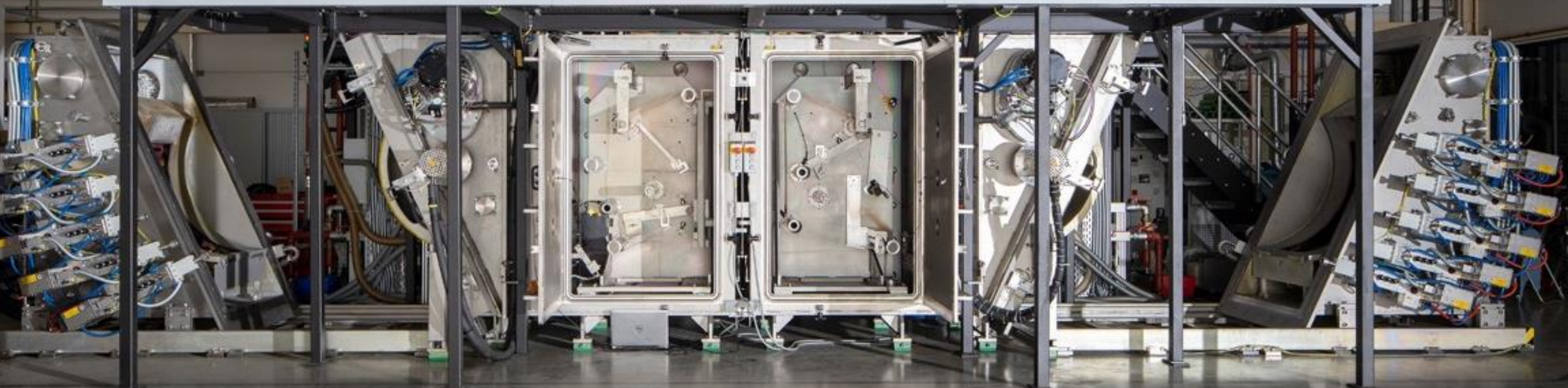
Pre-lithiation



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ENERGISING TECHNOLOGIES

BOOSTING BATTERY ENERGY
WITH PURE SILICON ANODES





End-to-end cell making capabilities and a scalable production platform



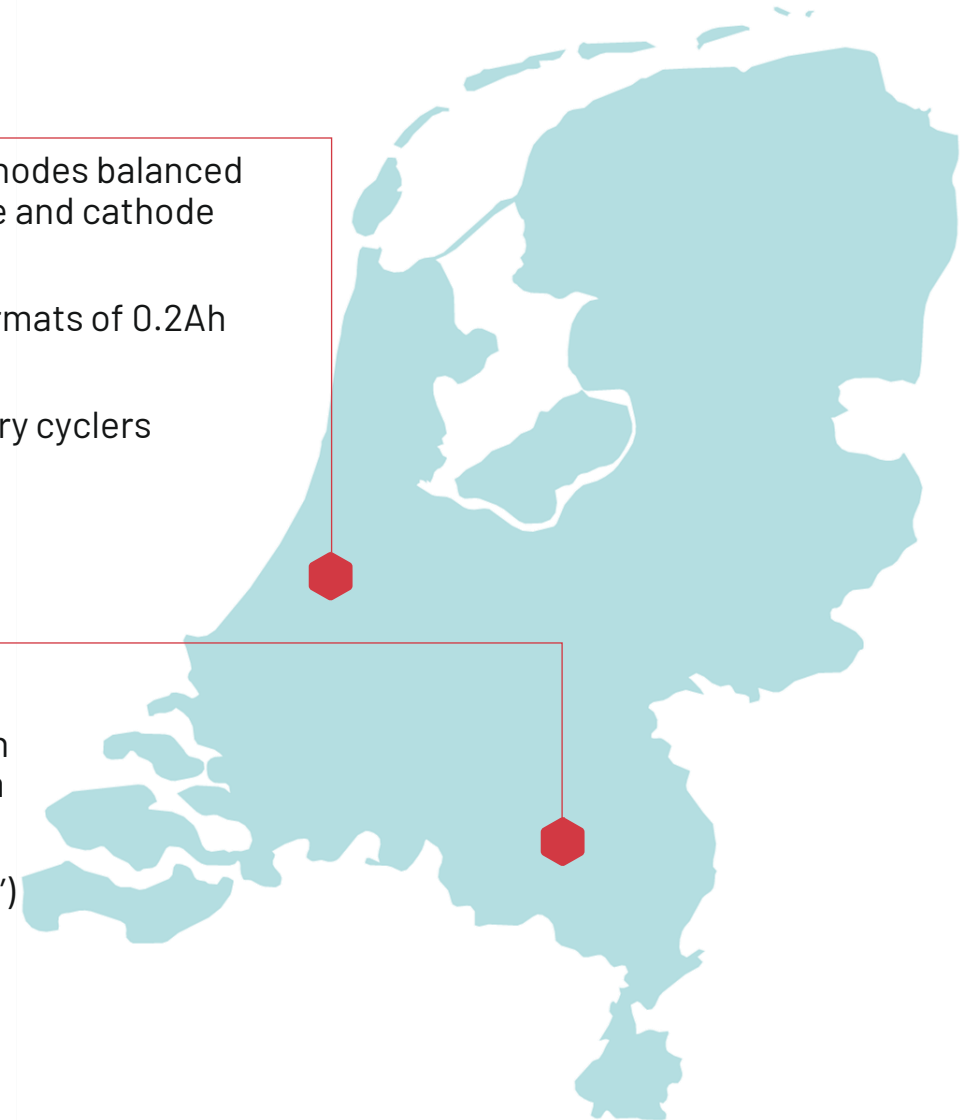
Leiden Battery Lab

- Full cell build. 100% silicon anodes balanced with off-the-shelf electrolyte and cathode material (NMC, LFP)
- Work based on pouch cell formats of 0.2Ah (single sheets) up to 1.5Ah
- Installed base of >1000 battery cyclers



Eindhoven Production Facility

- PECVD technology
- Current production capacity at 0.3MWh per annum. In 2026 100MWh per annum
- 2024: launch of LeydenJar proprietary 35MWh modular PECVD tool ('Gen3 tool')





Impact on industrial drone applications

Current batteries

Reachable area:
9850 km²

LeydenJar battery

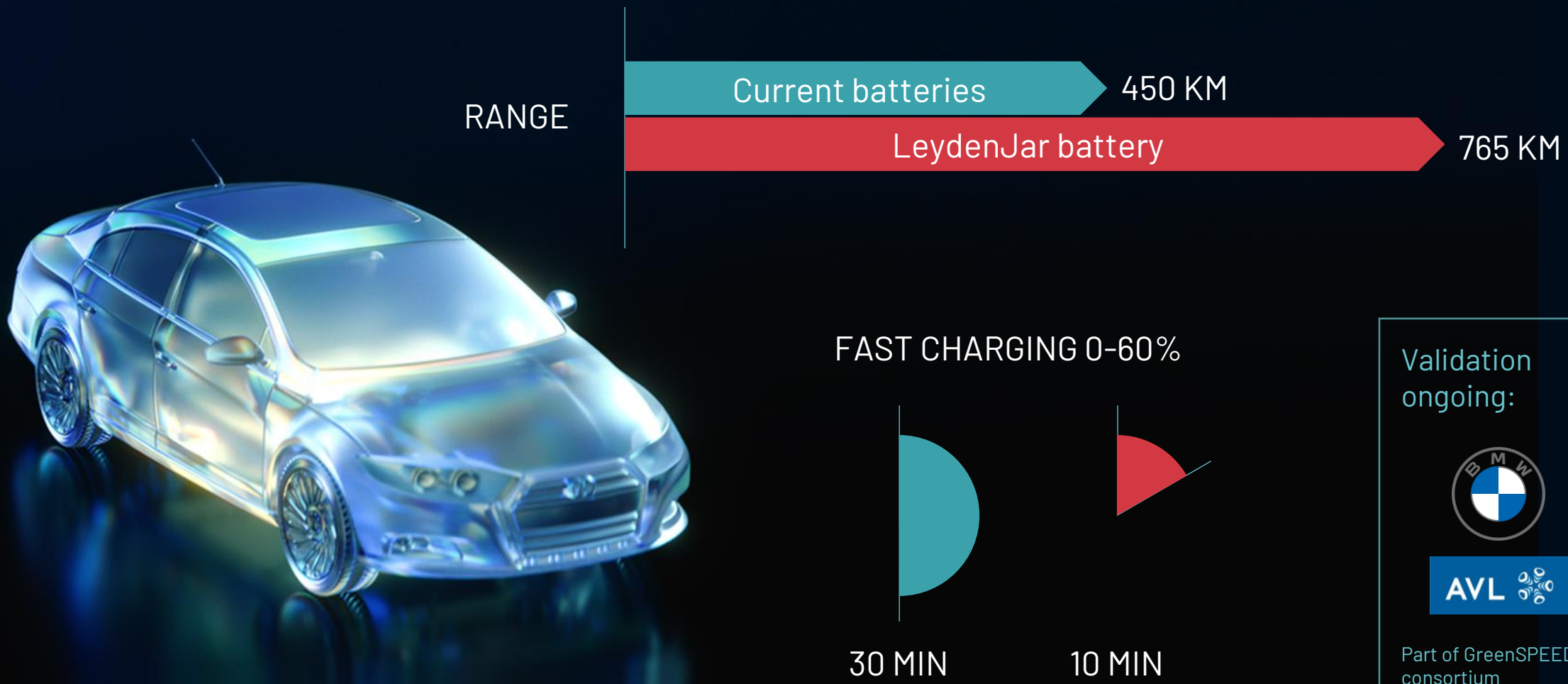
Reachable area:
22200 km²

+125%





Impact on electric vehicles





Impact on electric aviation

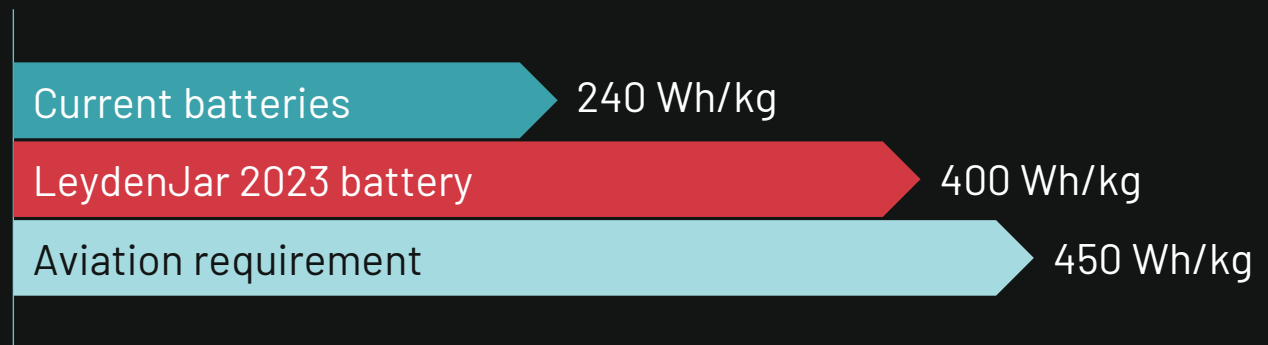
Maeve Chooses Advanced Batteries For Electric Regional

April 13, 2023

Source: Maeve - www.maeve.aero
LeydenJar is not involved in Maeve's activities



ENERGY
DENSITY





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