
Introduction
BEYONDER™

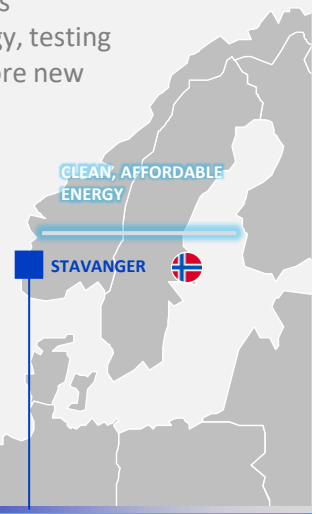
01

The Beyonder Story

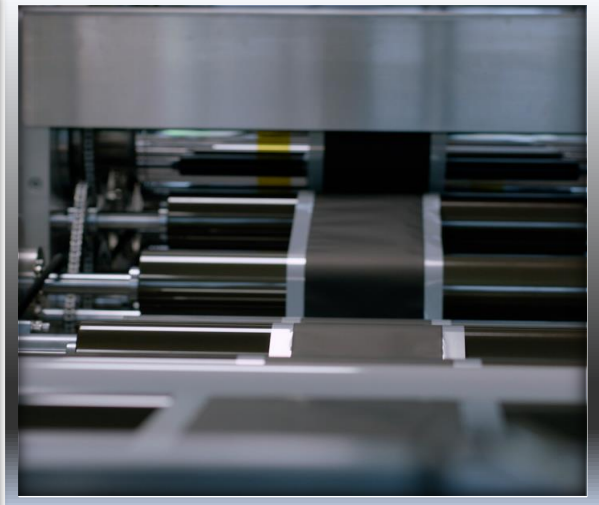
One of the first producing cell manufacturers in Europe

BEYONDER™ BATTERY CENTER

The BBC serves as the brain of Beyonder's operations; by developing new technology, testing scalability, and educating new staff, before new products are adopted by the production lines or sold in separate business segments



EMPLOYEES	~60 FTEs
PRODUCTION	1 000m² line
COD	March 2021
CAPACITY	~100 cells per day



Beyonder enables cost savings in attractive markets

BEYONDER™

MARKET

ATTRACTIVE FOR HIGH GROWTH MARKETS

Highly suitable technology for applications in fast growing markets fueled by the green transition (higher electrification and more intermediate power generation)

TECHNOLOGY

NEW BATTERY TECHNOLOGY

Beyonder's battery complements two existing technologies (LiB and super capacitators), leverages the advantages of both to prolong lifetime and reduce total battery cost

COMPETITION

BEYONDER IS WELL POSITIONED TO WIN

Due to proprietary technology (e.g., pre-lithiation process), a sustainable Nordic production line, a strong management team and proven traction with production line already up and running

The plan to introduce Beyonder batteries globally

TECHNOLOGY SCALE-UP

BEYONDER BATTERY CENTER + EXTENSION
100% OWNED

INNOVATION LINE (CURRENT):

- 1 000m^2
- ~0.3 MWh per year
- R&D efforts

SCALEUP FACTORY (EXTENSION):

- ~15 000m^2
- ~20 MWh per year
- Customer qualification

NORWEGIAN MASS PRODUCTION

MASS PRODUCTION LINES
0-100% OWNERSHIP

MASS PRODUCTION LINES:

- Product lines for commercial offtake
- Commercialization of technology from BBC
- Targeting 5 lines by 2026, 30 PPM per line
- ~2 GWh per year for all lines

GLOBAL EXPANSION

GLOBAL LICENSING OF TECHNOLOGY
EXTERNAL PRODUCERS PAYING ROYALTIES

EXTERNAL LINES:

- License LiC technology to external battery producers
- Scalable business model taking advantage of all IP developed from BBC
- Building capacity to meet growing market demand

2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2030-2040

Selected full-scale site at Haugaland Næringspark

ABOUT HAUGALAND NÆRINGSPARK

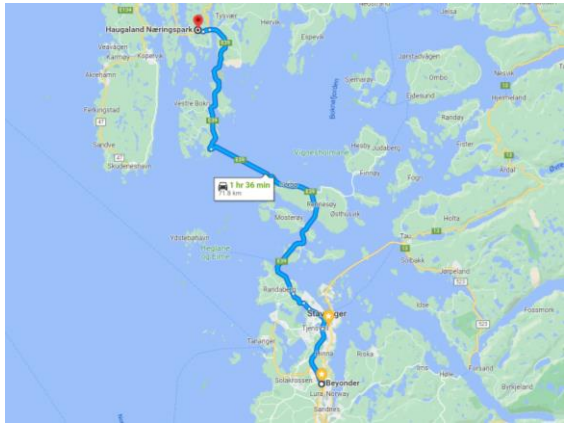
- Beyonder has selected Haugaland Næringspark as their full-scale battery factory site
  - Norway's largest zoned industrial aera (500hectare)
  - Located in an industrial intense region
  - The site will have sufficient and redundant green hydropower supply
  - Good source of cooling water
  - Large port facilities with deep sea quay (ISPS)
  - Infrastructure with dark fibre, power, water and sewage
  - Located on the west coast of Norway
  - Synergies with local industry
- Located in Rogaland Municipality

STRATEGICALLY LOCATED

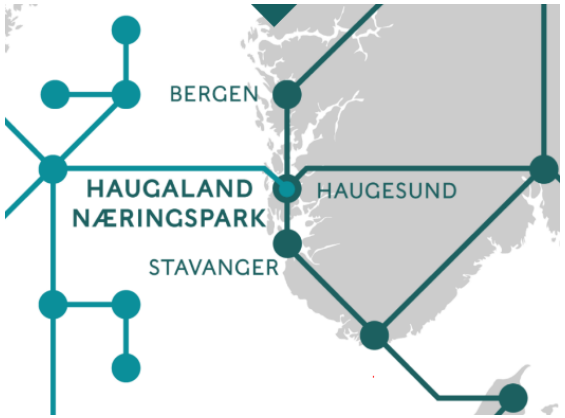
CLOSE TO SUBSTATION

SUSTAINABLE POWER

72 KM FROM BBC TO HAUGALAND



50 Ha AVAILABLE AREA



FULL-SCALE PRODUCTION LINE

5 PRODUCTION LINES CAPACITY

Notes: 1) TSO = Transmission System Operator (national grid owner)

Beyonder site option

- HAUGALAND NÆRINGSPARK
- **- stedet for de nye, grønne arbeidsplassene**

02

The High Power Battery

Producing battery cells with unmatched proposition

BEYONDER™

CHARGE/DISCHARGE TIME 2 MIN
30-150x faster than LiB

CAN BE RECHARGED UP TO 100 000 TIMES
20x more than LiB

HIGH POWER AND MODERATE ENERGY
8-20x higher power than LiB

BASED ON SUSTAINABLE BIO-MASS
No cobalt, nickel or other heavy metals

ACTIVATED CARBON ELIMINATES THE RISK OF INTERNAL FIRES
Bypasses safety issue in LiB

UP TO 50% LOWER TOTAL COST OF OWNERSHIP
For relevant market applications

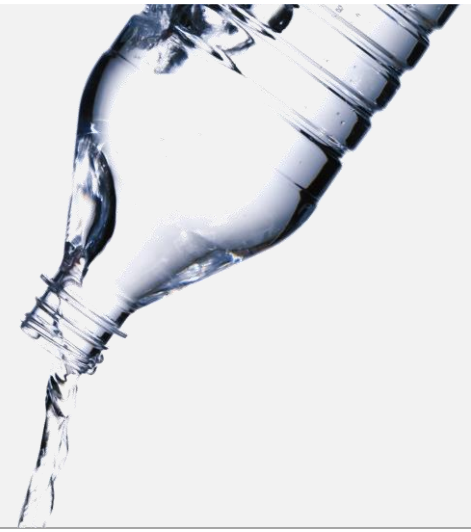
WIDE OPERATING TEMPERATURE WINDOW AND LOW COOLING REQUIRMENT
-20 to 60°C range

Lithium-ion capacitors – the union of power and energy

BEYONDER

High Power LFP
&
Li-Ion Capacitor

Li-Ion Battery



SPECIFIC POWER — POWER VS. ENERGY SPECTRUM — SPECIFIC ENERGY

Supercapacitor	BEYONDER Li-Ion Capacitor	Li-ion High Power Battery (LTO)	BEYONDER High Power LFP (BePowered)	Li-ion High Energy Battery
Power density: up to 30 kW/kg	Power density: 5-10 kW/kg	Power density: 5 kW/kg	Power density: 2-4 kW/kg	Power density: 0.4 kW/kg
Energy density: 5-8 Wh/kg	Energy density: 25-80 Wh/kg	Energy density: 45 Wh/kg	Energy density: 80-150 Wh/kg	Energy density: 260 Wh/kg
Cycle life: 1 million cycles	Cycle life: 50-100 000 cycles	Cycle life: 20-30 000 cycles	Cycle life: 10-50 000 cycles	Cycle life: 2 000 cycles
C-rate, charge / discharge: >30 / >30	C-rate, charge / discharge: 20-30 / 20-30	C-rate, charge / discharge: 3-5 / 3-5	C-rate, charge / discharge: 5-20/ 5-20	C-rate, charge / discharge: 1 / 1

Core technologies developed at Beyonder Battery Center

ACTIVATED CARBON

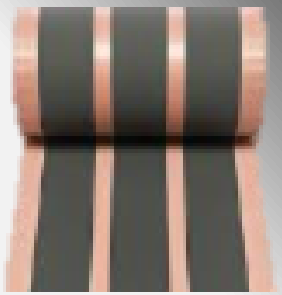
WHY:

- Boost specific capacitance through pore size optimization
- Reduced self-discharge through surface modification

PRE-LITHIATION

WHY:

- Provide extra long cyclic stability by compensating Li-ion loss during cycles
- Increases the capacity thus the energy density



SILICON ANODE

WHY:

- Extend cycle life through depth of charge control
- Increases the capacity thus the energy density

CELL DESIGN

WHY:

- Tailor-make the cell design with core technologies to meet with performance criteria based on customer needs

Technology roadmap

1ST GENERATION Li-ION Battery Capacitor

Energy density: 80 Wh/kg
Power density: 2 kW/kg
Cycle life: 10,000 cycle

2ND GENERATION Li-ION Battery Capacitor

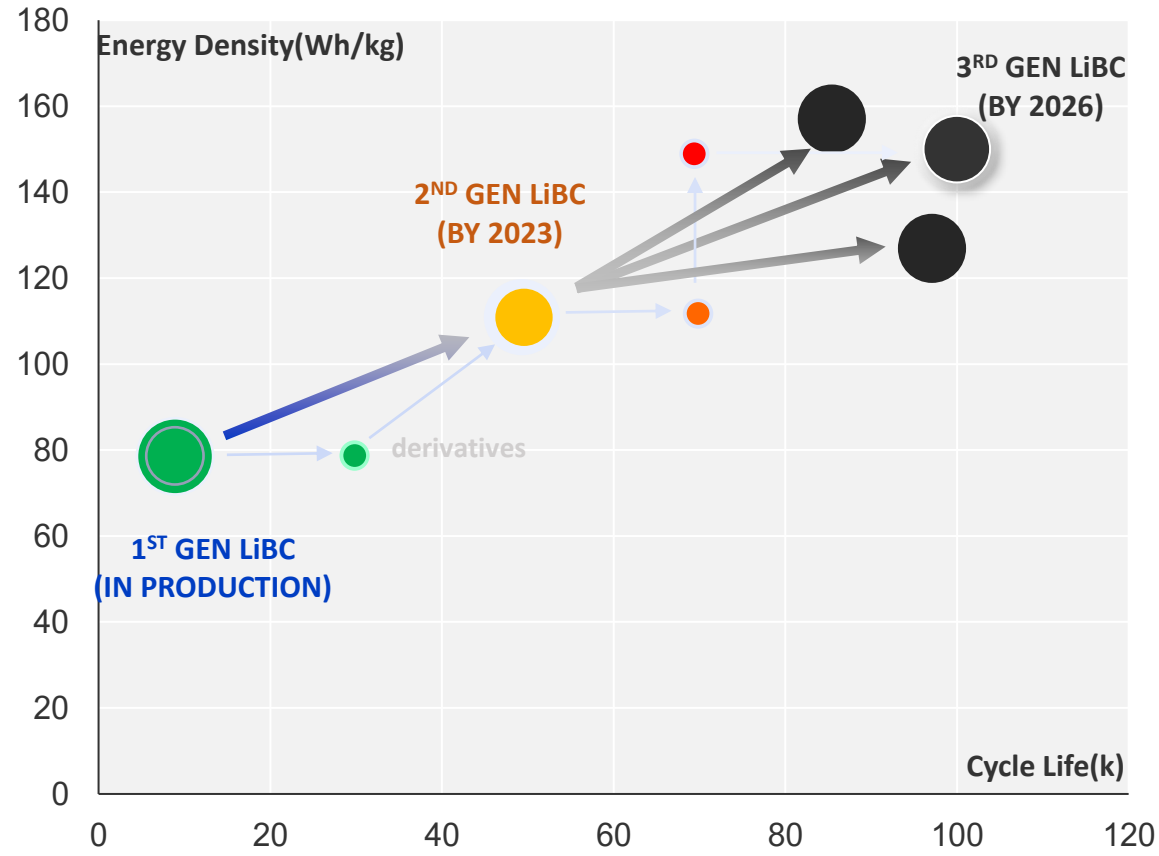
Energy density: 110 Wh/kg
Power density: 3 kW/kg
Cycle life: 50,000

3RD GENERATION Li-ION Battery Capacitor

Energy density: 150 Wh/kg
Power density: 4 kW/kg
Cycle life: 100,000

PERFORMANCE INNOVATION ROADMAP

Li-ion battery capacitor performance (Wh/kg, cycle life)

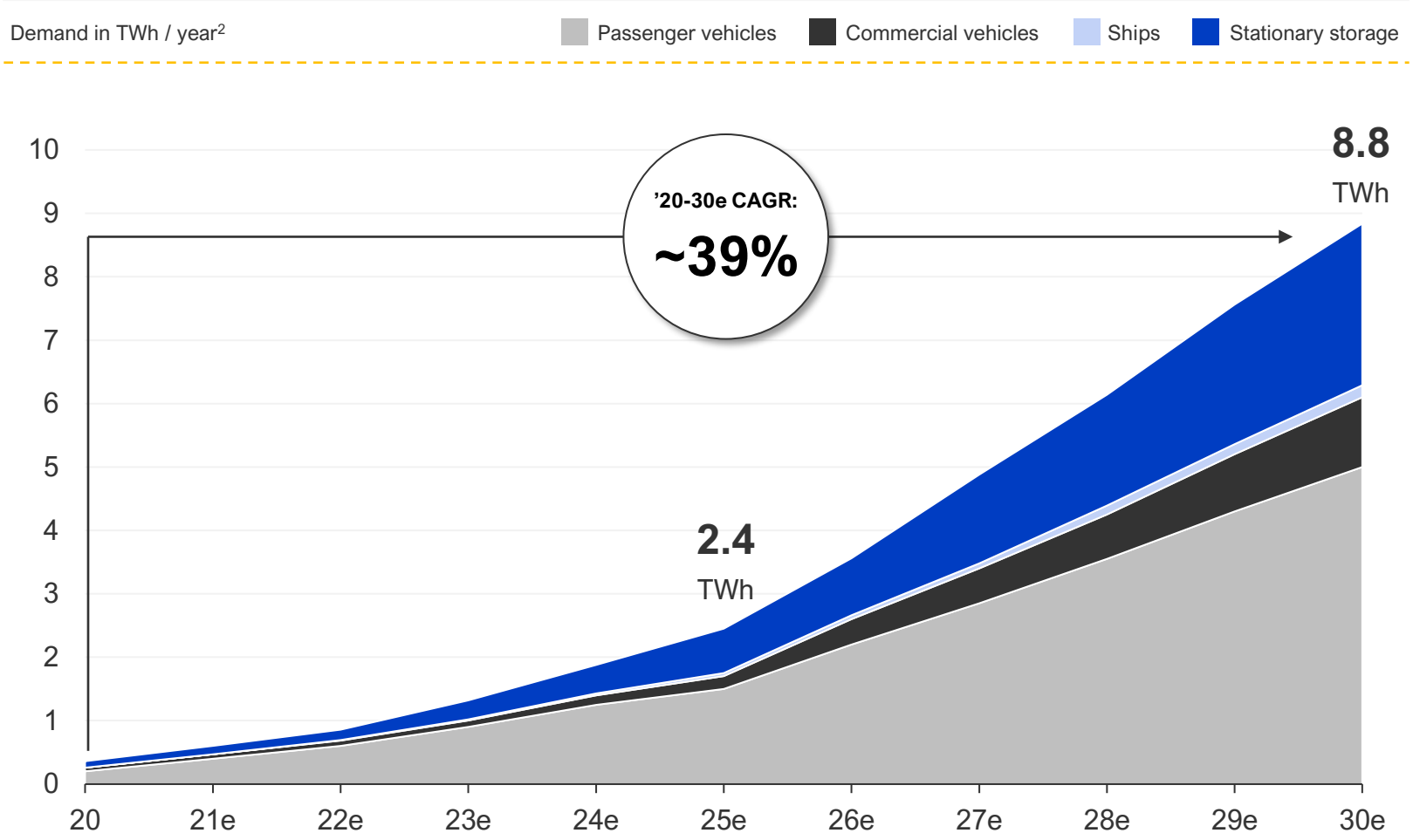


03

Market Applications & Customers

Global annual battery sales outlook

GLOBAL ANNUAL BATTERY DEMAND[1] BY SEGMENT



GENERAL COMMENTS:

- It is estimated that the global battery demand will grow rapidly towards 2030
- Growth is mainly driven by improved performance and reductions in costs on mainly cell level, but also for systems overall

MOBILITY:

- Passenger cars are soon to be at cost parity with traditional ICE cars and batteries for commercial vehicles is the next frontier
- Batteries will play a smaller role for shipping, but there is still solid growth in demand going forward ('30e demand for shipping is estimated to be above total battery demand for '20)

STATIONARY STORAGE:

- Decarbonization of society is the main driver for growth in stationary storage, including both the power sector and industry

Source: Rystad Energy

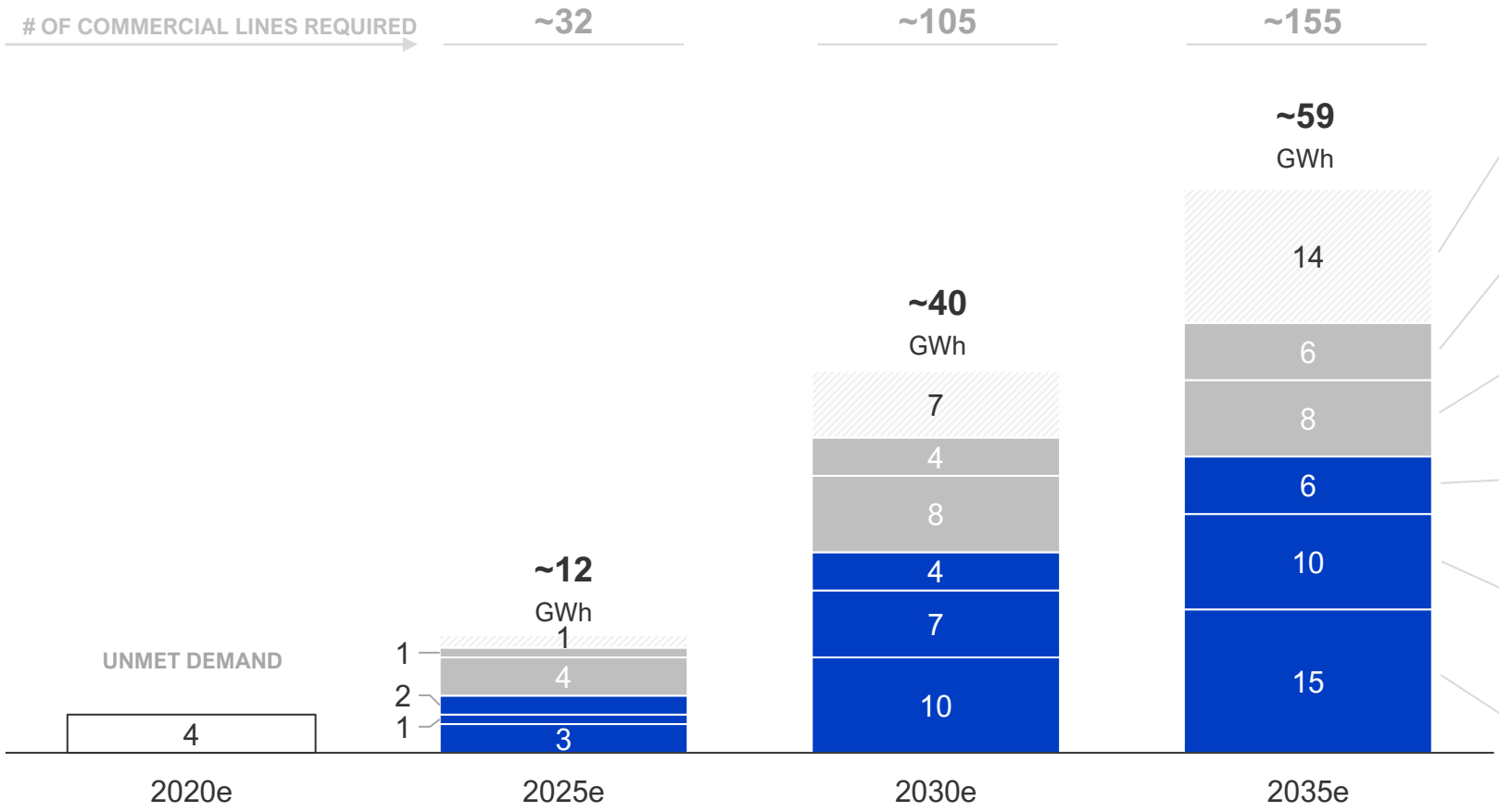
Notes: 1) 1.6 degree scenario UN IPCC; 2) Unconstrained by supply issues and 100% use of solar, wind and batteries in the power sector

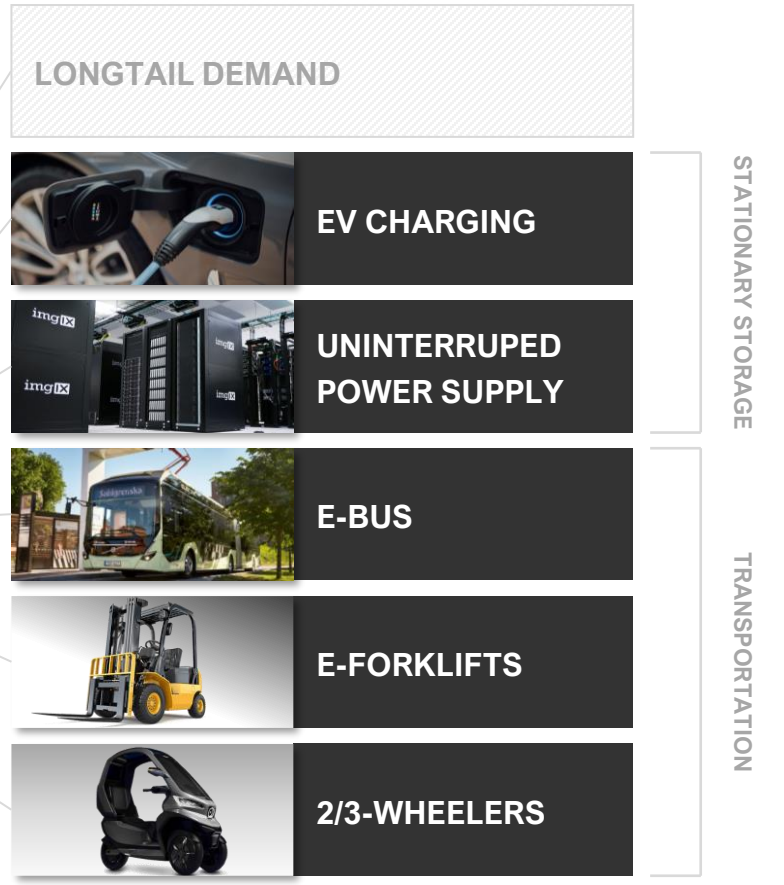
By 2035 the total LiC addressable market is 59 GWh/y

(Assessed by McKinsey)

TOTAL ADRESSABLE MARKET TOWARDS 2035

Demand potential, (GWh per year towards 2035[1])



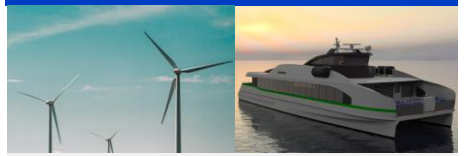


Source: McKinsey & Co.

Notes: 1) Based on 2025 targets, assuming 380 MWh per production line;

International demonstration projects

SENSE



KK Wind Solutions

PowerCon

AALBORG UNIVERSITY

PROGRAM

EUDP – Energiteknologisk udvikling og demonstration

HEROES

elringklinger

EASE

IFE

Sustainable INNOVATIONS

SIEMENS

LITHIUM BALANCE

EWE

VERTECH

PROGRAM

HORIZON 2020

GREEN ICT

PowerUP ENERGY TECHNOLOGIES

ZEM

PROGRAM

Iceland Liechtenstein Norway grants

PRE-STUDY

equinor

corvus energy

PROGRAM

Innovation Norway

PLUS

BEYONDER™

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International demonstration projects

MIDWEST ENERGY

Midwest Energy, Inc.

PRE-STUDY

IBERDROLA

E-FORKLIFT

ASCO

ELECTIN

NUKISSIORFIIT

ÍSLENSK NÝORKA ehf

umhverfisstofnun environment agency

Blámi

MUSIC

CIC energiGUNE

MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE