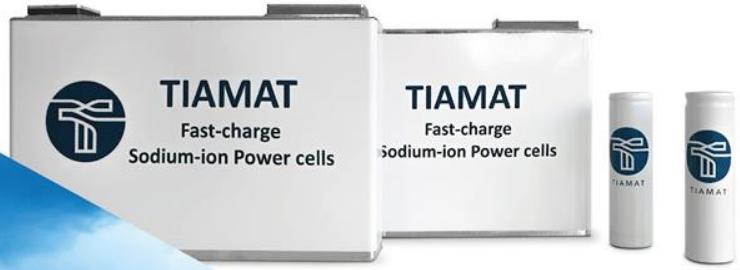
TIAMAT
Sodium-ion
Technology



July, 2023

Why Sodium?

2022
400 GWh → **2025**
1 500 GWh → **2030**
4 500 GWh

By 2030…

Nickel

Nickel Class 1 extraction capacity will be **46%** below demand*

Lithium

Lithium carbonate & hydroxide capacity will be **52%** below demand*

Cobalt

Cobalt extraction capacity will be **10%** below demand*

Nickel, Lithium and Cobalt are the main materials for Mainstream technology Li-ion based batteries

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TIAMAT Sodium-ion technology is a Lithium and Cobalt-free product

**McKinsey & Company – World Materials Forum 2022*

Our story : from french research to global market

Prof. JM Tarascon

Dr. M Morcrette – Prof. C Masquelier – Prof. P Simon – Dr L Croguennec

2012

Launch of the sodium-ion research task force (CEA, CNRS, Collège de France).

2016

Sodium-ion patents

2016

First 18650 Na-ion Gen[1]cell, resulting from the work of the scientists of the RS2E network.

2017

Birth of Tiamat

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2018

1st capital increase of 1.6 M€

2019-20

First real-life use cases

2020

1st development contract signed with French automotive Tier 1 for automotive48V battery pack

PLASTIC OMNIUM

2021

2nd capital increase of 3.5 M€

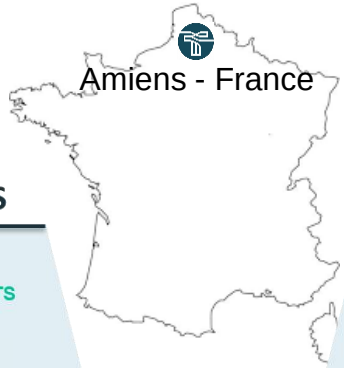
2022

First 18650 Na-ion Gen[2] cell

2023

3rd capital increase

A strong IP protection



WORLDWIDE IP-PATENTS & KNOW-HOW ASSETS

REGISTERED PATENTS

11

PENDING PATENTS AND MEMOS

9

9 Chemistry	8 Cells	2 BMS & Packs	2 Applications	3 Maintenance
• Synthesis of active materials • Electrolyte solutions composition • Manufacture of anode, cathode, separators	• Production and assembly of single cells • Application of raw materials to prepare cell components (temperature, solvents)	• Electronic interfaces • Software to manage power, charging cutoffs, temperature • Other battery management aspects	• Application-specific aspects (battery-car interface, chargers, cooling) • Combinations (hybrid packs, super packs)	• Recycling, storage and transport • Hardware retrofitting • Monitoring, diagnosis (IoT) • Wireless updates (OTA)

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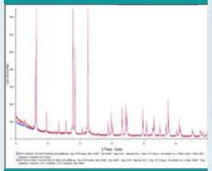
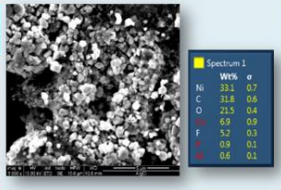
STATE-OF-THE-ART FACILITIES IN R&D

Coater

Winding machine





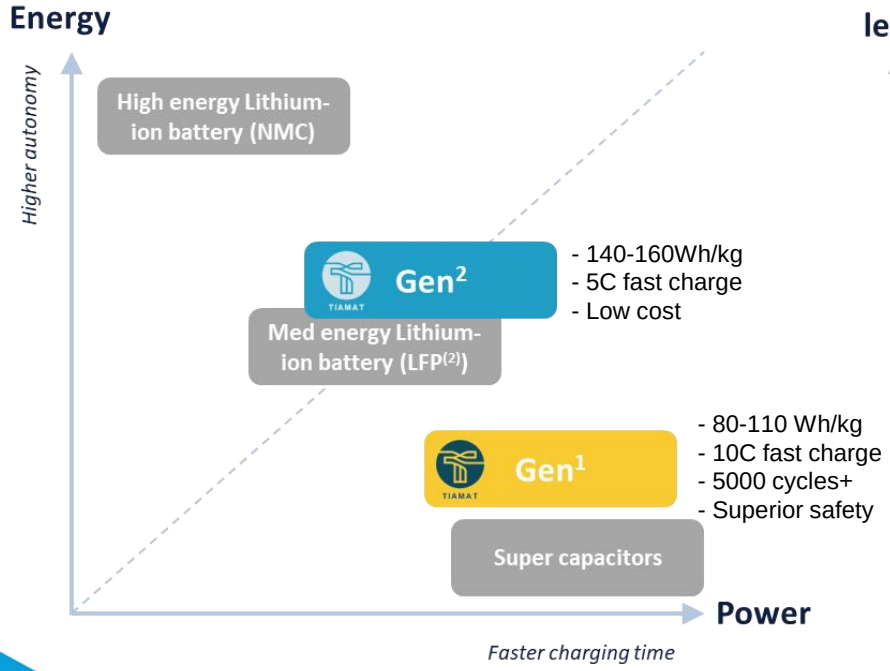
DRX and SEM

Dry room

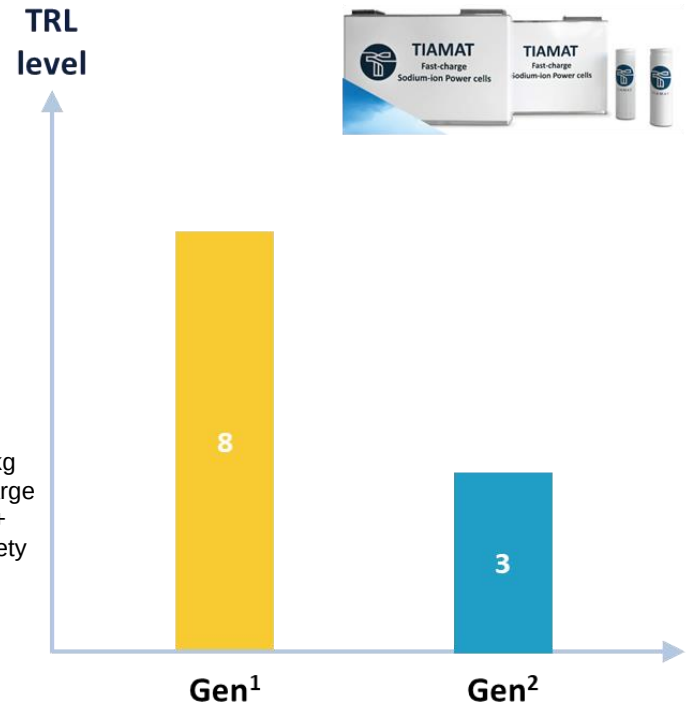
Products positioning

Tiamat's historical **Gen[1]** Sodium-ion battery cell has recently been complemented with **Gen[2]** to widen its market opportunities

Tiamat's products position in terms of Energy and Power



Tiamat's Gen[1] & Gen[2] TRL[(1)]

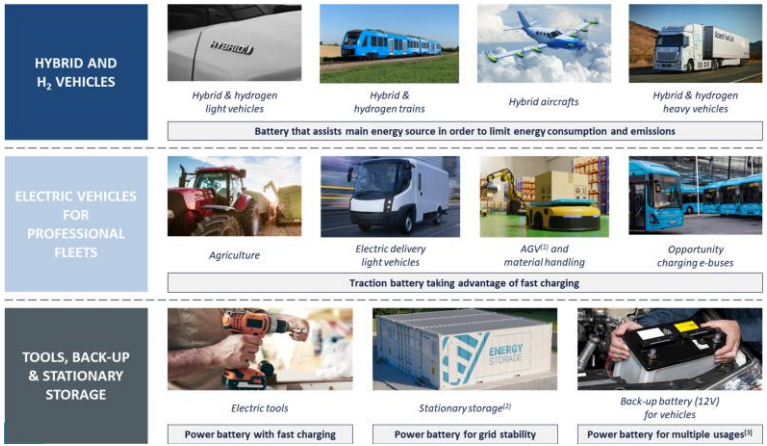


Markets and competition

**P3 consulting*

Gen¹

- 140 GWh in 2030*
- 40 GWh in 2030
- 5 GWh in 2030



Competition : **LTO – NMC power**

Advantages over competition :

- Product availability (Lithium for high energy density)
- Cost (vs LTO)
- Extreme safety
- Cycle life (vs NMC power)

Gen²

- 740 GWh in 2030*
- 210 GWh in 2030
- >20 GWh after 2030

Competition : **LFP**

Advantages over competition :

- Agnostic to Li price and availability fluctuation
- Sovereign supply
- Low and predictable cost
- Fast charge ability

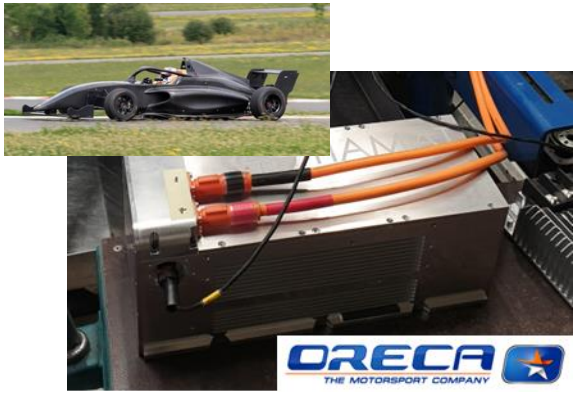
Application examples

Gen[1] hybridization applications

Product : A-sample 48V MHEV 0.8kWh / 30kW battery pack

Market : Automotive

Customer : Plastic Omnium



Product : B-sample 48V PHEV 0.8kWh / 25kW battery pack

Market : Automotive racing applications (Formula 4 2023 French championship)

Customer : Oreca / Mygale

Gen[1] power tools application

World premiere : In shops October 2023

Product : 1Ah single-cell to 5Ah multi-cell battery pack

Market : Consumer electronics - DIY

Customer : Adeo / Leroy Merlin

Commercial, industrial and product roadmap

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
kWh produced	24	160	1 200	30 000	150 000	500 000	1 000 000	1 800 000	3 000 000	5 000 000
	30 A Sample	200 B Sample	1500 C Sample	PRODUCTION						

Commercial Strategy

SCALING PHASE (Proof Of Concepts) → EXPANSION PHASE (commercialization)

Industrial Strategy

Manufacturing partners

Subcontracting → Licensing (domestic China and other licenses)

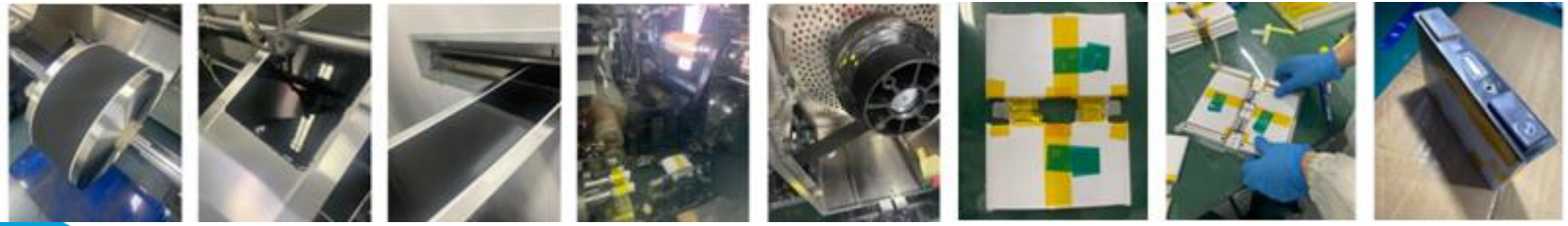
TIAMAT → Own manufacturing (Europe & ROW)

Product Development

Gen¹ (Power): 5000 W/kg → >6000 W/kg
- Hybrid electric vehicle (xHEV)
- Hybrid trains/aircraft/boats
- Powertools
- Stationary…

NEW!!

Gen² (Energy): 140 Wh/kg → 180 Wh/kg
- Full electric vehicles (BEV)
- Stationary…



Industrial partnership

May 9th, 2023 – during 25 GWh Changshu plant inauguration

Tiamat recently signed a Strategic Cooperation framework agreement for its proprietary Sodium-ion batteries technology with its partner Zenergy

This agreement covers the fields of technology development, market development, and early volumes subcontracting.

Tiamat product development will benefit from Zenergy's competence and know-how into improving product quality and performance through precise manufacturing, and into scaling-up the different cell formats that are required by Tiamat's Customers.

Gigafactory in

Targeting a 5 GWh factory starting production by year-end 2025E

Tiamat's project is to build the first fully dedicated Sodium-ion battery cells plant in Europe

Région Hauts-de-France

Tiamat factory plan

Tiamat current production plan

Starting production by year-end 2025E...

... to reach a 5 GWh capacity by the end of 2031E(1)

Source: Company

Note: (1) Production plan built on the basis of current customer needs identified. Ability to accelerate the ramp-up timeline and/or increase the targeted production depending on the evolution of ongoing lead discussions

5 A 5 GWh factory by 2025E

Gen1

LOCATED IN FRANCE

1ST SODIUM-ION CELLS PLANT IN EUROPE

MANUFACTURING PROCESS SIMILAR TO LITHIUM-ION PLANTS

THE PLAN DESIGN WILL OFFER HEADROOM FOR ADDITIONAL PRODUCTION CAPACITY

Thank you

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