

High performing, resilient and sustainable synthetic graphite production in US and EU



Bridget Deveney
VP Product Development

Vianode

Vianode: High-performance, resilient and sustainable battery graphite

Synthetic anode graphite solutions for the Electric Vehicle and Battery Value Chain

~230 employees from 20+ nationalities — growing towards 500 by 2027

Industrial pilot in operation since 2021

Full-scale production started at Via ONE in 2024

Developing large-scale sustainable production in North America

Our vision

Anode Graphite for the carbon neutral society

Our mission

Deliver the most efficient solution to reduce battery industry emissions

Our values

The Power of We

We take charge

We challenge the status quo

We keep learning

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Our rapid industrial development builds on decades of experience with high-temperature processes



Proprietary graphitization technology

Conventional synthetic graphite production



Vianode's breakthrough manufacturing solution



- **Product quality:** Controlled atmosphere inside the furnaces ensures superior quality of the final product



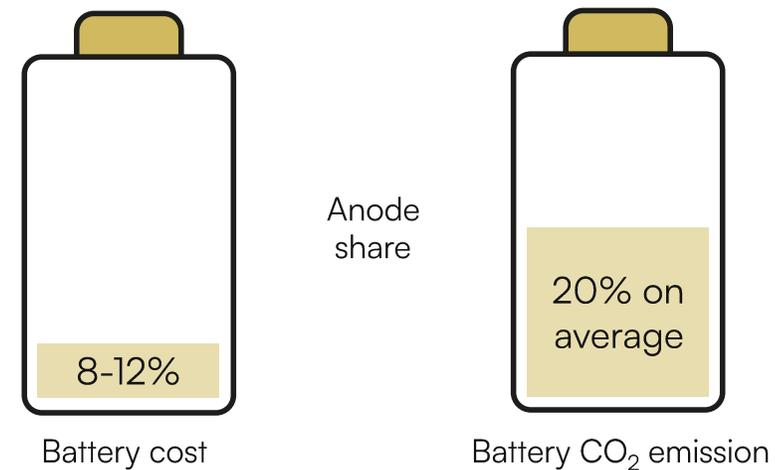
- **Efficiency and performance:** Proprietary furnace technology ensures homogeneous temperature distribution, resulting in 100% top-grade product, high yield, and low energy consumption



- **Environmental impact:** Closed furnaces capture all emissions, making the process the most environmentally friendly and contributing to more than a 90% reduction in CO2 footprint

Synthetic graphite is the most efficient route to reduce the CO₂ footprint of batteries...

- Disproportion between share of cost and CO₂ emissions in traditional synthetic anode graphite
- Significant value creation potential for sustainable anode graphite solutions



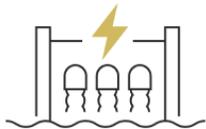
Our cradle-to-gate LCA shows a climate change impact of 1.9 kg. CO₂e per kg. for scope 1-3



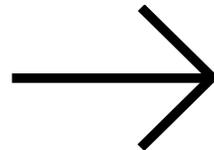
Clean, closed furnace production technology



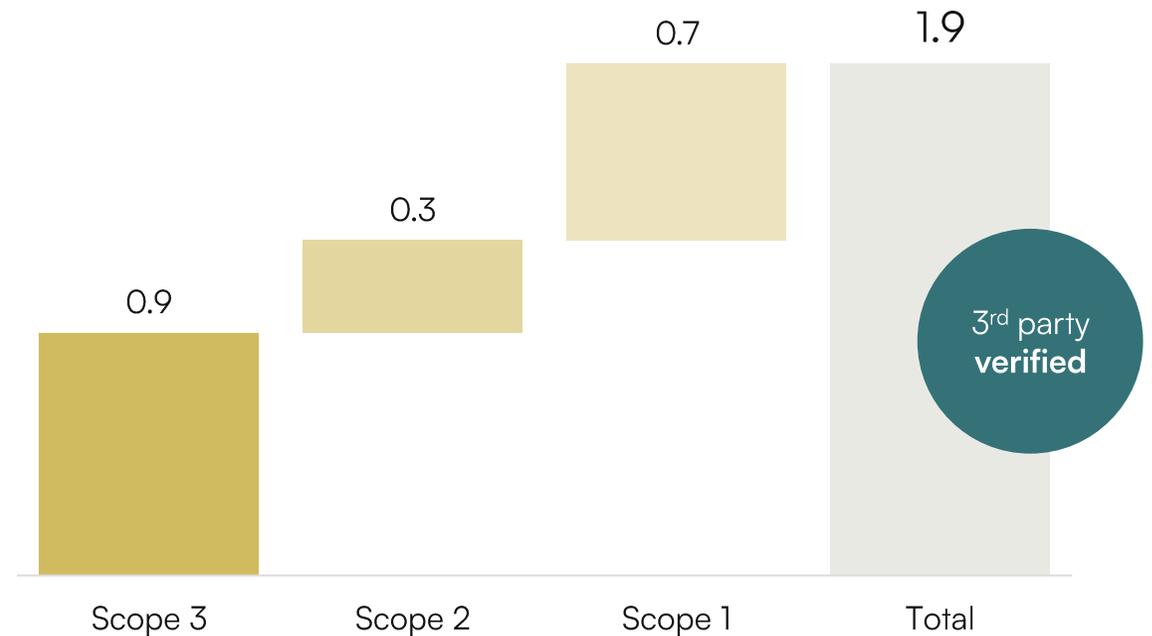
Reduced energy consumption



Renewable energy usage



Life Cycle Assessment (LCA)
CO₂/kg per graphite/kg



Vianode improves critical properties in batteries with cost-efficient solutions

Product family	Production process	Charge rate	Capacity ¹ mAh/g	Press density g/cc	BET m ² /g	FCE %
 Voyager	<i>Our long-range, high-energy density anode graphite</i>	0.5-1.5C	355+	1.65-1.70		
 Cruiser	<i>Optimally balanced anode graphite for charging speed and driving range</i>	1.5-3C	350-355	1.55-1.65	0.8-1.1	~95%
 Speedster	<i>Anode graphite refined for the fastest charging</i>	3C+	345-350	1.50-1.55		

Note: The typical characteristics are based on average results of control tests and are subject to normal variation. Accordingly, test data cannot be taken as established minimum or maximum specifications. 1. Average de-lithiation capacity at 0.1C | Source: Vianode analysis

Vianode's global manufacturing network

	Headquarter	Technology Center Lab	PILOT	Via ONE	Via TWO	Via THREE
						
Location	Norway Oslo		Norway Kristiansand	Norway Herøya	North America	To be defined
Capacity	-	-	200 tons/year ~0.2GWh battery capacity ¹ ~2.500 car ²	2.000 tons/year ~2 GWh battery capacity ¹ ~25.000 car ²	73.000 tons/year ~73 GWh battery capacity ~1.000.000 car	~1.000.000 car
SOP	2023	2022	2021	2024	2027	2030
Key Points	Mainly administrative	Product and process development Sample production		200mUSD investment	IRA and USMCA compliant	To be continued

Via ONE — World's most sustainable anode graphite



- **Operational full-scale production plant** for final product qualification, operation improvements, and commercial deliveries
- **2,000t per year**, possible to expand based on customer needs
- ISO9001 certified, ISO 14001 and ISO 45001 ongoing certification
- Plant **can be converted to a recycling facility** for graphite with additional capacity



Milling and Shaping



Agglomeration



Coating



Final Product Handling

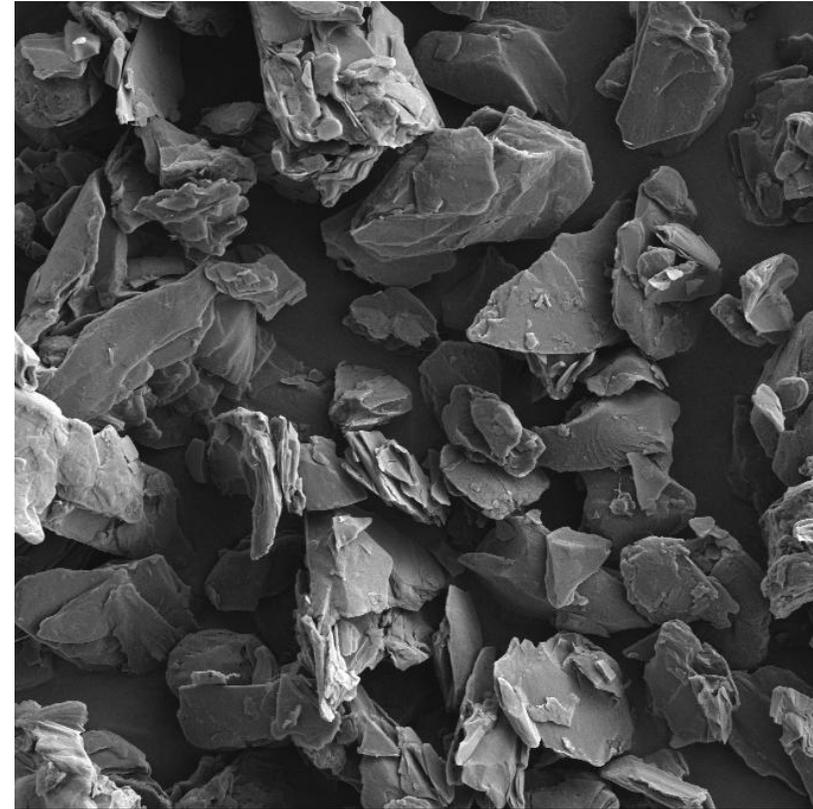


Turning a carbon waste product into battery-grade graphite

Graphite concentrate



Recycled graphite

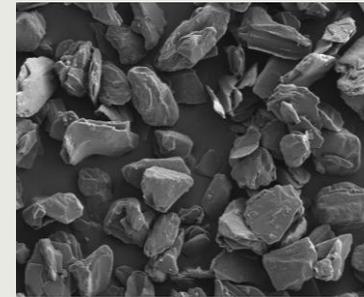


Recycling of graphite from production scrap

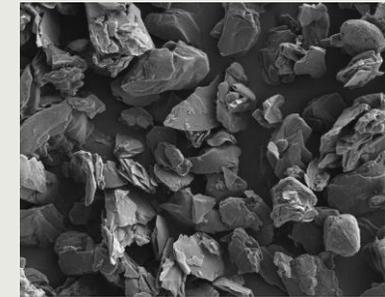
- Recycling of anode scrap is already achievable with at least equal technical properties and cell performance as the reference material
- The graphite concentrate from production scrap has low impurity content and is often easily traceable
- Since production scrap is available in volumes today, mastering this is a natural first step towards recycling at scale

Parameter	Unit	Recycled	Reference
Capacity	mAh/g	355.4	355.1
First cycle efficiency	%	96.1	94.8
Charge rate	C-rate	2C	2C

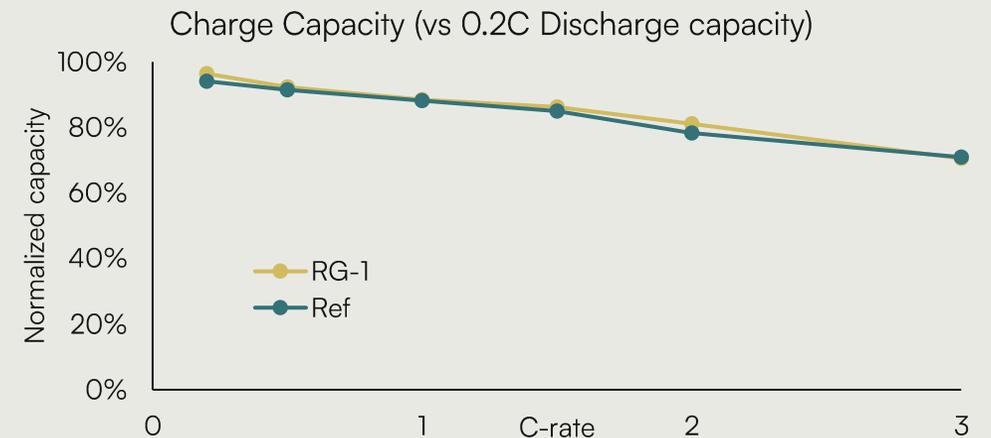
Can you spot the difference?



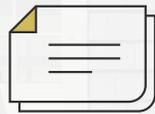
Virgin



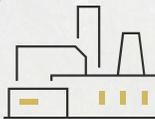
Recycled



General Motors has signed a USD multi-billion long-term supply agreement with Vianode



Strategic partnership: Vianode to supply high-performance anode graphite to GM for 7 years until 2033



Large-scale production: Manufacturing at Vianode's North American plant begins in 2027



Environmental impact: Vianode's graphite has a 90% lower CO₂ footprint than conventional methods



Usage: The material will be used by Ultium Cells LLC, GM's joint venture with LG Energy Solution, for next-generation EV batteries



This agreement with Vianode is a great example of GM's strategic effort to build a sustainable battery supply chain in North America.

Jeff Morrison

SVP of Global Purchasing and Supply Chain at GM



We are proud and honored that GM has chosen us as a strategic partner. This underlines Vianode's capability and our contribution to shaping the North American battery value chain.

Burkhard Straube

CEO of Vianode

Vianode

vianode.com