



ASX ANNOUNCEMENT

By e-lodgement

28 April 2022

VOLT's EMERGING BATTERY MATERIAL BUSINESSES

Highlights

- Volt is developing battery materials businesses in the United States and Europe for the following key battery technologies:
 - Lithium-ion battery (LIB) – coated spheroinised purified graphite (CSPG)
 - Alkaline battery - graphite coatings and electrode additives
 - Lead-acid battery – graphite expander additive for negative electrode
- Collaboration with Urban Electric Power (UEP) in alkaline battery technology, programs in lead-acid battery technology with Apollo Energy Systems and two lithium-ion CSPG developments, including the Energy Supply Developer's (ESD's) Super Site
- Proprietary battery anode material process flowsheet developed by technology partner, American Energy Technologies Company, enables very high yields of 74% purified spheroidal graphite produced from graphite feed for CSPG production
- The non-spherical ultra-high purity graphite produced as a by-product of making CSPG for the LIB battery market is used in the development of products for the alkaline and lead-acid battery markets
- All graphite feedstock is producing high value products for different battery technologies which will optimise the economics of Volt's planned battery anode material (BAM) facilities in the United States and Europe

Graphite producer and battery material developer **Volt Resources Limited (ASX: VRC)** ("Volt" or "the Company") is implementing plans to become a battery materials producer in Europe and the United States based on an integrated supply chain using flake graphite from its mine and processing plant in Ukraine and the development ready Bunyu graphite project in Tanzania.

Volt Managing Director, Trevor Matthews, commented: “Volt has made clear progress with the strategy to become a battery materials producer in the United States and Europe.

“The collaboration and product testwork programs are being undertaken to deliver graphite-based battery materials products into markets with expanding demand for energy storage and electric mobility.

With graphite prices increasing significantly over the past 12 months and growing demand for locally produced battery anode material in both the United States and Europe, Volt is positioned to be a key supplier in energy materials.”

Battery Anode Material (Spherical Graphite)

The Company has completed successful LIB cell cycle testing using coated spheroinised purified graphite (“CSPG”) produced from natural graphite originated from the Bunyu Resource in Tanzania. The testwork demonstrated highly consistent performance with negligible degradation of electrochemical characteristics from cycle to cycle. The flat capacity curve signals that Bunyu graphite can compete not only with other natural graphite battery anode material (“BAM”), but also with higher cost synthetic graphite BAM offerings, in its long-term cycling performance. The testwork confirmed Volt’s flake graphite is well-suited for use in the production of battery-ready anode material for energy storage applications.

Volt will be adopting the inverted flow sheet for its downstream operations following the successful spheronization and purification results achieved during the testwork program. The use of this proprietary process enables Volt to not only convert a significant portion of its graphite feed with yields of 74% achieved in the production of battery-ready anode material for lithium-ion batteries, but also generate a range of ultra-high purity by-products for use as electrically conductive diluents in battery cathodes and in a variety of valuable non-battery applications.

Energy Supply Developers (“ESD”) has selected Volt to be the CSPG supplier for its Gigafactory/Super Site that is expected to commence operations in 2025. ESD is developing a unique integrated LIB facility with planned capacity of up to 50 gigawatt-hours. The Super Site facilities will be developed by ESD to incorporate battery materials suppliers, LIB cell manufacturer(s), R & D facilities and associated utilities and infrastructure¹.

A well-known U.S. based cell developer has progressed with their testing of the Volt CSPG product and has requested further product sample with specific characteristics to meet their BAM requirements. The requested product sample is being prepared along with discussions on how Volt could supply the cell developer’s forecast demand for BAM product².

Ultra-High Purity Graphite

The non-spherical ultra-high purity graphite (“UHPG”) is a by-product of the spheroidization of purified graphite when producing LIB anode material. Volt will reap the benefits from the inverted flowsheet to produce not only spherical purified graphite for lithium-ion batteries, but also higher-margin UHPG that can be used in applications such as conductivity enhancement and other specialty uses³.

¹ Refer ASX announcement dated 17 February 2022 titled “Gigafactory Development Further Information”.

² Refer ASX announcement dated 17 February 2022 titled “Battery Anode Material and Offtake Discussions”.

³ Refer ASX announcement dated 8 November 2021 and titled “High Performance Results from Bunyu Battery Cell Testwork”

Alkaline Batteries – Urban Electric Power

The Joint Development Agreement (“JDA”) entered into with Urban Electric Power (“UEP”) targets improvements in alkaline battery performance while benefitting the end users - consumers of UEP’s alkaline battery technologies - by offering a more attractive cost structure than the currently available industry solutions on the market⁴.

Following the successful completion of the graphite technology programs for use in alkaline batteries, UEP and Volt plan to enter into an offtake agreement for the supply of ultra-high purity graphite-based coatings and additives in addition to potential licensing benefits derived from the intellectual property developed.

Lead-acid Batteries – Apollo Energy Systems

Lead-acid batteries containing Volt’s graphite were tested side-by-side with the control formulation whose expander was based on the formulation of traditional carbon materials such as carbon black and ligna sulfonate. **Cells containing Volt’s graphite consistently delivered higher capacity than the control. With Volt’s graphite expander product, the capacity of the battery continued to gradually increase during cycling which can be attributed to the unique capacitance effect of the Bunyu flake⁵.**

Volt is strongly positioned to address both cost management, as well as improved performance sought by the lead-acid battery industry, given its UHPG product is used for lead-acid battery expanders is actually a by-product of a larger downstream process for manufacturing of spherical graphite or BAM for lithium-ion battery anodes.

The testwork results provided very favourable information regarding the behaviour and performance of Volt’s UHPG in lead-acid battery applications. More work is planned with this product and battery technology and Volt will update the market as more data becomes available.

The development of non-spherical graphite products for the alkaline and lead-acid battery markets will improve the economics of Volt’s planned BAM facilities in the US and Europe leveraging our flake graphite production capability from the Zavalievsky Graphite business located in Europe combined with future production from the Bunyu graphite project development in Tanzania.

-ENDS-

This announcement was authorised for release by the Board of Volt Resources Ltd.

For further information please contact:

Trevor Matthews
Managing Director
Tel: +61 8 9486 7788

Alex Cowie
Investor Relations
Tel: +61 412 952610

Follow us on Twitter [@ASXVolt](https://twitter.com/ASXVolt)



About Volt Resources Limited

⁴ Refer ASX announcement dated 20 April 2022 titled “ Joint Development Agreement signed with UEP and AETC”

⁵ Refer ASX announcement dated 6 April 2022 and titled “Positive Lead Acid Battery Testwork Results”

Volt Resources Limited (“Volt”) is a graphite producer/developer and gold exploration company listed on the Australian Stock Exchange under the ASX code VRC. Volt has a 70% controlling interest in the Zavalievsky Graphite business in Ukraine. Zavalievsky is in close proximity to key markets with significant developments in LIB facilities planned to service the European based car makers and renewable energy sector. ZG benefits from an existing customer base and graphite product supply chains based on excellent transport infrastructure covering road, rail, river and sea freight combined with reliable grid power, ample potable ground water supply and good communications⁶.

Volt acquired three licence applications that are considered to be prospective for lithium-borate mineralisation. The licence applications are in respect to a total area of 291km², located in Serbia and are west and south-west of the Serbian capital, Belgrade⁷.

Volt is progressing the development of its large wholly-owned Bunyu Graphite Project in Tanzania, as well as gold exploration in Guinea leveraging the Company’s existing extensive networks in Africa.

The Bunyu Graphite Project is ideally located near to critical infrastructure with sealed roads running through the project area and ready access to the deep-water port of Mtwara 140km from the Project. In 2018, Volt reported the completion of the Feasibility Study (“FS”) into the Stage 1 development of the Bunyu Graphite Project. The Stage 1 development is based on a mining and processing plant annual throughput rate of 400,000 tonnes of ore to produce on average 23,700tpa of graphite products⁸. A key objective of the Stage 1 development is to establish infrastructure and market position in support of the development of the significantly larger Stage 2 expansion project at Bunyu.

The Guinea Gold Projects comprise 6 permits in Guinea, West Africa having a total area of 348km. The Projects are located in the prolific Siguiri Basin which forms part of the richly mineralised West African Birimian Gold Belt.

⁶ Refer to Volt’s ASX announcements titled “Volt to Acquire European Graphite Business following Completion of Due Diligence” dated 14 May 2021 and “Completion of the ZG Group Transaction Following Execution of New Convertible Securities Facility” dated 26 July 2021.

⁷ Refer to Volt’s ASX announcement titled “Strategic European Lithium Acquisition – Jadar North” dated 18 November 2021.

⁸ Refer to Volt’s ASX announcement titled “Positive Stage 1 Feasibility Study Bunyu Graphite Project” dated 31 July 2018. The Company confirms that it is not aware of any new information or data that materially affects the information included in this document and that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.