



**VOLT**  
RESOURCES

**ASX ANNOUNCEMENT**

By e-lodgement

4 October 2022

**STRONG PROGRESS ACROSS BATTERY MATERIALS BUSINESSES**

**Highlights**

- Volt through its US subsidiary, Volt Energy Materials LLC, has progressed its battery materials businesses in the United States in order to provide graphite products for key battery markets including:
  - Coated spheronised purified graphite (CSPG) for the Lithium-ion battery (LIB) market
  - Graphite coatings and electrode additives for the Alkaline battery market
  - Graphite expander additive for negative electrode for the Lead-acid battery market
- Recent appointment of Prashant Chintawar as Senior Advisor – Battery Materials, who joined Michael Lew, Vice President - Business Development USA and other advisers
- The continuation and development of the technical partnership with American Energy Technologies Corporation (AETC)
- LIB cell developer collaboration agreements for the supply of CSPG in progress

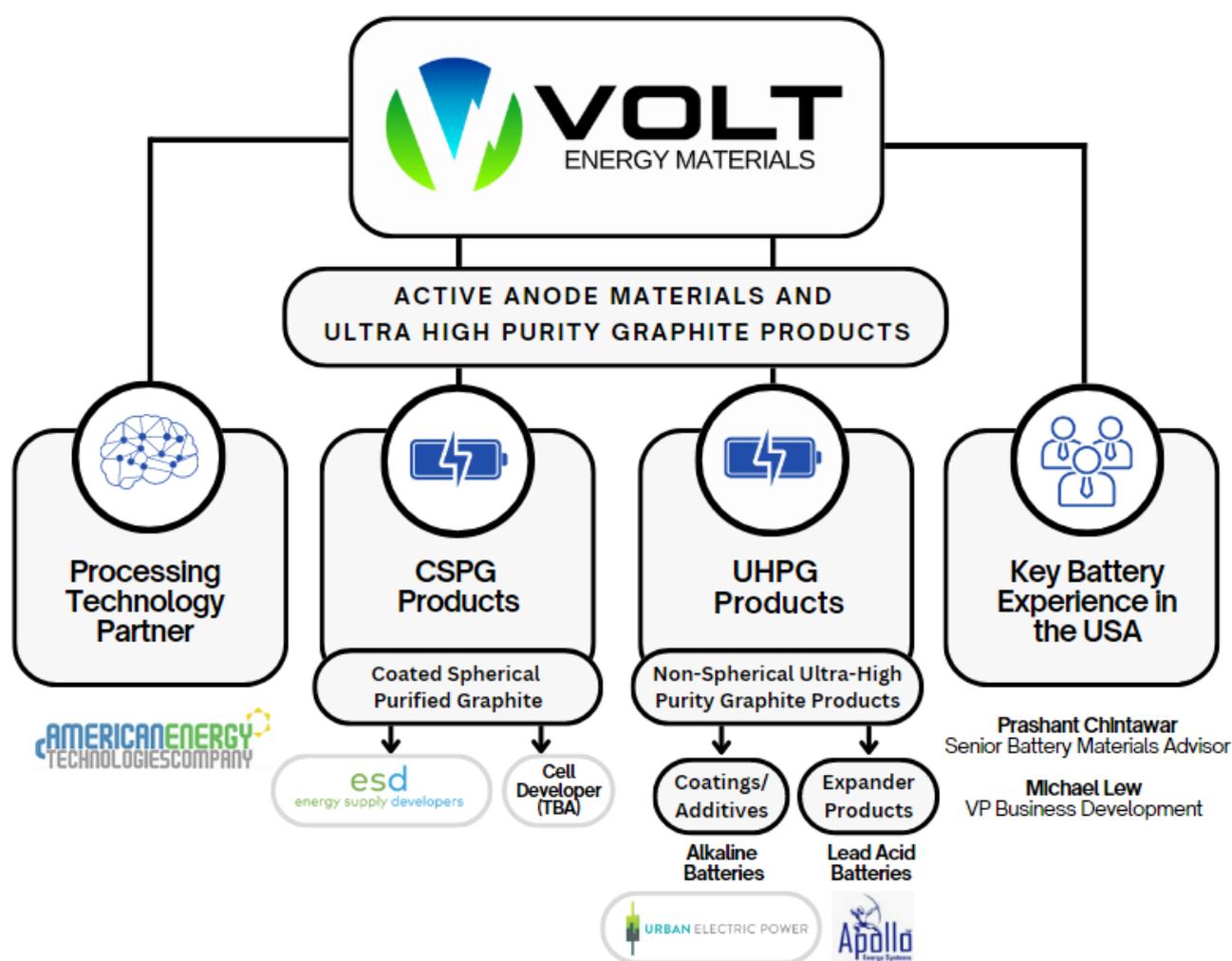
Graphite producer and battery material developer **Volt Resources Limited (ASX: VRC)** (“**Volt**” or “**the Company**”) is pleased to provide a summary of progress achieved to date on its strategy to become a battery materials producer in the United States and Europe, based on an integrated supply chain using flake graphite from its mine and processing plant in Ukraine, and in time, from its development-ready Bunyu graphite project in Tanzania.

**Volt Managing Director, Trevor Matthews, commented:** *“The Company is excited to summarise for investors the strong progress made across our downstream processing initiatives in the US this year, given the significant value uplift in creating finished graphite battery products. We have partnerships with a number of key groups, which allows us to develop products that utilise all graphite feedstock which supports excellent economics. These partners include Energy Supply Developers which has chosen Volt to be the CSPG supplier for its Super Site; Urban Electric Power for graphite coatings for*

the Alkaline battery market; and Apollo Energy Systems for Lead acid battery markets. We see these partnerships, and an additional soon-to-be-announced partnership, as highly valuable opportunities for Volt's shareholders and we look forward to continuing to update you as they progress".

## US Battery Materials Business - Volt Energy Materials LLC

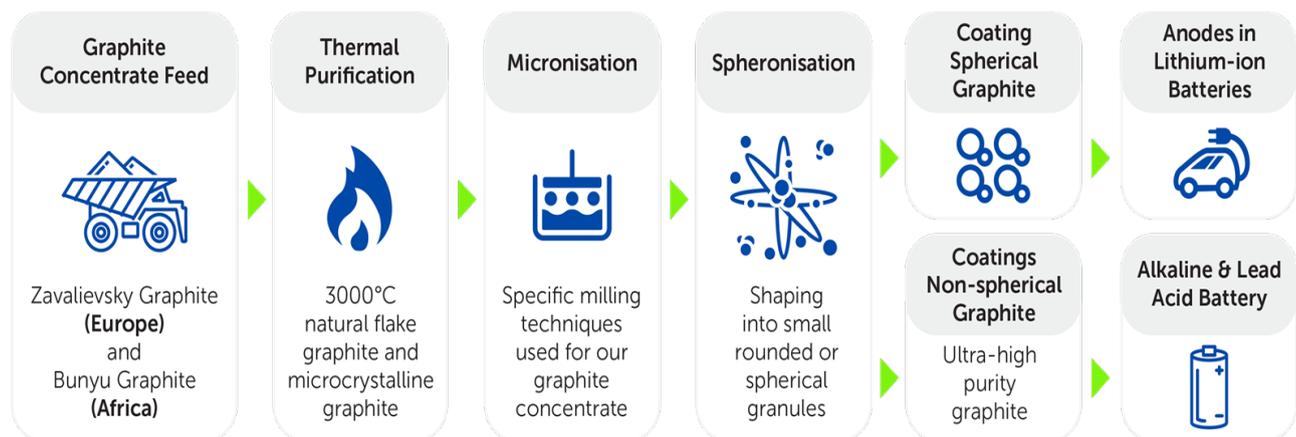
The Company is engaged in advanced testwork and CSPG supply discussions in the United States with a number of entities engaged in both the electric vehicle and stationary energy storage industry. The Company is also progressing discussions with multinational engineering firms to commence feasibility studies for the CSPG facilities to meet the future demand from battery manufacturers. Volt formed a US subsidiary, Volt Energy Materials LLC, which will be the entity within which the various graphite battery materials businesses will be incorporated including the LIB CSPG anode materials, and the alkaline and lead-acid battery products.



## Processing Technology – American Energy Technology Company

Volt will be adopting the inverted flow sheet for its downstream operations following the successful spheronisation and purification results achieved during the testwork program conducted by American Energy Technologies Co. ("AETC"), an established commercial graphite producer and processor which is headquartered in Illinois, USA.

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.



**Fig 1: The simple flowsheet for Volt’s graphite processing highlighting high value end products**

The non-spherical ultra-high purity graphite (“UHPG”) is a by-product of the spheronisation 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 uses<sup>1</sup> as identified below.

### Coated Spherical Purified Graphite (CSPG) for lithium-ion battery market – ESD

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. This would require approximately 55,000 tonnes of CSPG annually to supply this cell making capacity. 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 infrastructure<sup>2</sup>.

The LIB cell producer selected for the Super Site facility has recently been approved for substantial funding from the Federal Government of the USA, and once the funding is made available, construction of the Super Site project will move forward quickly.

ESD, in partnership with their developer, Thomas Crowley Developers will finance the construction of the Super Site facilities including Volt’s CSPG facility. The construction firm partner, Yates Construction, which was the General Contractor behind the construction of Tesla’s gigafactory, will build the CSPG facility to Volt’s specifications.

ESD board members include Chairman, Bob Galyen, who was formerly the Chief Technology Officer of CATL, the world’s largest lithium ion battery company, and brings over forty years of experience in the battery space to the ESD; and CEO, Jeff Yambrick, who was Business Development Director at Great Wall Motor’s Battery Business Unit, ‘SVolt’, and brings thirty years of auto and battery experience.

Benefits from Volt’s participation in the ESD Gigafactory development include:

<sup>1</sup> Refer ASX announcement dated 8 November 2021 and titled “High Performance Results from Bunyu Battery Cell Testwork”

<sup>2</sup> Refer ASX announcement dated 17 February 2022 titled “Gigafactory Development Further Information”.

- Capital savings from ESD constructing the building, utilities and infrastructure, with Volt's expenditure limited to plant and equipment supply and installation once the facility is completed
- There are no initial payments required from Volt to participate in the ESD Gigafactory development
- Volt will be the logical supplier of CSPG material for the LIB cell producer located in the facility, as the sole graphite supplier in the ESD Gigafactory.

Volt has supplied CSPG product samples to a well-known U.S. based cell developer. They have progressed with the testing of the Volt CSPG product and requested further product samples with specific characteristics to meet their CSPG requirements. The requested product sample is being prepared along with the development of draft technical and commercial agreements which are expected to be completed in the coming weeks<sup>3</sup>.

### **UHPG coatings for the Alkaline battery market - 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 market<sup>4</sup>.

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.

### **UHPG expander additive for 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<sup>5</sup>.

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 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 development of non-spherical graphite products for the alkaline and lead-acid battery markets will improve the economics of Volt's planned CSPG manufacturing 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.

---

<sup>3</sup> Refer ASX announcement dated 13 April 2022 titled “Battery Anode Material and Offtake Discussions”.

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

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

-ENDS-

**This announcement was authorised for release by:**

**Trevor Matthews  
Managing Director  
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**

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 communications<sup>6</sup>.

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 291km<sup>2</sup>, located in Serbia and are west and south-west of the Serbian capital, Belgrade<sup>7</sup>.

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 products<sup>8</sup>. 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.

---

<sup>6</sup> 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.

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

<sup>8</sup> 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.