

# Corporate Update

## Ultra High Purity Quartz

Ultra High Purity Quartz (“UHPQ”) is used in the solar industry and other high-end applications. The significant growth in the solar industry and high end applications for UHPQ has resulted in Vytas receiving over 150ktpa in off-take interest for its product.

### **BULK SCALE PRODUCTION**

Vytas commenced the Bulk Scale Production program in February 2024 to produce Ultra High Purity Quartz. The initial stages of the program are completed, including design, procurement and construction of the pilot facility and the development of safety and standard operating procedures. Product from this program will be available in the September quarter.

### **OFF-TAKE SUPPORT**

The UHPQ strategy has been demand-driven for the supply of ultra high purity, ethically sourced and environmentally sustainable products. Vytas has had good engagement from off-takers, which have provided Vytas with access to their facilities and the facilities of the current UHPQ suppliers in an effort to assist Vytas.

Vytas has received “Invitations to treat” from potential off-takers, allowing Vytas to ‘test’ its product at off-taker facilities, and have included verbal offers of funding support, sufficient to meet Vytas’ anticipated CAPEX, through non-dilutionary prepayments.

Marketing bulk sample product is anticipated to commence in July and August 2024 in Asia, US and Europe.

### **FULL SCALE PRODUCTION**

Vytas is seeking to move to full scale production targeting 25ktpa at nameplate capacity with a staged scale-up.

The equipment utilised for the Bulk Scale Production program will be the same as full scale production, meaning full scale production requires the addition of modules, rather than larger equipment, reducing scale-up risk.

Full scale facilities and locations have been identified, with Vytas seeking to lock away a location when the off-take commitments are executed.

### **GOVERNMENT SUPPORT**

Vytas has received and will continue to apply for the benefits of the federal government’s R&D rebates scheme for the Ultra High Purity Quartz. In addition, Vytas has applied for a “dollar-for-dollar” matched funding grant with the Western Australian Government’s Investment Attraction Fund (IAF).

## Corporate Update

### Carbon Free Nanoporous Silicon & Silane (Polysilicon)

Vytas has converted silica to carbon free nanoporous silicon (for applications such as silicon anodes for lithium-ion batteries). From the silicon, silane (precursor to polysilicon – solar panels and semiconductors) and hydrogen can be produced.

#### PILOT – STAGE ONE COMPLETED

Stage 1 pilot program of producing silicon using a carbon free process has been completed. Components of Stage 1 were completed with the support of the Office of Naval Research and Lincoln Laboratories in the United States.

#### CARBON FREE NANOPOROUS SILICON ANODES

Vytas has commenced a testing program with a German auto manufacturer and their US anode specialists to use Vytas' silicon in the production of a silicon anode for electric vehicle batteries.

The dominant anode chemistry in current lithium-ion batteries uses graphite. The use of silicon in battery anodes has the potential to improve the charge density and improve performance of the battery.

Vytas will continue to develop relationships with battery anode manufacturers with the near-term objective of testing Vytas' silicon product with additional potential customers and partners.

A US based silicon anode peer is producing silicon nanowire at circa USD\$50,000/t providing Vytas with a high margin opportunity to develop a material for anodes delivering superior performance.

#### SILANE (POLYSILICON & SEMICONDUCTOR INDUSTRY)

Vytas produced silane at its laboratory in Perth. While early-stage, Vytas believes this has the potential to positively disrupt major industries, including current producers and end users in the solar industry, semiconductors and other high-end applications.

The current process of silane and polysilicon production has very high energy requirements and a large carbon footprint – up to 3,000 degrees, 12 tonnes of CO2 from carbon inputs and an additional 100kwh/kg of silane.

Vytas is moving to the next testing phase in the near term to confirm the quality of the silane produced. The process is showing positive indications for the potential of carbon free production of silane at ambient temperature and atmospheric pressure.

Vytas is engaging with industry in Germany and other parts of the world to understand commercialisation opportunities and partnerships.

# Corporate Update

## Green Hydrogen On Demand

Vytas believes its “On Demand” hydrogen may have a significant positive impact on our economy and industry by supporting the “energy transition”. On Demand Green Hydrogen represents an opportunity to store green energy at scale and provide dispatchable, green energy on demand, safely and affordably.

The Stage 1 Pilot Program was completed with the support of the Office of Naval Research and Lincoln Laboratories. For the upcoming Pilot stages, Vytas is preparing to develop projects with key industry partners that bring energy construction and technology experience: the largest Indigenous-owned electrical and construction company in the Northern Territory and a US-based entity with decades of experience in solid state fuel and hydrogen.

### PLANT – STAGE 2 (50kWh)

Vytas is preparing its Stage 2 Pilot Plant to demonstrate at scale the silica through to AC power process flowsheet, to produce hydrogen energy. The pilot plant aims to also produce fresh potable water as a by-product of the hydrogen production and improve Vytas’ understanding of the intermediary reactions and exothermic heat generation to identify optimisation opportunities.

Data reported by the Australian Energy Regulator (AER) shows that the average Australian energy consumption is around 20 kWh/day per home. Based on this average energy consumption per hour, a 50kWh Demonstration Plant could produce sufficient energy (converted to AC), to power 50 average Australian homes if run continuously.

### PLANT – STAGE 3 (500kWh)

Vytas will adopt the learnings from Stage 2 to construct a 500kW plant, with commercial-scale demonstration of recycling of heat (heat optimisation), automation and remote monitoring systems.

A 500kW plant could support the energy needs of approximately 500 homes, representing multiple regional communities, with sufficient green power to safeguard their energy requirements.

Vytas’ process avoids the need to build renewable energy sources such as solar or wind in regional centres that lack appropriate skilled labour or in locations vulnerable to damage. Vytas green hydrogen production deployed in remote communities has the potential to importantly deliver “spinning load”, negating the need for diesel back up systems.

### GOVERNMENT SUPPORT – SILICON, SILANE & HYDROGEN

Vytas will apply to Federal Government grant schemes for critical minerals and green hydrogen. Vytas is also investigating grant and funding opportunities internationally, given the strategic and economic importance of Vytas’ target end-use sectors, including semiconductors, solar, and electric vehicle batteries.

## Corporate Update

### \$5m Capital Support

Vytas received over \$5M in capital support from existing shareholders and management, as well as family offices with significant experience in the renewable energy sector and silica sectors.

This support has enabled the Vytas team to advance the various programs, commence bulk scale production and provide the capital to meet the dollar-for-dollar commitments should the company be successful in securing IAF funding.

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### Traditional Owners, Government, Industry & Stakeholder Support

Vytas would like to thank the WA Government, the US Government, the Traditional Owners, and the many important local stakeholders for their continued support. Vytas would also like to thank the Western Australian Chamber of Commerce team for its significant effort to engage with and understand our business. We are very grateful for the success in promoting Vytas to many local and international organisations.

Regards



David Cornell  
Managing Director