



## HPQ ANNOUNCES EARLY-STAGE PLANNING FOR A SILICON-BASED BATTERY MATERIAL PRODUCTION LINE IN NORTH AMERICA

**MONTREAL, Canada, February 21th, 2023** — [HPQ Silicon Inc.](#) (“HPQ” or the “Company”) ([TSX-V: HPQ](#)) ([OTCQX: HPQFF](#)) ([FRA: O08](#)), a technology company engaged in green engineering processes for producing silica and silicon material, would like to inform shareholders on plans to build a silicon-based battery material production line in North America (“N.A”).

Eventually, as the Company has reported, HPQ expects to use the 2,500 tonnes per year (TPY) of High Purity Silicon produced by its *Gen4 PUREVAP™ Quartz Reduction Reactor (QRR)* as feedstock for a battery material production line, among other applications.

Between now and then, HPQ intends to build up its North American capacity gradually and gain the expertise and market presence (share) to accomplish that goal. Since the minimal commercial capacity of the systems being tested to make Silicon battery material is 200 TPY, HPQ’s first modular production line capacity will be set at 200 TPY capacity to produce sub - 5-micron size Silicon (Si) powders or 300 TPY of less than 5-micron SiO<sub>x</sub> powders.

### SILICON DEMAND TO INCREASE TO RESOLVE BATTERY PERFORMANCE ISSUES

A rather recent (industrial) development is the introduction of small amounts (between 5% to 10%) of silicon or silicon oxide (SiO<sub>x</sub>) to graphite composite electrodes, since pure graphite anodes have essentially reached their maximum performance concerning energy density.<sup>1</sup> Using estimates of graphite demand, this application suggests a minimum of 400,000 tonnes (t) to 800,000 t of silicon would be required just to satisfy the gap in graphite demand by 2040<sup>2</sup>. By 2030 it is estimated a minimum of 100,000 TPY will be required.

### HPQ INVESTIGATING EARLY START TO PRODUCTION:

To facilitate the early move toward production and to enter the market as quickly as possible, the Company, with input from Novacium, is developing plans to create an initial production facility that can produce 200 TPY of micron-size Si and SiO<sub>x</sub> powders for battery applications by 2024. After onboarding [Novacium in Q3 of 2022](#), HPQ tasked the company to identify micron size Si or SiO<sub>x</sub> material characteristics and markets and propose pathways through which HPQ can use to build a North American material production line. The principal characteristics of the Silicon material needed are its size (less than 5 microns in powder form, and purity (at least 3N+ or 99.95% Si). Presently, the potential selling price for this spec material in North America, duties and transportation costs included, stand at approximately US\$ 30 per Kg<sup>3</sup>.

### IMPLEMENTING A STAGED APPROACH TO THE PRODUCTION LINE

To have a test production line operational in 2024, HPQ will need to deploy commercially available technologies for each of the Critical Technological Building Blocks (“CTBB”) identified by Novacium and have them work seamlessly, to make the micron size Si or SiO<sub>x</sub> material EV, battery, and advanced material manufacturers will need. HPQ will cost out the various approaches and could be able to start manufacturing the necessary silicon for the battery industry during 2024.

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<sup>1</sup> The Royal Society of Chemistry 2020 Sustainable Energy Fuels, 2020, 4, 5387–5416

<sup>2</sup> <https://www.mining.com/web/graphite-deficit-starting-this-year-as-demand-for-ev-battery-anode-ingredient-exceeds-supply/>

<sup>3</sup> Adjusted supplier quote to include transport and duties.



#### **CTBB #1: SUB – 5 MICRON SILICON GRINDING EQUIPMENT**

Novacium identified different techniques and several equipment suppliers that have commercially proven equipment for the task. Tests were completed in Q4 2022 using one technology, the beginning of Q1 using a second technology provider, and plan to complete a final test with a third technology provider before the end of Q1 2023.

The second test result is extremely promising, of special interest is the fact that the size distribution of the material, an important spec for battery manufacturers, was very promising with a D97 = 4.98  $\mu\text{m}$  and a D50 = 2.32  $\mu\text{m}$ . Follow-up tests are presently being planned to validate the capacity of the systems to produce uniformly larger quantities of sub - 5-micron material.

Once all the tests are completed, an assessment of the CAPEX and OPEX of each process will be made to choose the most appropriate technology for HPQ's production line.

#### **CTBB #2: SECURING 3N+ FEEDSTOCK MATERIAL FOR THE PRODUCTION LINE**

In the immediate future, HPQ *GEN3 PUREVAP™ Quartz Reduction Reactor (QRR)* Pilot Plant's is expected to produce 50 TPY. The minimal commercial capacity of HPQ's planned production being 200 TPY indicates that HPQ will need to source a minimum of 150 TPY of 3N+ Silicon feedstock for its operation. The team at Novacium have proposed options to attain this objective. The first of which is scheduled to be tested during Q2 2023.

#### **CTBB #3: IMPROVING THE SILICON MATERIAL BATTERY CAPABILITIES**

HPQ and Novacium, working with several high-level research centers, intends to investigate how it can improve the battery performance of the material. Furthermore, Novacium will do some tests to see if its patented surface treatment processes can improve the material's performance.

#### **CTBB #4: RIGHT SIZING THE MODULAR CAPACITIES OF THE PRODUCTION LINE**

HPQ expects to ramp up capacity to match the 2,500 TPY High Purity Silicon feedstock of its *Gen4 PUREVAP™ QRR*.

*"We are very happy to inform shareholders of this alongside our GEN3 QRR pilot plant program. HPQ's battery initiative is taking shape. On another hand, we are excited about the significant progress made since onboarding of the NOVACIUM team back in Q3 2022," said Mr. Bernard Tourillon, President and CEO of HPQ Silicon Inc. "As we gain traction producing and selling our silicon battery materials, we will also be strengthening the values of our QRR projects. We anticipate that using the Silicon produced with the Gen4 PUREVAP™ QRR should result in a reduction of production cost by 50% to 75%."*

#### **OTHER CORPORATE NEWS**

HPQ Silicon is pleased to announce that it has entered into an agreement to acquire all rights held by the inventors of a new *PUREVAP™ QRR* patent application. This contract stems from negotiations between the parties and from a French legislation stipulating that inventors are entitled to receive remuneration for their work.

HPQ, therefore, negotiated an outright purchase agreement rather than the payment of remuneration. Consequently, to become the owner and acquire all the rights in the patent, the company will have to issue, in two stages, to each of the three inventors 120,000 Units, for a total of 360,000 Units representing a consideration of \$ 86,400.



Each Unit will consist of one (1) common share of the Company, and one (1) warrant to purchase one (1) additional common share of the Company at an exercise price of \$ 0.32, for a period of two (2) years after the closing date of the transaction. The first issue of 60,000 units to each of the inventors will be made at the time of filing the patent. The second issue of 60,000 Units will be made to each of the inventors at the time of the international filing of the patent. transaction is subject to TSX Venture Exchange and regulatory approval.

#### About HPQ Silicon

[HPQ Silicon Inc.](#) (TSX-V: [HPQ](#)) is a Quebec-based TSX Venture Exchange Tier 1 Industrial Issuer.

HPQ is developing, with the support of world-class technology partners [PyroGenesis Canada Inc.](#)(TSX: [PYR](#)) ([NASDAQ: PYR](#)) and [NOVACIUM SAS](#), new green processes crucial to make the critical materials needed to reach net zero emissions.

HPQ activities are centred around the following five (5) pillars:

- 1) Becoming a green low-cost (Capex and Opex) producer of High Purity Silicon (2N+ to 4N) using our proprietary **PUREVAP™ “Quartz Reduction Reactors” (QRR)** being developed by PyroGenesis.
- 2) Becoming North America’s first producer of micron size High Purity Silicon (3N & 4N) powders with the assistance of NOVACIUM SAS.
- 3) Working to become the first producer of nano silicon materials from High Purity Silicon chunks using our proprietary **PUREVAP™ Nano Silicon Reactor (NSiR)** being developed by PyroGenesis.
- 4) Becoming a green low-cost (Capex and Opex) producer of Fumed Silica using our proprietary **FUMED SILICA REACTOR** being developed by PyroGenesis.
- 5) Developing a small and compact process for the on-demand production of hydrogen via hydrolysis of Silicon and other materials.

For more information, please visit [HPQ Silicon web site](#).

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