



SUCCESSFUL SILICON POUR AND VALIDATION OF ALL CRITICAL MILESTONES IN HPQ PUREVAP™ GEN3 QRR TESTING

MONTREAL, Canada, October 11th, 2023 — [HPQ Silicon Inc.](#) (“HPQ” or the “Company”) ([TSX-V: HPQ](#)) ([OTCQB: HPQFF](#)) ([FRA: 008](#)), a technology company specializing in green engineering processes for silica and silicon material production, updates shareholders on the successful silicon pour.



**Images of the Historic Silicon (Si) Pour
from the HPQ PUREVAP™ GEN3 QRR Pilot Plant in Montreal, QC.**

Subsequent to our [Sept 28th release](#), [PyroGenesis Canada Inc.](#) ([TSX: PYR](#)) ([NASDAQ: PYR](#)) ([FRA: 8PY](#)), the project's technology provider, informed HPQ that the enhancements made to improve liquid silicon fluidity at the Gen3 QRR reactor's base in September 2023 played a pivotal role in successfully achieving the final critical milestones, completing a successful silicon pour ([link to a video of the pour](#)).

As a result, the work completed has now successfully validated 100% of the project's critical milestones, which include:

1. Achieving 99.5% Silicon purity (2N+) from the outset, a level that exceeds the best commercially available purity threshold.
2. Scaling up production by 2,500X from PUREVAP™ Gen2 QRR.
3. Demonstrating the semi-continuous batch production capability of the reactor.
4. Completing a successful silicon pour.

5. Achieving one-step production of 3N+ Silicon or battery-grade Silicon.
6. Production of silicon using 25% **less feedstock** than conventional carbothermic processes that use a ratio of 6 tonnes (t) of raw materials to produce 1 ton of metallurgical grade silicon (MG Si – 98.5% to 99.5%) [1].

“The completion of the pour marks a significant milestone in the Gen3 QRR testing program. I thank the dedicated efforts of the PyroGenesis Silicon team for making this possible,” stated Bernard Tourillon, President & CEO of HPQ Silicon. *“Our HPQ PUREVAP™ QRR process is advancing toward the modernization of high-purity Silicon production, particularly in line with HPQ's vertical integration plans for manufacturing silicon-based anode materials for the battery industry.”*

During the past month, HPQ's three key initiatives – Silicon, Fumed Silica, and Autonomous Hydrogen Generation via Hydrolysis – have all achieved significant milestones as we diligently executed our business plan.

“This silicon pour is the crowning achievement in the development of this QRR pilot plant; from conception to commercialization,” said Mr. P. Peter Pascali, CEO of PyroGenesis. *“We are proud of our team of scientists and engineers who, during this long process, met and overcame all challenges and delays. We are, of course, also very happy for our client, HPQ Silicon, as they now have final proof that this game-changing approach to the creation of high-purity silicon is ready for commercialization.”*

HPQ'S STRATEGY FOR SILICON-BASED MATERIALS FOR BATTERIES

HPQ is actively pursuing its battery strategy to supply tailored silicon-based (Si) anode materials to industry buyers. We're making excellent progress in establishing our first silicon-based (Si) anodes production line to meet specific demands from a party under NDA by the end of 2024.

SILICON-BASED MATERIALS FOR LITHIUM BATTERIES

A major trend in the lithium battery industry is the introduction of small amounts (between 5% and 10%) of silicon oxide (SiOx) into graphite composite electrodes. This is due to the fact that pure graphite anodes have essentially achieved their maximum performance in terms of energy density [2].

This new reality is driving a surge in demand for silicon anode materials. As of 2023, this market is valued between US\$1.1 billion [3] and US\$2.7 billion [4]. Its growth prospects indicate a potential demand of 300,000 tons by 2030, estimated at US\$15 billion [5], according to one source, and US\$ 131.6 billion in 2033 according to another source [6].

Currently, depending on the final composition, the potential selling price for silicon-based (Si) materials for anodes ranges between US\$30 per kg [7] and US\$50 per kg [8].

“Our technology has the potential to transform a century-old industrial process notorious for its high CO₂ emissions [9]. We aim to create an efficient, scalable, and low-carbon manufacturing process tailored to meet the future demands of the battery industry,” Mr. Tourillon noted.

REFERENCE SOURCES

- [1] From Ferroglobe PLC investor presentation dated October 17, 2017 (Page 11).
- [2] The Royal Society of Chemistry 2020 Sustainable Energy Fuels, 2020, 4, 5387–5416
- [3] QY Research, SNE Research, Shinhan Securities / NBM June 2023 Deck page 11
- [4] The [global silicon anode battery market](#) is likely to be valued at US\$ 2.7 billion in 2023. From [Future Market Insights Global and Consulting Pvt. Ltd.](#)
- [5] QY Research, SNE Research, Shinhan Securities / NBM June 2023 Deck page 11



- [6] According to Future Market Insights, the [global silicon anode battery market](#) is Estimated to Reach US\$ 131.6 Billion by 2033.
- [7] Information from supplier quotes received from GH Technologies (adjusted to include freight and duties)
- [8] NMB July 10, 2023, press release.
- [9] Bernstein L, Roy J, Delhotal KC, Harnisch J, Matsuhashi R, PriceL, Tanaka K, Worrell E, Yamba F, Fengqi Z (2007) Industry. [In: Climate change 2007: Mitigation. Contribution of working group III to the fourth assessment report of the intergovernmental panel on climate change](#). Cambridge University Press, Cambridge, UK and New York, USA.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and sustainable solutions which reduce greenhouse gases (GHG) and are economically attractive alternatives to conventional “dirty” processes. PyroGenesis has created proprietary, patented, and advanced plasma technologies that are being vetted and adopted by multiple multibillion dollar industry leaders in three massive markets: iron ore pelletization, aluminum, waste management, and additive manufacturing. With a team of experienced engineers, scientists and technicians working out of its Montreal office, and its 3,800 m² and 2,940 m² R&D and manufacturing facilities, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The operations are ISO 9001:2015 and AS9100D certified, having been ISO certified since 1997. For more information, please visit: www.pyrogenesis.com.

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 providers [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) manufacturer of Fumed Silica using the **FUMED SILICA REACTOR**, a proprietary technology owned by HPQ being developed for HPQ by PyroGenesis.
- 2) Becoming a zero CO₂ low-cost (Capex and Opex) producer of High Purity Silicon (2N+ to 4N) using our **PUREVAP™ “Quartz Reduction Reactors” (QRR)**, a proprietary technology owned by HPQ being developed for HPQ by PyroGenesis.
- 3) Becoming a producer of silicon-based anode materials for battery applications with the assistance of NOVACIUM SAS.
- 4) HPQ SILICON affiliate NOVACIUM SAS is developing a low carbon, chemical base on demand and high-pressure autonomous hydrogen production system.
- 5) Working to become the first producer of nano silicon materials from High Purity Silicon chunks using our proprietary **PUREVAP™ Nano Silicon Reactor (NSiR)**, a technology owned by HPQ being developed for HPQ by PyroGenesis.

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

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This press release contains certain forward-looking statements, including, without limitation, statements containing the words “may”, “plan”, “will”, “estimate”, “continue”, “anticipate”, “intend”, “expect”, “in



the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Company's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Company with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Company's ongoing filings with the security's regulatory authorities, which filings can be found at www.sedar.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Company undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws.

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Source: HPQ Silicon Inc.

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