



HPQ SILICON *PUREVAP™* PILOT PLANT TESTING ENTERS REACTOR STARTUP PHASE

MONTREAL, Canada, September 7th, 2022 — [HPQ Silicon Inc.](#) (“HPQ” or the “Company”) ([TSX-V: HPQ](#)) ([OTCQX: HPQFF](#)) ([FRA: O08](#)), an innovative silicon solutions and technology development company, would like to inform shareholders of a significant milestone achieved in the ongoing *PUREVAP™* Pilot Plant testing process, as reported in our [August 10, 2022 release](#). Technology provider [PyroGenesis Canada Inc.](#) ([TSX: PYR](#)) ([NASDAQ: PYR](#)) ([FRA: 8PY](#)) has completed the GEN3 *PUREVAP™* Quartz Reduction Reactor (QRR) Pilot Plant system integration validation phase. This first phase is a key milestone of the research and development program.

HPQ GEN3 *PUREVAP™* QRR PILOT PLANT R&D TESTING PROGRAM ADVANCING ON SCHEDULE

The GEN3 *PUREVAP™* QRR Pilot plant is a first-of-its-kind, state of the art prototype comprised of multiple systems that must operate under harsh conditions, extremely high temperatures and under vacuum. With the systems integration now completed, the next milestones in PyroGenesis’ meticulous approach are:

- a) Reactor start-up, a duration of about one (1) month will be allocated to this phase,
- b) Four (4) process improvement tests, a duration of about two (2) months will be allocated to this phase, and
- c) Operating the *GEN3 QRR* continuously, with non-stop production, during the remaining time.

As with all R&D projects, particularly with new process technology, the timeline is subject to change. PyroGenesis is confident that the program will allow HPQ to validate and quantify the previously completed *GEN1* and *GEN2 PUREVAP™* QRR testing phase results:

- i. Produce Silicon (Si) material of higher purity than any traditional processes, in a single step¹,
- ii. That it can do so from raw material sources without the need for extremely pure feedstock as required by conventional processes²,
- iii. That it only requires 4.5 MT of raw material to make 1 MT of Silicon versus the 6 MT required by conventional processes², a 25% reduction,
- iv. That it can do so at a lower cost advantage versus all traditional Silicon producers².

Furthermore, once process improvement tests start (see point b above), HPQ will commence:

1. Using the Si produced for downstream testing and production of HPQ high-value-add products,
2. Providing samples to potential off-takers to allow for product customization,
3. Planning the deployment of commercial – scale production systems (*PUREVAP™ QRR 4.0*) capable of producing 2,500 tonnes per year of high purity silicon material.

*“Some investors will question our need to allocate about a month to the *PUREVAP™* GEN3 QRR pilot plant reactor startup, but they need to realize that the GEN3 is a scaled-up version of our GEN1 and GEN2 test platforms by a factor of about 200 (X). Starting up the reactor, on this “first-of-its-kind, state-of-the-art prototype,” requires more steps than just flipping on a switch. Our goal is to disrupt Silicon manufacturing; an industry that still relies on a conventional process developed back in the 1890s. Following our methodical approach, we are on the right path to validate our disruptive potential,”* said Mr. Bernard

¹[\(HPQ February 26, 2019\)](#)

²[\(HPQ June 17th, 2019\)](#)



Tourillon, President and CEO of HPQ Silicon Inc. *“HPQ is the only company that will bring to market a new process for manufacturing Silicon that is perfectly suited to the new demands and realities of today’s Silicon market. With ESG principles playing an active role in materials sourcing and with recent geopolitical unrest emphasizing the need for stable trade partners and supply security, global corporations are becoming more aware of the difficulties in securing the ESG-compliant Silicon needed to meet their renewable energy agenda. The reality of chronic underinvestment in new technologies combined with the offshoring of Silicon production capacity, is creating massive opportunities for HPQ and its PUREVAP™ QRR patented process.”*

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 innovative silicon solutions company that offers silica (SiO₂) and silicon (Si) based solutions and is developing a unique portfolio of high value-added silicon (Si) products sought after by battery and electric vehicle manufacturers, among other industries. On July 21, 2022, HPQ started trading as a Tier 1 Industrial Issuer on the TSX Venture Exchange.

Silicon (Si), also known as silicon metal, is one of today’s key strategic materials needed for the decarbonization of the economy and the Renewable Energy Revolution (“RER”). However, silicon does not exist in its pure state and must be extracted from quartz (SiO₂) in what has historically been a capital and energy-intensive process.

With [PyroGenesis Canada Inc.\(TSX: PYR\)](#) ([NASDAQ: PYR](#)), HPQ is developing:

1. the **PUREVAP™ “Quartz Reduction Reactors” (QRR)**, an innovative process (patent granted in the United States and pending in other jurisdictions), which will permit the one-step transformation of quartz (SiO₂) into high purity silicon (Si) at reduced costs, energy input, and carbon footprint that will propagate its considerable renewable energy potential.
2. Through its 100% owned subsidiary, HPQ NANO Silicon Powders Inc., the **PUREVAP™ Nano Silicon Reactor (NSiR)** is a new proprietary process that can use material produced by the QRR as feedstock, to make a wide range of nano/micro spherical powders and nanowires of different sizes.
3. Through its second 100% owned subsidiary, HPQ Silica POLVERE Inc., HPQ is developing a new plasma-based process that allows a direct Quartz to Fumed silica transformation, removing the usage of hazardous chemicals in the making of Fumed silica and eliminating the Hydrogen Chloride Gas (HCl) associated with its manufacturing.



HPQ is also a technology development company interested in developing hydrogen-based ventures, that could be complementary to the QRR efforts. Currently, HPQ is evaluating two different approaches to reach this goal, those being:

1. Working with Swiss based company EBH₂ Systems SAS on their proprietary process to manufacture Green Hydrogen via electrolysis, and
2. Developing HPQ's own processes of making hydrogen via hydrolysis of nanosilicon materials made by our *PUREVAP™ (NSiR)*.

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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- 30 -

Source: HPQ Silicon Inc.

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