



GEN3 PUREVAP™ QRR PILOT PLANT: PROCESS TESTING MOVING FORWARD ON SCHEDULE

MONTREAL, Canada, January 19th, 2023 — [HPQ Silicon Inc.](#) (“HPQ” or the “Company”) ([TSX-V: HPQ](#)) ([OTCQX: HPQFF](#)) ([FRA: O08](#)), a technology company engaged in green engineering processes of producing silica and silicon material, would like to inform investors of the next milestones planned as its *GEN3 PUREVAP™ Quartz Reduction Reactor (QRR)* (“*GEN3 QRR*”) (“*Pilot Plant*”) testing program passes the halfway mark.

During the past six (6) months of the program technology provider [PyroGenesis Canada Inc.](#) ([TSX: PYR](#)) ([NASDAQ: PYR](#)) ([FRA: 8PY](#)), validated that the *GEN3 QRR* pilot plant operates as designed and produces Silicon (Si) Materials.

Having passed the halfway mark, the remaining months of the program will focus on achieving key milestones that will dictate the start and end of a series of process improvement tests. These three series of process improvement tests will enable us to collect important data required to advance the project to the next logical step, planning the development of our first commercial scale plant (*PUREVAP™ GEN4 QRR*).

TEST SERIES #1: BATCH TESTING THE REACTOR

In Q4 2022, a dynamic blank test, part of the startup of the Pilot Plant and two process improvement tests part of test series #1, were completed. These tests were very successful, producing silicon materials and yielding important data on the operation of the system.

During Series #1 of the process improvement test, the reactor processes the silica and reductant feedstock in batches. During each batch testing, raw material is placed inside the reactor which is then powered up to its operational temperature and taken through the cycle needed to reach a carbothermic reaction. Once the test is complete, the system is powered down and allowed to cool, after which it is inspected while the produced silicon material at the bottom of the reactor is recovered.

Batch tests are currently being performed and will continue until we reach the key milestone of a successful silicon pour from the *GEN3 QRR*.

TEST SERIES #2: REACTOR UNDER SEMI-CONTINUOUS BATCH PRODUCTION

Following a first successful silicon pour, Series #2 will commence with the objective of improving silicon material production yield. The *GEN3 QRR* system will be operated in a semi-continuous batch process.

Raw material will be placed inside the reactor, as in Series #1, which will be powered up to its operational temperature and cycled to reach a carbothermic reaction. During this process, the liquid silicon material produced is recovered by pouring it out of the system into a crucible, the ‘casting’ step. This ends one cycle, and another starts again, with feedstock material now being loaded into the reactor, which at this point is already at its operational temperature.

Testing will be performed to gather enough data to make the necessary changes to the system or production process with a focus on improving production yield. This will continue until the system reaches the required key milestone of completing at least 6 continuous production cycles per day, with each cycle



yielding 20 Kg of Silicon per pour. This is a key required milestone for the GEN3 QRR to be considered fully operational under semi-continuous production conditions.

The recovered Silicon material will be used as feedstock to produce samples for use as part of HPQ silicon's battery initiatives.

TEST SERIES #3: SEMI-CONTINUOUS PRODUCTION AND PURITY UPGRADE

Series #3 will focus on operating the system on a non-stop production basis. While this is ongoing, improvement tests will be performed aimed at ensuring the recovered material attains battery grade silicon purity.

"We've made significant progress since starting the GEN3 QRR pilot plant back in July 2022 and I credit the PyroGenesis team for their exceptional dedication and expertise in getting us here and beyond," said Mr. Bernard Tourillon, President and CEO of HPQ Silicon Inc. "Series #1, #2 and #3 will be important milestones for our 'Silicon for Batteries Initiative'. In terms of timing, the schedule will be driven by results and improvements as we continue to venture into uncharted waters with this groundbreaking approach to silicon production. Having said that, we are confident that over the next six months we will have completed the Series #1, #2, and #3 process improvement steps. As always safety is the primary consideration and safety procedures are an important part of the ongoing process improvements."

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 technology company green engineering processes of producing silica (SiO₂) and silicon material (Si) 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.

HPQ is the only company bringing 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 the processes it is developing with [PyroGenesis Canada Inc.\(TSX: PYR\) \(NASDAQ: PYR\)](#):

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 working with Novacium developing processes for making hydrogen via hydrolysis of silicon and other materials.

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

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- 30 -

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