

HPQ Silicon Resources Inc. Nano Silicon Reactor Update

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MONTREAL, Jan. 12, 2022 - [HPQ Silicon Resources Inc.](#) ("HPQ" or the "Company") (TSX-V: HPQ) (OTCQX: HPQFF) (FWB: UGE), an innovative silicon solutions and technology development company, through its wholly - owned subsidiary HPQ Nano Silicon Powders inc ("HPQ NANO"), would like to update shareholders on advancements of the *PUREVAP™ Nano Silicon Reactor ("NSiR")* development project led by technology provider, PyroGenesis Canada Inc. (TSX: PYR) (NASDAQ: PYR) (FRA: 8PY).

ADVANCING METHODICALLY, FOCUS ON BATTERY GRADE NANO SILICON MATERIALS

As expected with ground-breaking R&D projects, the PyroGenesis engineering team continued to resolve design and process issues encountered during Phase 1 of the *PUREVAP™ NSiR* development program. As testing progressed during the second half of 2021, the challenge for the team became eliminating oxygen from the final product of nano-silicon material. The oxygen was affecting our ability to produce qualified samples.

Systematic analysis of the process performed by the PyroGenesis technical team indicated that:

- The internal sources of oxygen contamination were directly linked to the heat - resistant liner material used in the *Gen1 PUREVAP™ NSiR*, a modified *Gen2 PUREVAP™ Quartz Reduction Reactor ("QRR")*, originally designed for the carboreduction of quartz into Silicon (Si),
- The *GEN 1 PUREVAP™ NSiR* needed to be re-designed and rebuilt to eliminate the internal sources of the contamination.

The modified *Gen1.5 PUREVAP™ NSiR* system was re-designed and built in Q3 2021 and commissioned in Q4 2021. Preliminary results obtained with material produced during commissioning tests completed in December are very promising. Once final adjustments are completed, expected in January, the system will be ready to produce new samples for third party evaluation.

"For HPQ NANO, 2021 was the year of "Slow is Smooth & Smooth is Fast". While it may have taken us longer than we had expected to get here, we are here now, ready to revolutionize nano-silicon materials manufacturing for batteries, a market that is ready to explode" said Bernard Tourillon, President and CEO of HPQ Silicon. "While HPQ value proposition is derived from harnessing the potential of our silicon materials innovations, manufacturing and commercializing the silicon and nano Silicon materials needed to offer ESG compliant silicon materials to meet the demand of the up-and-coming renewable energy revolution, we could not be here without PyroGenesis and its technical team depth and experience."

GEN1 NSiR TESTS VALIDATE ABILITY TO MAKE HIGH VALUE NANO SILICON MATERIALS

During the first half of 2021, the *Gen1 NSiR*, was used to validate the following key design parameters of the

NSiR process, a new low-cost method to manufacture nano silicon materials:

1. The *NSiR* can produce < 150nm Nano Silicon Materials (Powders and Nanowires),
 1. SEM imaging of the latest material produced showed that material can be produced in the 10 to 50 nm range, which has direct application for solid state batteries developers.
2. The *NSiR* can produce Nano Silicon Materials Powder at the throughput needed to allow for low-cost production of nano materials (HPQ April 22nd 2021 release).

"Notwithstanding some unexpected delays, we couldn't be prouder of where we are in developing this game changing technology with strategic partners like HPQ", said Mr. P. Peter Pascali, CEO and Chair of PyroGenesis. "The fact that we are getting closer to meeting a significant challenge in the development of lithium-ion batteries for the electric vehicle market not only proves that we are on the right track and with the right partner, but also validates our commitment as an emerging leader in providing CO₂ reduction solutions."

HPQ VERTICAL SILICON INTEGRATION: A POWERFUL ADVANTAGE

Another key takeaway from the efforts by the Pyrogenesis team, is that it confirms the advantage of HPQ's ability to produce internally sourced feedstock material produced by its proprietary *PUREVAP™ QRR* process. By controlling the entire chain from raw material, the company can modify the entire process and adapt the feed material required for the NiSR production to meet end market requirements.

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 Resources

[HPQ Silicon Resources Inc.](#) (TSX-V: HPQ) is a Quebec-based innovative silicon solutions company that offers innovative silica (SiO₂), 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.

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 pending), 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 of different sizes and nanowires.
3. Through its second 100% owned subsidiary, HPQ Silica POLVERE Inc., HPQ is developing a new plasma-based process that will allow a direct Quartz to Fumed silica transformation, removing the usage of hazardous chemical 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 as it pertains to their proprietary process to manufacture Green Hydrogen via electrolysis, and
2. Developing our own processes of making hydrogen via hydrolysis of nanosilicon materials made by our *PUREVAP™ (NSiR)*.

For more information, please visit HPQ Silicon web site.

Disclaimers:

The Corporation's interest in developing the *PUREVAP™ QRR* and any projected capital or operating cost savings associated with its development should not be construed as being related to the establishing the economic viability or technical feasibility of any of the Company's Quartz Projects.

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

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This News Release is available on the company's CEO Verified Discussion Forum, a moderated social media platform that enables civilized discussion and Q&A between Management and Shareholders.

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