Independent Analysis Confirms HPQ Fumed Silica Reactor Produces Commercial-Grade Material at Pilot Scale

HPQ achieves a key milestone toward commercial production, producing commercial-grade fumed silica with superior surface area and purity in a single step at pilot scale.

Montreal, Canada, November 12th, 2025 — HPQ Silicon Inc. ("HPQ" or the "Company") ("HPQ" or the "Company") (TSX-V: HPQ, OTCQB: HPQFF, FRA: O08), a technology company driving innovation in advanced materials and critical process development, is pleased to announce that independent laboratory analysis [1] of material produced during Test #7 of its proprietary Fumed Silica Reactor (FSR) pilot plant has confirmed the production of commercial-grade fumed silica.

This achievement validates the scalability and performance of HPQ Silica Polvere Inc.'s (HSPI) [2] unique plasma-based process. It confirms that the technology can produce hydrophilic fumed silica directly from quartz, without the use of chlorosilanes or the production of hazardous by-products.

Pilot Plant Results Exceed Previous Tests – Validate Commercial Quality of Material

Independent laboratory testing of material from the most recent pilot-scale run produced the following results:

- **Specific Surface Area (BET)**: 168.44 to 191.17 m^2/g
  (up from 136 m^2/g achieved during Test #6, a 20 to 40 % improvement in Surface Area.)
- **Product Purity (ICP-MS)**: 99.74 – 99.83 percent
  (up from 97.92 percent in Test #6 and above the 99% purity commercial baseline)
- **XRD Analysis**: Fully amorphous powder, representative of true fumed silica structure.

These results confirm HSPI's ability to replicate the lab-scale data announced in November 2023 (135 – 185 m^2/g range with 99% purity) and also demonstrate measurable improvements in both purity and performance consistency. The achieved range of up to 191 m^2/g and 99.8% purity positions the material squarely within the upper end of commercial specifications typically targeted by leading fumed silica producers.

"Replicating and surpassing lab-scale results at a commercial pilot scale is a defining moment for HPQ," said Bernard Tourillon, President and CEO of HPQ Silicon Inc. and HPQ Silica Polvere Inc. "What truly matters here is what we've achieved. By scaling lab results up twentyfold while maintaining, and even improving, quality metrics. These independent results confirm that our FSR technology can now consistently deliver industrial-grade material sustainably."

From Lab to Pilot Scale, and Toward Commercial Deployment

When HPQ first announced lab-scale results in 2023, the FSR technology was demonstrating a potential to produce commercial-quality fumed silica directly from quartz using plasma energy. Since then, HSPI and its technology partner PyroGenesis Inc. (TSX: PYR, OTCQX: PYRGF, FRA: 8PY1), with support from both the Federal and Provincial governments have designed, constructed and commissioned a 20× larger pilot facility, enabling continuous production test runs and full-scale process optimization.

Over the course of 2025, seven test campaigns were conducted to refine feedstock parameters, energy profiles, and reactor stability. The overarching goal was clear: to reproduce lab-scale quality at pilot scale and prove that HSPI's proprietary reactor can sustain consistent, high-surface-area output and commercial purity under industrial operating conditions.

"Until we achieved this benchmark, the question remained whether our unique single-step process could deliver commercial results at scale," added Tourillon. "We never doubted it could, but now we have independent confirmation that it does."

Image of test #7 material at PyroGenesis facilities in Montreal (Source PyroGenesis)

Sustainability and Cost Advantages Remain Central

The FSR process remains distinct from conventional fumed-silica manufacturing, which typically involves converting metallurgical Silicon into silicon tetrachloride ($SiCl_4$) and then converting that into fumed silica through high-temperature hydrolysis, generating large volumes of hydrogen chloride (HCl) and significant CO_2 emissions.

In contrast, HPQ's proprietary plasma-based FSR:

- Uses quartz (SiO_2) as the sole feedstock, eliminating toxic chemical inputs.
- Generates no HCl by-products, removing costly waste-management requirements.
- Consumes up to 87 percent less energy than traditional production routes.
- Reduces CO_2-equivalent emissions by 84 percent, offering a substantial environmental and financial advantage in jurisdictions with carbon pricing.

As previously disclosed, these advantages translate into major potential capital and operating-cost savings, and also represent a smaller footprint decentralize manufacturing process that is perfectly suited for today marketplace.

"Our process eliminates the costly environmental footprint of traditional fumed-silica manufacturing," said Tourillon. "We are not only proving that sustainability and profitability can coexist, and that plasma technology can outperform legacy chemical processes on every measurable level, but that our smaller plant's approach could yield the quicker profits compared to large-scale projects, that Industrial partner are looking for."

Next Steps: Toward 50 Tonnes Per Year Production

Following the successful completion of Test #7, HPQ and PyroGenesis will move forward with the next phase of optimization, focusing on maintaining consistent production near 200 m^2/g and initiating plans to operate the pilot facility at its full design capacity of 50 tonnes per year.

HSPI also plans to distribute sample batches under non-disclosure agreements to potential partners in coatings, polymers, and advanced materials sectors, industries that rely on high-surface-area hydrophilic fumed silica for thickening, dispersion, and reinforcement applications.

"These results open the door to moving our direct engagement with industrial buyers to a next level," noted Tourillon. "They also allow us to advance commercial discussions and begin planning for a future dedicated production site. We are now entering the commercialization stage of the FSR program."

A Step Closer to Market Leadership

The global fumed-silica market is projected to surpass US$2.57 billion by 2034 [3], driven by growing demand in the coatings, sealants, automotive, and lithium-ion battery sectors. By combining cost advantages with a dramatic reduction in environmental impact, HSPI FSR technology positions HPQ as a potential new entrant capable of capturing meaningful market share in a sector long dominated by chemical giants.

REFERENCE SOURCES

[1] The independent material quality analysis for test 7 were conducted by Covalent Metrology. The analysis included BET surface area for specific surface area evaluation, ICP-MS for elemental composition, XRD for crystal structure and SEM for microstructural analysis.

[2] A wholly owned subsidiary of HPQ Silicon Inc., when technology supplier PyroGenesis announced its intention to exercise its option to acquire a 50% stake in HSPI in May 2024.

[3] EXACTITUDE CONSULTANCY, *Fumed Silica Market Overview 2025-2034 Report*.

About HPQ Silicon

HPQ Silicon Inc. is a Quebec-based TSX Venture Exchange industrial issuer (TSX-V: HPQ) focused on innovation in advanced materials and critical process development. In partnership with its research and development partner **Novacium**—of which HPQ is a shareholder—the Company is advancing next-generation **silicon-based anode materials** (Gen3) for batteries, commercializing its **ENDURA+ lithium-ion cells**, and developing breakthrough **clean-hydrogen** and **waste-to-energy** technologies, for which HPQ holds exclusive North American rights.

HPQ is also pursuing proprietary technologies to become a low-cost, zero-CO_2 producer of **fumed silica** and **high-purity silicon**, with technical support from PyroGenesis Inc. Together, these initiatives position HPQ to capture growth opportunities in the energy storage, clean hydrogen, and advanced materials markets essential to achieving global net-zero goals.

For more information, please visit HPQ Silicon web site.

About PyroGenesis Inc.

PyroGenesis leverages 30 years of plasma technology leadership to deliver advanced engineering solutions to energy, propulsion, destruction, process heating, emissions, and materials development challenges across heavy industry and defense. Its customers include global leaders in aluminum, aerospace, steel, iron ore, utilities, environmental services, military, and government. From its Montreal headquarters and local manufacturing facilities, PyroGenesis' engineers, scientists, and technicians drive innovation and commercialization of energy transition and ultra-high temperature technology. PyroGenesis' operations are ISO 9001:2015 and AS9100D certified, with ISO certification maintained since 1997. PyroGenesis' shares trade on the TSX (PYR), OTCQX (PYRGF), and Frankfurt (8PY1) stock exchanges.

Cautionary Note Regarding Forward-Looking Information

This press release contains forward-looking statements regarding HPQ Silicon's Fumed Silica Reactor project. Such statements reflect management's expectations on future performance, pilot plant testing, commercialization, financing, and strategic milestones. They involve assumptions about technology, market conditions, financing, permits, supply chains, and economic factors. However, risks—including delays, financing challenges, regulatory changes, competition, commodity prices, geopolitical factors, and market demand—may cause actual results to differ materially.

Readers are cautioned that forward-looking information is uncertain and not guarantees of future performance. Additional risk factors are detailed in HPQ's Annual Information Form on SEDAR+.

A more detailed cautionary note regarding forward-looking information related to HPQ Fumed Silica is available for download [here].

Further information regarding the Company is available in the SEDAR+ database (www.sedarplus.ca), and on the Company's website at: *http://www.hpqsilicon.com/*

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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.

Source: HPQ Silicon Inc.

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