



HPQ SILICON PARTNERS WITH THE FRENCH START-UP NOVACIUM TO STRENGTHEN ITS INNOVATION CAPABILITIES IN NEW MATERIALS AND PROCESSES CRITICAL TO RENEWABLE ENERGY

MONTREAL, Canada, September 15, 2022 - [HPQ Silicon Inc.](#) ("HPQ" or the "Company") ([TSX-V: HPQ](#)) ([OTCQX: HPQFF](#)) ([FRA: O08](#)) an innovative silicon solutions and technology development company, informs shareholders that it has partnered with three leading French research engineers to create Novacium, a "jeune entreprise innovante (J.E.I)" based in Lyon, France.

NOVACIUM'S EXPERIENCE IN THE FIELD OF RENEWABLE ENERGY MATERIALS (PHOTOVOLTAIC, HYDROGEN AND BATTERIES) IS IN HIGH DEMAND.

Novacium's three founding research engineers, Jed KRAIEM PhD, Oleksiy NICHIPORUK PhD, and Julien DEGOULANGE PhD have over 50 years of combined experience in developing innovative processes for renewable energy; this includes hydrogen production via hydrolysis, photovoltaic processes, as well as materials for batteries and energy storage. In addition, the team has world-renowned expertise in producing and purifying Silicon.

AN EXPERIENCED TECHNICAL TEAM WITH A PROVEN TRACK RECORD

Novacium's Chief Operating Officer ("COO"), Mr. Jed KRAIEM, received his PhD from the National Institute of Applied Sciences in Lyon in 2005; he then worked for the CNRS and FerroPEM (now FerroGlobe) as Valorization engineer in order to develop an innovative process for crystallization and purifying Silicon for Photovoltaics. He was subsequently approached by Apollon Solar SAS, a French start-up, which recruited him to become the Innovation Director and later promoted him to General Manager, a position he held until recently.

Novacium's Chief Technical Officer ("CTO"), Mr. Oleksiy NICHIPORUK, earned his PhD from the National Institute of Applied Sciences in Lyon in 2005, he then joined PHOTOWATT, the leading French producer of solar cells and panels, as an R&D engineer to work on continuous process improvement. In 2012, he joined the team at Apollon Solar as R&D engineer and was soon promoted to CTO due to his extensive expertise, a position he held until recently.

Novacium's Chief Innovation Officer ("CIO"), Mr. Julien DEGOULANGE, obtained his PhD from the Polytechnic Institute in Grenoble in 2008 (his thesis was on purifying Si Metallurgy via plasma), he then spent a year working for NNTNU/SINTEF in Norway on Silicon crystallization as a postdoc. He went on to join Apollon Solar in 2010 as an R&D engineer and was later promoted to Head of the Silicon Business, a position he held until recently.

A COLLABORATION BETWEEN HPQ AND NOVACIUM IS READY TO BEGIN

With offices and a laboratory on the AXEL'ONE site in the Lyon region of France, Novacium is already operational and can immediately begin its collaboration with HPQ, focused on the following three areas:

- 1) R&D assistance and collaboration on HPQ's processes (*PUREVAP™ RRQ and RNIS*):
 - a. Supporting, optimizing and sharing knowledge and know-how, etc.

- 2) Collaborating on R&D to develop innovative processes that may be complementary to HPQ's processes in the following niche sectors:
 - a. Manufacturing silicon or SiOx particles for battery applications.
 - b. Manufacturing carbon particles for super-capacitor applications
 - c. Manufacturing silicon-based particles for battery and hydrogen applications, etc.
- 3) Capitalizing on their own knowledge and know-how, the technical team has several innovative concepts in the hydrogen sector and intend to develop two innovative processes.

Mr. Jed KRAIEM PhD, Chief Operating Officer of Novacium said, *“This partnership with HPQ is very exciting and very strategic given our positioning. Today, everyone has understood that Silicon is a critical, highly import and extremely strategic material. It is everywhere! Including in semiconductors, photovoltaic panels, lithium batteries, biomedical, etc., all of which are key fields. Moreover, having a partner that is capable of supplying us directly with silicon or exploiting the technologies that we intend to develop guarantees both our security of supply and our success in quickly being able to commercialize them on the market.”*

“Having first-hand experience of their silicon skills at Apollon Solar, we are extremely pleased to have been able to formalize a partnership with Messrs KRAIEM, NICHIPORUK and DEGOULANGE via Novacium. This partnership comes at a pivotal moment for HPQ. Without a dedicated technical team within HPQ, this could have limited our ability to exploit the opportunities available to us with the imminent start of our GEN3 PUREVAP™ pilot plant,” said Mr. Bernard Tourillon, Chief Executive Officer of HPQ Silicium. *“Furthermore, having a research & development center in Lyon, France, opens up new opportunities for cooperation within Europe, a region which, unlike Quebec, Canada and the United States, has formally recognized that silicon is a critical, highly important and extremely strategic material.”*

About NOVACIUM SAS

Novacium is a “jeune entreprise innovante (J.E.I)” based in Lyon, France. It is the result of a partnership between three of France’s leading research engineers, who wanted to start a new Research and Development company to develop their own technology in high added value fields connected to renewable energy, and HPQ Silicon Inc, a Canadian company, which wanted to find a technical team capable of helping it develop its silicon and new renewable energy projects.

Achievements of the founding research engineers

While working at Apollon Solar, the three research engineers were responsible for the PHOTOSIL-ISOPEM project, the largest research project on silicon photovoltaics in France, with a budget of around €45m. In 2020, as part of the project, they were the first in the world to demonstrate that it was possible to obtain a crystal silicon ingot from metallurgically purified silicon. The following year, they went even further by teaming up with the German company, Roth & Rau to demonstrate that a very high conversion efficiency could be achieved and set a world efficiency record of 19% (‘World Class Solar Efficiency On N-Type Cz UMG Silicon Wafers By Heterojunction Technology’). Even today, this silicon is the subject of a collaborative research project with the prestigious University of New South Wales (UNSW) in Australia and the current efficiency record stands at over 22%.

In parallel to their work in the Photovoltaic sector, the team also launched a very innovative project within Apollon Solar to produce Hydrogen from silicon and aluminum powders. This project, which was of considerable interest to the French Directorate General of Armaments (DGA), was financed within the framework of a RAPID to develop a portable Hydrogen reactor to power a system called TREKHY, which contains a fuel cell developed by the start-up Pragma-Industries. TREKHY is currently being tested by the French Special Forces and the DGA. Finally, they have written several books in the field of Silicon



Photovoltaics, dozens of scientific articles and patents and their expertise is in high demand from various public bodies (ADEME, European Commission, BPI, etc.).

About Axel'One

Based in the region of Lyon, the collaborative innovation platform Axel'One hosts and supports collaborative R&D projects as well as VSEs/SMEs in the chemical-environmental sector. The Axel'One collaborative platform was established in June 2011 with 10 founding members, including academic institutions (CPE Lyon, ENS Lyon, INSA Lyon and Université Lyon 1), public institutions (CNRS, IFP Energies nouvelles) and industrial companies (Adisseo, Elkem, Solvay and SUEZ ENVIRONNEMENT).

Axel'One has three sites in the Lyon area: PMI (Innovative Materials Platform) in Saint-Fons, PPI (Innovative Processes Platform) in Solaize and Campus (Fundamental Research Platform) in LyonTech-la Doua and collaborates with 3 competitiveness clusters: Axelera (chemistry-environment in Lyon); Polymeris (Rubber, plastics and composite) and Techtera (textiles and flexible materials in Lyon).

Axel'One currently hosts more than 80 collaborative projects, 20 start up and SMEs and 5 technology platforms of shared tools and skills in industrial analysis, industrial catalysis, digital simulation, polymer processing and materials characterization.

For more information, please visit www.axel-one.com - Twitter: [@AxelOne](https://twitter.com/AxelOne)

About HPQ Silicon

[HPQ Silicon Inc. \(TSX-V: HPQ\)](http://www.hpq.com), 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.\(TSX: PYR\) \(NASDAQ: PYR\)](http://www.pyrogenesis.com), 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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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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