PyroGenesis Announces that HPQ Silicon Signs Development Agreement with Solar Silicon Specialist Apollon Solar

MONTREAL, QUEBEC--(GlobeNewswire– December 21, 2017) - PyroGenesis Canada Inc. (http://pyrogenesis.com) (TSX-V: PYR) (OTCQB: PYRNF), a high-tech corporation (the "Corporation" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma waste-to-energy systems and plasma torch products, announces today that HPQ Silicon Resources Inc., ("HPQ" or the "Client") signed a development agreement with Apollon Solar, a solar silicon specialist.

As previously disclosed, PyroGenesis has been engaged by HPQ to demonstrate, on a laboratory scale, that the PUREVAP™ process can produce high purity silicon metal from quartz in a one step process. Pursuant to a Can$8.3 MM contract signed with HPQ in August 2016, PyroGenesis is designing, fabricating, assembling, commissioning and testing a PUREVAP™ pilot system to produce silicon metal directly from quartz.

Mr. P. Peter Pascali, President and CEO of PyroGenesis, provides an overview of today's announcement in the following Q&A format.

Q: HPQ Silicon announced Monday[1] their agreement with Apollon Solar ("Apollon"), a solar silicon specialist. What does this mean for PyroGenesis specifically and the project in general?

A: This move, to bring Apollon into the HPQ-PyroGenesis fold, is in one word: ingenious. Not only does it demonstrate the validity and merit of our project, but the development agreement, in our opinion, not only increases the probability of success, but decreases the time frame in which success may be obtained.

Q: How is that?

A: To answer your question one must first understand who Apollon is and what they have achieved to date.

First, Apollon is a private French company which, as one of the world's leaders in renewable energies, has developed processes to make high purity silicon metal for photovoltaic conversion for use in high performance solar cells…

Q: So, they are competitors to PyroGenesis?

[1] http://www.marketwired.com/press-release/renewable-energies-hpq-silicon-announces-international-development-agreement-with-solar-tsx-venture-hpq-2243450.htm

A: Absolutely not! They complement us and that is the genius of this partnership.

Apollon is an expert in the manufacture of silicon wafers for use in solar panels. Apollon's unique knowledge and experience with silicon, silicon wafers, and solar panels has enabled it to understand what works and what doesn't, and they have been extremely successful at this. In fact, Apollon was the first to manufacture entirely monocrystalline Czochralski ("Cz") ingots made with 100% solar grade silicon metal refined metallurgically ("SoG Si UMG"). Which in layman's terms translates simply to the fact that they were one of the first to manufacture silicon wafers using an upgraded metallurgical grade ("UMG") silicon metal as feedstock. In addition to this achievement, Apollon has also managed to obtain conversion efficiencies of over 20% in solar panels using these same wafers. In fact, Apollon holds a world record conversion efficiency of 21.1% with wafers made from UMG silicon metal used as feedstock.

So, in short, Apollon has managed to use UMG silicon metal as feedstock, manufacture silicon wafers, introduce them into solar panels, and get world record conversion rates.

Q: And….?

A: And we can supply Apollon with the required feedstock, and therein lies the beauty of this arrangement. Apollon has proven that UMG silicon metal can be used as feedstock to make silicon wafers for solar panels. Our results to date show that PUREVAP™, at a bench test scale, could convert quartz into the UMG silicon metal which can be used as feedstock to manufacture Apollon's wafers for solar panels.

Q: What else can you say about Apollon and the team?

A: It is important to realize, that in all this, Apollon is actually the first independent party to validate the innovation potential of the PUREVAP™ process. When reviewing the PUREVAP™ process, Apollon concluded that:

- PUREVAP™ is a new metallurgical process (patent pending held by HPQ) for the production of solar grade silicon metal, and that it is a unique process, based on the innovative plasma technology that is at the heart of PyroGenesis' expertise, and
- The successful commercial application of the PUREVAP™ process will lead to the production of solar quality silicon at significantly lower costs compared to those of competing process technologies (examples include Siemens chemical process, Elkem Solar, Silicor Materials, etc.

Without a doubt, future collaboration between HPQ, Apollon and PyroGenesis should increase the probability of success of the project. In this sense, Apollon brings two important elements to the team:

- Firstly, the ability to achieve a higher level of vertical integration (from the extraction of raw quartz (SiO_2) by HPQ all the way to the production of solar cells), and
- Secondly, many years of innovative research and development work in the field of solar silicon and solar panels which complements the work already underway.

Q: From a practical perspective, how do you expect these benefits will be integrated into the project?

A: In the short term, we expect Apollon to provide immediate input into, and to help accelerate, the development phase of GEN-2 as well as to de-risk the design and testing of the pilot phase of the project (GEN-3). In the longer term, Apollon's knowledge and expertise in solar panels will not only lend itself well to the integration of silicon produced by the PUREVAP™ technology into solar panels, but could eventually lead to HPQ becoming a vertically integrated producer of such solar panels.

Q: Conclusion?

A: Once again, we are impressed with the strategies and forward thinking of the HPQ team. They have done their research and positioned themselves to be a significant force within their space. We are happy to be engaged in this project.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc. is the world leader in the design, development, manufacture and commercialization of advanced plasma processes. PyroGenesis provides technical and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, additive manufacturing (3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and 3,800 m^2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Its core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and technical services to the global marketplace. Its operations are ISO 9001:2008 certified, and have been ISO certified since 1997. PyroGenesis is a publicly-traded Canadian corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace (Ticker Symbol: PYRNF). For more information, please visit www.pyrogenesis.com

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of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.otcmarkets.com. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation 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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