PyroGenesis Announces Latest PUREVAP™ GEN2 Results; Provides Update

MONTREAL, Quebec (GlobeNewswire – February 27th, 2018) - PyroGenesis Canada Inc. (http://pyrogenesis.com) (TSX-V: PYR), (the "Company", the "Corporation" or "PyroGenesis") a Company that designs, develops, manufactures and commercializes plasma atomized metal powder, plasma waste-to-energy systems and plasma torch products, announces today its latest testing results for PUREVAP™ Gen2, and provides a general update on its PUREVAP™ Project with HPQ Silicon Resources Inc ("HPQ").

This announcement today is as a result of a step by step study which was performed to investigate the effect production yield has on the purity of silicon end-product. Theoretical calculations which were obtained in the previous phase were also validated. In conclusion, it was found that higher production yields actually enhance end-product purity, which confirms our previous calculations. Specifically, the results of this extrapolation calculation indicate that a higher production yield will enhance the final silicon purity, reaching 99.993% (+4N) at 90% production yield.

Mr. P. Peter Pascali, President and CEO of PyroGenesis, provides this update on PUREVAP™ in the following Q&A format. The questions, for the most part, are derived from inquiries received from investors, and analysts:

Q. For those that are new to the story, could you please provide an overview of the project and technology?

A. Most certainly.

HPQ is the owner of quartz properties. Quartz can be processed, through multiple steps, into a high purity silicon metal which is an important element in solar panels. It helps convert solar energy into useful electricity. Many in the solar panel industry consider the cost of converting quartz into solar grade silicon metal to be a limiting factor in the growth of the solar panel industry.

PyroGenesis was first engaged by HPQ to demonstrate, on a laboratory scale, that its proprietary PUREVAP™ process could produce high purity silicon metal from quartz in just one step.

This could be significant to the solar panel industry since the industry is highly dependent on high purity silicon metal in its solar panels. Any reduction in the cost of high purity silicon metal would benefit the industry as a whole, and if significant, could be game changing.

The primary goal of the PUREVAP™ process is to reduce (i) capital costs, and (ii) operating costs in the production of high purity silicon metal. A side benefit of the PUREVAP™ process is that, at the same time, it can replace polluting conventional processes, with a cheaper and environmentally friendly

alternative by reducing the carbon footprint of current silicon metal production methods.

Specifically, PUREVAP™'s current targets are as follows:

i. Reduce CAPEX to transform quartz to solar grade silicon by between 60% (China) and 86% ("Rest of the World" or "ROW");
ii. Reduce OPEX to transform quartz to solar grade silicon by between 30% (China) and 60% (ROW);
iii. Reduce carbon footprint to transform quartz to solar grade silicon by up to 96%;
iv. Investigate new opportunities for high value niche applications that could also benefit from cheap high purity silicon.

Q. Where do we stand with the technology?

A. Let us first review the question in the context of what we have achieved to date:

We started this project in early 2016, a little over 2 years ago. By June 2016, we had already demonstrated PUREVAP™'s ability to transform quartz into high purity silicon metal exceeding 99.9+%, or 3N (3N reflects 99.9% or 3 Nines). Before moving on let me put 3N in the context of what we are trying to achieve:

Purity	Grade	Applications	Market Size
98.5-99.5% (1N-2N)	Metallurgical Grade	▪ Feedstream to electronic and solar grade Silicon production ▪ Additive for aluminum alloys ▪ Feedstream to making fumed silica, silanes and silicone	> 2.2M T/yr
99.9 – 99.99% (3N-4N)	High Purity & Special Grade	▪ Powders for batteries ▪ SiAl targets for the glass industry ▪ Industrial quality Si3N4	> 220 kT/yr
> 99.999% (5N+)	Solar Grade	▪ Solar cells	> 400 kT/yr

Table 1

The potential uses of high purity silicon metal is depicted on Table 1 above. This market is typically divided into three broad grades: Metallurgical Grade (1N-2N), High Purity & Special Grade (3N-4N), and Solar grade (5N+).

One can see that 3N silicon metal addresses a significant market. As we are developing a process to produce solar grade silicon metal, we have discovered a way to produce 3N. To do so on a commercial basis opens up another revenue stream, and effectively reduces project risk.

Once we demonstrated the ability to transform quartz into high purity silicon metal, we next needed to demonstrate scalability. This we did by the beginning of 2017. By this time, we had demonstrated scalability of the process by increasing production from 1.1g to 8.8g of material. Later in 2017, by Q3, we

estimated that silicon production yield played an important role on the final purity of the metal produced; PyroGenesis theoretical calculations, assuming a 100% production yield, concluded that the purity of the silicon produced, under various operational conditions could, at commercial scale, range from 3N (99.984 % Si) to 4N (99.996 % Si) for low purity feedstock, and to 4N+ (99.998 % Si) when using high purity feedstock. Recent Gen2 tests reported not only confirm these results, but exceed them and, as such, our baseline has now moved from 3N+ to 4N+ which, it and itself, is quite noteworthy.

Q. What is the next step?

A. The next step will be the pilot plant where we expect to produce silicon metal based on the results developed during the GEN1 and GEN2 lab phase tests.

We are currently designing and building a 50 tonnes per year (TPY) pilot plant to produce larger quantities of 4N+ silicon, which will then be upgraded to solar grade silicon, with the ultimate goal of producing test solar cells. We expect the pilot plant to be completed within the next two quarters.

Q. Ok, but 4N is still not solar grade. How do you think you can achieve solar grade?

A. This is the interesting part, and one I don't think the market fully understands. We are still targeting 6N as our ultimate goal however, in the interim, HPQ has identified a faster route to market by the addition of Apollon Solar ("Apollon"). Apollon is a private French company with longstanding expertise in Silicon Purification and Crystallisation, Solar Silicon, Photovoltaic Cells and Photovoltaic Modules. Simply put, Apollon is one of the world's leaders in renewable energies, and has an expertise in purifying/upgrading high purity silicon metal even further to obtain solar grade silicon. Of note, they also have an expertise in producing solar cells. This is a huge addition to the PUREVAP™ process because it essentially means that on the way to target 6N, we can use a lower level of purity which could be further upgraded with Apollon's expertise, thereby further reducing overall project risk. In short, the time to market has been significantly reduced with the addition of Apollon.

Q. What does this mean for PyroGenesis?

A. We are not a charity. We deploy assets for the benefit of our shareholders, for whom there are many advantages with our contractual relationship with HPQ. First, we are currently under contract with HPQ to deliver and operate the pilot plant. Second, we are entitled to a 10% royalty on all future silicon metal sales. Third, we have a right of first refusal on the next phases of the project, the first of which would be a commercial plant at 5,000 TPY (which is expected to be ordered shortly after the pilot phase). Finally, we retain the right to use the technology for other applications other than the conversion of quartz to silicon, opening up new markets and opportunities for PyroGenesis.

In short, this project is very meaningful to PyroGenesis and its shareholders.

Q. What are the next milestones?

A. These latest results were what we needed before going flat out with the completion of the installation and commissioning of the pilot system, which will be the next real milestone. It is expected that the output from this system will be upgraded by Apollon to solar grade material which will then be used to produce test solar cells. We expect to produce our first solar cells made using PUREVAP™ sometime late 2019/early 2020. Shortly after that, a full commercial plant will be commissioned.

Q. Are there any risks?

A. There are always risks with R&D, as you know, and there is never a guarantee of success. However, if you ask me generally about the risk of this project, I can tell you with 100% certainty that the risks have been significantly reduced in our favor since we started. We have considerably de-risked the project by doing extensive tests on GEN1 and further validating our scale-up assumptions with GEN2. We have gained invaluable experience with GEN2 which we have implemented in the design of the pilot plant.

Of note, something else the market has not fully understood is that along the way, we believe we have identified possible commercial uses for the 3N+ material itself which, as I noted earlier, opens up new commercial applications, and further reduces project risk.

Q. Do you still feel this technology will work?

A. I have said this before and I will say it again, PyroGenesis does not have time or money to waste on projects that do not have future potential. Each and every day PyroGenesis has to decide where to allocate its resources, the most important of which is its time. Plasma expertise, such as ours, does not grow on trees and we must be very discerning as to where we dedicate this valuable resource. Do we dedicate it to Additive Manufacturing (powders for 3D printers), DROSRITE™, other development projects…or HPQ? The profit from the HPQ relationship does not, in and of itself, justify dedicating such scarce resources to the project. However, the royalty from the success of the project, does.

So, to answer your question, yes, we are fully committed to its technology, and believe more than ever before that it will be game changing in its own right.

Talk is cheap, but as you can see, we currently hold over 21M common shares plus over 17M warrants in HPQ. You can't get more committed than this.

Q. What would you advise investors?

A. Do your due diligence. Invest with full understanding, and…follow the money.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a TSX Venture 50® high-tech company, is the world leader in the design, development, manufacture and commercialization of advanced plasma processes and products. We

provide engineering and manufacturing expertise, cutting-edge contract research, as well as turnkey process equipment packages to the defense, metallurgical, mining, advanced materials (including 3D printing), oil & gas, and environmental industries. With a team of experienced engineers, scientists and technicians working out of our Montreal office and our 3,800 m^2 manufacturing facility, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. Our core competencies allow PyroGenesis to lead the way in providing innovative plasma torches, plasma waste processes, high-temperature metallurgical processes, and engineering services to the global marketplace. Our operations are ISO 9001:2015 certified, and have been since 1997. PyroGenesis is a publicly-traded Canadian Corporation on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace. For more information, please visit www.pyrogenesis.com

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