



## **PyroGenesis Additive to Reveal Completion of Powder Performance Characterization Results by Independent Parties at FormNext**

**MONTREAL, QUEBEC--(GlobeNewswire-- November 13, 2017)** - PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX-V: PYR) (OTCQB: PYRNF), a high-tech company (the "Company" or "PyroGenesis") that designs, develops, manufactures and commercializes plasma waste-to-energy systems and plasma torch products, announces today that its powder performance characterization program (the "Program"), for Titanium (Ti64 ELI) powders, by independent parties, has been completed, and will be revealed at FormNext this week in Frankfurt, Germany. FormNext is the leading trade fair for the Additive Manufacturing ("AM") industry.

The Program consisted of:

- i) Powder Analysis: an analysis of the properties of PyroGenesis' titanium (Ti64) powders in comparison to a well-known titanium powder supplier, and
- ii) Performance Testing: testing the performance of these powders on one of the most widely installed metal 3D printers<sup>1</sup>, using the manufacturer's settings, and generating a Material Data Sheet ("MDS") which, management believes, compares favorably to those available in the marketplace.

The powder analysis was performed by an independent laboratory, who analyzed common powder properties such as sphericity, density and purity, using a cutting-edge digital imaging technique. During this process, PyroGenesis' titanium powders were scanned using a Nikon XT H 225 X-ray m-CT system. The volume was then reconstructed with a voxel size of 1.1  $\mu\text{m}^3$  and analyzed with the Dragonfly V3 powder analysis routine. The aspect ratio, equivalent diameter, volume and porosity of the powder were evaluated.

"We consider a perfect powder to be highly spherical, fully dense, and pure," said Mr. Pierre Carabin, Chief Technology Officer of PyroGenesis. "Our powders were sent to an independent lab for analysis, and when tested, reflected a high level of sphericity, little-to-no porosity, with exceptional purity. These combined results make, in my opinion, our powder exceptional in the market."

The second part of the Program, which was performed by an independent university research team, consisted of testing PyroGenesis' powders on one of the most widely installed Selective Laser Melting (SLM) type printers, to produce test parts, collect performance parameters, and generate a MDS specific to PyroGenesis' titanium powders. The results were found to compare favorably with those presently available in the marketplace.

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<sup>1</sup> Wholer's Report 2016

Printer OEMs characterize powders on their printers to provide a MDS which highlights the expected performance of a specific part produced, using a specific powder, on a chosen setting. Typically, printer OEMs provide predefined parameter settings for each material with the goal of optimizing a specific aspect of the print job (for example, one setting may optimize quality while another typically optimizes productivity, i.e. faster build rate).

PyroGenesis worked with the university research team to generate a PyroGenesis' MDS which outlines the performance parameters of PyroGenesis' titanium powders on an EOS M 280 400W printer, at the manufacturer's standard settings, to optimize quality. The results produced equivalent, or better, results than those widely accepted.

PyroGenesis is currently in the process of determining, and generating, two (2) additional performance MDS for the same printer, but now focusing on productivity, i.e. build rate. The first (1<sup>st</sup>) data sheet will be generated using the manufacturer's standard settings for productivity, while the second (2<sup>nd</sup>) will be generated at a setting optimized to take advantage of the specific characteristics of PyroGenesis' powders.

"Given the data received to date, we expect that the build rate will be significantly higher, for the same quality than that currently available," said Mr. Pierre Carabin. "These results are expected within the next four (4) months".

"The economic value of a printer lies in the build rate. The more parts you can print without losing quality implies significant value to the user", said Mr. P Peter Pascali, President and CEO of PyroGenesis. "By making available a competitively priced powder, which could increase build rates, will significantly impact the economics of the printer to an end user."

PyroGenesis will be presenting the results announced today at the upcoming FormNext show in Frankfurt, Germany (Nov 14-17, 2017) in Hall 3.0, Booth G33, wherein the Company will reveal both i) the powder characterization test results and related 3D animated images, as well as ii) the MDS for -53/+20  $\mu\text{m}$  Ti64 grade ELI powders.

#### **About PyroGenesis Canada Inc.**

PyroGenesis Canada Inc. is the world leader in the design, development, manufacture and commercialization of advanced plasma processes. PyroGenesis provides engineering 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 our 3,800 m<sup>2</sup> 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

engineering 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 company on the TSX Venture Exchange (Ticker Symbol: PYR) and on the OTCQB Marketplace (Ticker Symbol: PYRNF). For more information, please visit [www.pyrogenesis.com](http://www.pyrogenesis.com)

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