

HPQ Silicon set to disrupt technology in solar panel market

☒ Last week I had the privilege to sit down with Bernard Tourillion, Chairman and CEO of **HPQ Silicon Resources Inc.** (“HPQ”) (TSXV: HPQ).

On 2 November 2016, HPQ achieved breakthrough in silica/quartz technology in that their processing engineering firm, PyroGenesis Canada Inc (“PyroGenesis”) released a report indicating that PUREVAP™ QRR process is capable of using silicon dioxide (SiO₂) feed material that does not even meet the minimal industry specification to make Ferrosilicon₂ and produce Silicon Metal (Si) of greater purity than what can be achieved by traditional processes used to make Metallurgical Grade Silicon Metal (98.5% to 99.5% Si).

For us non-process engineering experts, let’s unpack what this means and the significance of this achievement.

Silicon dioxide silica, quarts and SiO₂ are synonyms for one of the world’s most common mineral deposits. While high purity deposits are ubiquitous, high purity deposits with SiO₂ above 99% grade and low levels of impurities is rare. As such, the EU began including high purity silica on its critical list in 2014. Moreover high purity silica is recognized as a critical input into making solar panels and the US Department of Justice recognized the need for high purity silica in artillery manufacture.

Until now, high silica purity grades for use in solar panels could only be achieved by refining medium grade silica into high purity metal using the Siemens process.

HPQ commissioned PyroGenesis to develop the PureVAP™ process

which was capable of taking low grade silica material and in a single-step process, developing high grade silica. On the 2nd of November, a significant milestone toward that goal was achieved. Testing are still ongoing with the goal of making material for use in solar panel,

With respect to costs, the PureVAP™ process capex requirements is estimated at around \$18.5/kg Si, compared to \$75/kg for the Siemen's Process in China or \$100/kg in the USA.

The goal now is for HPQ to receive the PureVAP™ patent and to move to a commercial phase with an objective of building around 20,000 tpa of capacity within the next 5-7 years.

With respect to funding, HPQ is entitled to R&D research credits worth about 30% of C\$7.726m from Canada. The project is further eligible for government funding (Provincial and Federal) which will cover 55-80% of the projected costs. Furthermore, over C\$2.77m worth of warrants are already in the money and management hopes to explore several non-dilutive options for financing the pilot plant.

I discussed the business model with well-known traders who prefer to remain anonymous. They indicated that HPQ seems sound, provided they could get a contract with an end user as the solar panel market is said to be "difficult to get a foot in." To this end, what impressed me is Bernard's constant focus on commercialization. He mentioned that already they had been approached by a French solar panel manufacturer to explore synergies.

In my experience, few junior mining projects consider the commercial viability so soon, tending to rather focus on geology, processing and financing. HPQ has focused on the commercial aspects almost from day one, ensuring that they could produce a low-purity material in order to take advantage of the growth of the solar panel market and now already making

contact with potential end-users. An experienced management team, access to finance and proof of concept with a much lower capex estimate. HPQ is definitely one to watch.