

MASON GRAPHITE

MASON GRAPHITE PROVIDES TECHNICAL AND ECONOMIC UPDATE ON ITS COATED SPHERICAL NATURAL GRAPHITE AND OTHER R&D PROGRAMS

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Mason Graphite Inc. (“Mason Graphite” or the “Company”) (TSX.V: LLG; OTCQX: MGPHF) is pleased to provide a detailed update on its Value-Added Products ongoing work and on its Tailings Valorization Program.

Benoît Gascon, President and CEO, commented: “We are very pleased to have achieved all of the objectives that we set when we launched our value-added products program in 2015. Since the beginning of the project, we have followed our rigorous industrial approach targeted at customers’ needs which is why the coated spherical graphite grades we have developed meet all the requirements of electric vehicles Li-ion batteries. Likewise, the acquisition of equipment to set up a pilot production facility fits perfectly with our industrial approach. And by combining the coated spherical graphite plant with the Lac Guéret mine and the Baie-Comeau ore processing plant, Mason Graphite will offer to the end users a fully integrated production chain, from the deposit to the finished products, thus offering a long term, reliable, stable and consistent source of supply.”

COATED SPHERICAL NATURAL GRAPHITE FOR LI-ION BATTERIES

Product development

The work related to the coated spherical natural graphite grades (“CSNG”) development, which covers the purification, the micronization, the classification, the spheronization and the coating processes, has been completed, with success, this fall. The end results are CSNG grades that fully meet the performance required by Li-ion battery makers. CSNG grades were developed for, and specifically meet, the requirements for batteries aimed at electric vehicles; grades were also developed for other applications such as power tools and cellular phones.

The CSNG grades were developed using Mason Graphite’s own fine natural graphite concentrate (< 106 µm, produced through pilot production of the Lac Guéret ore) as feed material and meet the following industry’s requirements:

- Tap density higher than 1 g/cm³;
- Purity above 99.95% carbon;
- Reversible capacity of 355 to 360 mAh/g (milliamperes-hour per gram, for which the theoretical maximum capacity is 372);
- Adequate particle size distribution (10 to 30 µm);
- Appropriate form factor (shape, size and volume of the particles); and
- Specific surface area less than 3 m²/g.

Microphotographs of Mason Graphite’s CSNG grades can be seen at:
<http://www.masongraphite.com/projects/photo-gallery/default.aspx>

The production of about 50 kg of anode material (CSNG) for electric vehicles batteries will be completed imminently and is expected to confirm the electrochemical properties in pouch cell tests, which will be conducted by the National Research Council of Canada (“NRC”), a partner of the program since its beginning in 2015. This material will then be used for product qualifications with customers.

CSNG pilot production facility

In partnership with COREM, Mason Graphite is setting up a CSNG pilot plant. Most of the required equipment is already available at the COREM facility and the Company has placed the order for the acquisition of the micronization, spheronization and classification equipment. This processing line, capable of producing 20 kg per hour of classified spherical graphite, is expected to be commissioned in February 2019. Once operational, the piloting facility will have a production capacity of 500 kg per week. A laboratory instrument for specific surface area measurement is also being acquired by Mason Graphite.

Mason Graphite’s CSNG piloting facility will allow for very short production turn around times, real time quality control and high flexibility to adapt products properties to meet varying specifications. This will result in efficient collaboration with customers to develop products meeting their specific needs.

Commercial interests and future production facility

Mason Graphite has received real and concrete interest from end users and is highly confident that the commercial discussions currently held will lead to supply agreements, once a qualification period is sufficiently advanced. As such, the Company expects facing enough demand to use its entire production of fine natural graphite (<106 microns), which will represent approximately 50% of the Baie-Comeau concentrator output, as a feed for CSNG production.

Hence, Mason Graphite is now considering an initial production facility having a feed capacity of approximately 25,000 tonnes per year. 45% of this feed will be processed into CSNG grades, expected to carry, according to a recent market study, selling prices between US\$9,000/t and US\$12,000/t. Mason Graphite recently conducted a scoping study and the CAPEX for this facility was estimated at C\$135M plus contingencies while the production costs were estimated at C\$3,500/t, thus allowing for highly attractive operating margins. The remaining 55% of the plant feed will result in high purity fine graphite suitable for several applications.

Based on current and ongoing discussions with large multinational end users, the Company expects to fund this incremental business in partnership with customers seeking a source of long term, sustainable supply. Progress on this front will be communicated as discussions evolve.

Having completed the battery materials process development and the equipment testing and selection, a detailed study will be conducted early 2019 to advance the industrial design of the production facility and refine the economics of the project. Detailed engineering of the plant itself should begin shortly after. Following Mason Graphite’s industrial vision, the production facility will be designed with flexibility in mind, to supply customers with products meeting precise specifications and produce large quantities of products on a just-in-time basis.

Additional technical information related to coated spherical natural graphite

Purification

The purity objective of 99.95% minimum carbon content has been met repeatedly using the classical methods of caustic bake and sulfuric acid leaching. These methods have the

advantages of being well known, safe and environmentally friendly. Furthermore, reagents consumptions have been thoroughly optimized through recycling, lowering the operational costs by more than 60% and significantly reducing the quantity of spent reagents to neutralize. The purification recipe was validated multiple times at the pilot scale on batches of 50 to 100 kg and the same positive results were achieved every time.

In addition to the chemical purification done with COREM, other means of purification are being explored. Mason Graphite has been testing thermal purification and carbochlorination. Notably, impressive results were achieved with thermal purification and tests on larger volumes are being planned.

Selection of the final purification method for the industrial facility will depend on costs but also on customers requirements.

Micronization, spheronization and classification

Working jointly with COREM and the NRC, fine natural graphite concentrate was micronized, spheronized and classified with equipment from four different manufacturers. In all cases, the end products met the Li-ion market particle size requirements of 10 to 30 microns and a tap density greater than 1 g/cm³.

Coating

In collaboration with the NRC, the coating process has been developed and optimized: the specific surface area of less than 3 m²/g, required by users, is mastered. The scale-up towards the pilot level is well advanced and expected to be completed by the end of 2018.

Testing in cells

To determine the electrochemical properties of Mason Graphite's CSNG grades, half cells made with samples from different test batches were produced by the NRC and cycled at least 60 times and the reversible capacity of 355 to 360 milliamperes per gram was achieved. Larger scale, pouch cell tests, again at the NRC facility, with at least 100 cycles, are upcoming.

Partners

Mason Graphite would like to take the opportunity to express its gratitude to the Industrial Research Assistance Program ("IRAP") of the NRC, ID Manicouagan and Passeport Innovation (Ministère de l'Économie, de la Science et de l'Innovation du Québec) for their financial contributions supporting this Value-Added Product Program.

OTHER VALUE-ADDED PRODUCT FAMILIES

In addition to the CSNG, other value-added products are being developed. Expandable graphite is a product worth mentioning as it has a wide range of applications, notably in thermal management, flame retardants, insulation, fuel cells and vanadium redox battery products. Mason Graphite coarse concentrates have proven to intercalate and expand very well, with expansion ratios meeting those of comparable products currently available commercially.

The planned value-added products industrial facility will have the capability to produce various grades of purified, micronized and purified-micronized natural graphite.

CONCENTRATOR TAILINGS VALORIZATION PROGRAM

The ore processing plant in Baie-Comeau will generate annually on average 140,000 tons of tailings. The current plan is for these tailings to be filtered and stored in a stockpile, but the

Company launched, more than a year ago, a research program targeted at neutralizing and transforming these tailings into useful, saleable co-products. This would not only increase revenues from the operation but also greatly reduce its environmental footprint.

This program, conducted in partnership with the Centre de Technologie minérale et de Plasturgie ("CTMP"), Dundee Sustainable Technology ("DST") and the Centre de transfert technologique en écologie industrielle ("CTTEI"), is defining the requirements for flotation and calcination of sulphides and the production of sulfuric acid, which has a wide range of industrial and commercial applications. Other resulting products of this process would be gypsum, fine hematite and a neutral product (quartz and silicates), which could be used in civil engineering.

Seven tons of tailings were recently processed in a pilot plant. Testing went according to plan and pending results will be communicated soon.

About Mason Graphite and the Lac Guéret Project

Mason Graphite is a Canadian mining and processing company focused on the development of its 100% owned Lac Guéret natural graphite deposit located in northeastern Québec. The Company is led by a highly experienced team that has over five decades of experience in graphite production, sales, and research and development. For more information, visit www.masongraphite.com.

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