Northern Graphite Files Patent Application for Purification Technology

written by Raj Shah | January 8, 2018

January 8, 2018 (Source) – Northern Graphite Corporation **(TSXV: NGC) (OTCQX: NGPHF)** ("Northern" or the "Company")announces that it has filed an application to patent its proprietary natural graphite purification technology. The patent is entitled "System and Method for Producing High Purity Particulate Graphite using Carbochlorination in an Electrical Resistance Heated Fluidized Bed Reactor." The inventors are Dr. Kamal Adham Ph.D. P.Eng, Sabrina Francey M.A.Sc. P.Eng and Darren Kazmaier P.Eng, all of whom are employees of Hatch Inc. ("Hatch"), and Gregory Bowes, B.Sc. MBA P.Geo., Chief Executive Officer of Northern. The patent relates to the use of chlorine in a specially constructed fluidized bed reactor that was designed by Hatch. Northern has signed an exclusive licensing agreement to use Hatch's Intellectual Property ("IP") in the design, construction and operation of the reactor, which is a key component of Northern's patent pending purification technology.

Graphite mine concentrates must be upgraded with a secondary purification process in order to be used in a number of value added markets, the largest being lithium ion batteries ("LiBs"). The anode material in LiBs is graphite, either natural or synthetic, and there are no substitutes. Natural graphite, which makes up over 60 per cent of the market, must be purified to 99.95%Cg for use in LiBs and some specific impurities must be less than 50ppm. Essentially all of this purification is done in China with the wet chemical approach which is largely based on

the use of hydrofluoric acid. This is difficult and/or expensive to do in the west because of environmental and workplace health and safety challenges. Thermal purification is too expensive and can still require secondary purification prior to use.

As the electric vehicle and grid storage markets expand, the demand for LiB anode material will grow exponentially and it is critical that the west develop an alternative to current graphite purification processes. Benchmark Mineral Intelligence estimates that over 300gWh of LiB manufacturing capacity will be added by 2021. This would require an additional 600,000t of flake graphite **per year** (current production is approximately 650,000t), and all of it has to be purified.

Gregory Bowes, Chief Executive Officer, commented that; “Northern’s patent pending purification technology represents a cost competitive, scalable and environmentally sustainable solution for the lithium ion battery industry.” He added; “This provides the Company with the opportunity to build anode material manufacturing plants, or to license the technology to other manufacturers, in parallel with the development of our Bissett Creek graphite deposit.”

The ability to purify natural graphite with chlorine is well known and has been the subject of prior patents. However, previous processes have achieved very limited commercial success because of the costs associated with high reagent consumption, long furnace retention times, batch processing and the requirement for catalysts and other chemicals. Also, high purity levels were often not achieved and the corrosive nature of chlorine at temperature caused mechanical, structural and safety problems with the furnaces. Hatch’s know how, expertise and IP have facilitated the development of a solution that addresses these issues. Initial lab and bench scale testing, and a fatal flaw analysis and scoping study, have all confirmed the

viability of Northern's process. A pilot plant test is planned to evaluate its performance on a larger scale and to refine capital and operating cost estimates.

Northern's process can also be used as a simple means to increase the purity of flake graphite concentrates to 98 or 99% Cg for many industrial markets or to 99.95%Cg for more advanced uses.

About Northern Graphite

Northern is a Canadian company with a 100% interest in the Bissett Creek graphite deposit located in southern Canada, relatively close to all required infrastructure. Bissett Creek is an advanced stage project that has a Full Feasibility Study and major environmental permit. Subject to the completion of operational and species at risk permitting, which are well advanced, Northern could commence construction 2018 pending financing. The Company believes Bissett Creek has the highest margin, best flake size distribution and lowest marketing risk of any new graphite project, and has the added advantages of low capital costs and realistic production levels relative to the size of the market.

About Hatch Ltd.

Hatch is an employee-owned, multidisciplinary professional services firm that delivers an array of technical and strategic services, including consulting, engineering, process development, and project and construction management to the Mining, Metallurgical, Energy, and Infrastructure sectors. Hatch draws upon its corporate roots which extend back more than a hundred years and its 9,000 staff with experience in over 150 countries to challenge the status quo and create positive change for clients, employees, and the communities it serves. Hatch's mining and metallurgy teams undertake major expansions

and metallurgical plant upgrades from concept to design to construction anywhere in the world. Hatch rebuilds furnaces, introduces new process controls, and develops unique technologies that give its clients a substantial competitive edge.

Gregory Bowes, B.Sc. MBA, P. Geo., a Qualified Person as defined under NI 43-101, has reviewed and is responsible for the technical information in this news release.

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