TSX-V: "VRB"

VANCOUVER, Nov. 8, 2016 /CNW/ - Vanadiumcorp Resource Inc. (TSX-V: "VRB") (the "Company") is pleased to announce the Canadian Government has officially introduced a new mandate for vanadium and energy storage, titled, "Defining Canada's role in a growing vanadium market." This mandate bodes well for VanadiumCorp development of high purity vanadium and vanadium electrolyte (VE) from 100% owned vanadium resources in Quebec, Canada. There is no primary VE production in Canada and USA currently. Canadian vanadium supply would facilitate the renewable energy and grid scale energy storage targets ratified in the Paris Climate Agreement. The Canadian government announcement states: "Currently, there are few vanadium producers able to produce high purity Vanadium Oxide "V_2O_5" and products show significant differences in purity and trace element level"

The entire Canadian Nation Research Council (CNRC) report is below:

Energy storage technologies are expected to increase at an exponential rate in Canada and abroad over the next decade – all positive news for proponents of a greener, more efficient grid. With growth come new opportunities, such as increased demand for graphite, nickel, and lithium used in lithium-ion batteries. Similarly, the vanadium redox flow battery (VRFB) is a promising technology choice for stationary energy storage, and a growing market raises the question – where do we find stable and affordable sources for high-quality vanadium?

How is vanadium sourced?

Vanadium is a grey ductile metal, but does not occur naturally in forms usable in a VRFB. Rather, it is mined in combination with other compounds that must be extracted and processed to achieve sufficient purity for these applications. The purification process ultimately produces vanadium pentoxide (V2O5), which is sourced in three main ways:

1. Co-production – from steel production derived from iron ore mining.
2. Primary production – from mined ore (generates a quarter of the world's supply).
3. Secondary production – from catalysts, ash, and residues.

After V2O5 is produced, it is primarily used in the steel industry for the production of high strength low alloy, full alloy, and carbon steels. But an emerging market opportunity is rapidly developing for V2O5 to be used as the main ingredient in VRFB electrolyte and other vanadium redox battery (VRB) technologies, such as lithium-vanadium phosphate batteries.

What is the outlook for demand?

VRFBs have emerged as a promising solution for grid services because of their long lifecycle potential and high energy capacity, which can provide extended discharge times. Additionally, given the ability to scale power and energy of a system independently, VRFB technology may be a long-term solution for off-grid power systems and micro-grids. In particular, these systems could be used to support residential, community, military, and commercial end-users, and to fulfil remote-energy-access needs of rural areas in developing countries.

Approximately 90% of today's vanadium consumption occurs in the steel industry. About 10% is used for non-ferrous alloys (titanium alloys, super alloys, magnetic alloys) and chemical applications (catalysts, dyes, phosphors). VRFB energy storage applications, in which V2O5 quality requirements are usually more rigorous, accounted for about 1 kt V demand in 2014, compared to global production of 94.3 kt V that year.

Estimates on vanadium requirements for VRFB vary among producers, with an average of approximately 8 Kg of high purity V2O5 per KWh Footnote1. Currently, there are few vanadium producers able to produce high purity V2O5 and products show significant differences in purity and trace element levels Footnote2.

High-performance VRFBs require high quality V2O5; vanadium electrolyte must be at least 99.5% pure. High-purity V2O5 production can be costly if the mined ore or secondary sources used require extra processing to achieve this level of quality. In fact, the cost of vanadium contained in the electrolyte amounts to 42% of the overall VRFB cost. Reducing electrolyte costs by 55% is needed to reduce the cost of VRFBs to make this technology competitive in grid-level energy storage applications Footnote3 Footnote4.

Given cost and quality considerations, vanadium used in VRFBs is about 1% of total current demand; however, demand could increase significantly over the next several years if supply chain and cost challenges are addressed. Considering the potential size of the grid energy storage market, even a slight increase in VRFB demand would mean significant growth in V2O5 consumption for this end-user product. For example, it is estimated that the vanadium consumption in the battery energy storage industry could rise 3100% by 2025, to 31 kt V Footnote5.

What's the opportunity for Canada?

Canada is not currently a primary producer of V2O5 and only 1.3 kilotons of vanadium (kt V) was produced in Canada in 2014 from secondary sources. However, primary production options are in development and untapped secondary sources may produce relatively low-cost, high-quality V2O5 for electrolytes in VRFBs and VRB technologies.

Currently, 55% of global V2O5 production occurs in China, followed by 17% in South Africa, 8% in Russia, and 4% each in the USA and Austria. Canada's production from secondary sources accounted for 1% of global production in 2014.

Given the opportunity for growth, NRC is working on a vanadium market assessment report exploring Canada's role as a potential producer and supplier of high purity V2O5 for North America. To learn more, join us at the upcoming Québec Mines 2016 conference, November 21-24, in Québec City. Leading NRC researchers will provide an overview of preliminary findings on this topic, and a review of VRFB technology.

Footnotes

•Footnote 1- Roskill Information Services Ltd., "The World Market for Vanadium to 2025: Premium Edition," 14th edition, 2015.

•Footnote 2 - Perles, "Vanadium Supply for VRB Applications" (PDF, 121 KB), May 30, 2016.

•Footnote 3 - Lux Research, "Flow Battery Cost Reduction: Exploring Strategies to Improve Market Adoption", 2014

•Footnote 4 - Frost & Sullivan, Emerging Technologies in the Energy Storage Market", 2016

•Footnote 5 - Roskill Information Services Ltd., "The World Market for Vanadium to 2025: Premium Edition," 14th edition, 2015.

About the CNRC:

CNRC is a government of Canada organization. Their mandate is set out in the National Research Council Act. CNRC's vision is to be the most effective research and technology organization in the world, stimulating sustainable domestic prosperity. CNRC's mission is working with clients and partners, we provide innovation support, strategic research, scientific and technical services to develop and deploy solutions to meet Canada's current and future industrial and societal needs.

- 2016-2017 budget: ~$900,000,000
- Over 3,500 employees
- Wide variety of disciplines and broad array of services and support to industry

Energy, mining and environment

NRC Energy, Mining and Environment delivers advanced technology solutions to Canada's resource and utility sectors. NRC's unique technology risk management capabilities help companies develop and maintain a globally competitive position, and support quality improvements and cost reductions for vital products and services delivered to Canadians.

NRC takes a long-term view of industry needs and challenges, working with clients and stakeholders to identify the outcomes that will drive research and technology focus. They apply this focus with multi-year plans that deploy a critical mass of expertise in strategic areas of investment such as electric energy storage and environmental risk management, adapting capabilities as necessary to meet shorter-term market needs.

Collaboration potential:

- Energy Storage for Grid Security and Modernization
  Developing energy storage technologies that offer a good business proposition to electrical utilities and independent power producers.
- High Efficiency Mining
  Reducing costs and increasing efficiency of mining and mineral recovery and processing, including low grade ore and reduced wear and corrosion of rock handling equipment.
- Environmental Advances in Mining
  Reducing environmental costs and liabilities by avoiding harm and accelerating remediation while increasing Canadian mining supply chain market share by de-risking technology development and deployment.

The NRC advantage

NRC's wide-ranging expertise and extensive national and international research and business networks enable clients to manage the risks of adopting globally-competitive, practical technology solutions.

NRC's clients are companies in the mining, oil and gas and environment sectors as well as utilities and independent power producers and their supply chains. We work with the spectrum of renewable and emerging energy technology developers, including bioenergy, wind, solar, hydrogen, fuel cells and batteries. NRC connects producers to end users, working with suppliers and manufacturers to facilitate quick deployment and systems-level integration. We also provide research, testing and demonstration services to government agencies and labs to support the development of public policy and regulations.

The NRC is flexible in their business arrangements to best meet specific client needs. This can range from fee-for-service testing or research contracts to collaborative strategic R&D. They also establish multi-client projects and consortia to connect suppliers and end-users, and channel multi-partner R&D funding and capacity towards targeted innovation goals. Whatever the business arrangement, they deliver industry-driven research and problem solving, bringing deep multidisciplinary capabilities to the development of value-added products and more effective processes.

About VanadiumCorp
Commercialized VRFB energy storage requires the cost reduction potential of VE from a high purity primary source. Development of the only primary North American vanadium supply offers distinct strategic and competitive advantages for Canada for energy storage, national security, aerospace and infrastructure. The VanadiumCorp resources are all close to required infrastructure and easily accessed with high purity vanadium mineralization at surface. VanadiumCorp and its global VRFB partners, Schmid Energy GmBH and others have recognized the value of developing low cost stable supply of VE to significantly reduce the cost/KWH of the VRFB. Preliminary economics and detail will be provided in the Company's much anticipated PEA. News relating to VE processing from The Company's Lac Dore Vanadium Project is also pending. VanadiumCorp's objective is to establish the lowest cost VE supply for North America and the world.

VRFBs are emerging as the technology of choice for grid energy storage and renewable energy. VRBs offer longer life cycle to competing technologies, scalability, superior safety, unlimited capacity and utilize 100% reusable battery material.

VanadiumCorp invites the public to visit www.vanadiumcorp.com for more information.

Cautionary Note - The information in this news release includes certain "forward-looking statements" All statements, other than statements of historical fact, included herein including, without limitation, plans for and intentions with respect to the company's properties, statements regarding intentions with respect to obligations due for various projects, strategic alternatives, quantity of resources or reserves, timing of permitting, construction and production and other milestones, are forward looking statements. Statements concerning Mineral Reserves and Mineral Resources are also forward-looking statements in that they reflect an assessment, based on certain assumptions, of the mineralization that would be encountered and mining results if the project were developed and mined in the manner described. Mineral resources that are not mineral reserves do not have demonstrated economic viability. This preliminary assessment is preliminary in nature; it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the results of the preliminary assessment will be realized. Forward-looking statements involve various risks and uncertainties. There can be no assurance that such statements will prove to be accurate, and actual results and future events could differ materially from those anticipated in such statements. Important factors that could cause actual results to differ materially from VRB's expectations include the uncertainties involving the need for additional financing to explore and develop properties and availability of financing in the debt and capital markets; uncertainties involved in the interpretation of drilling results and geological tests and the estimation of reserves and resources; the need for cooperation of government agencies and local groups in the exploration, and development of properties; and the need to obtain permits and governmental approval. VRB's forward looking statements reflect the beliefs, opinions and projections of management on the date the statements are made. VRB assumes no obligation to update the forward looking statements if management's beliefs, opinions, projections, or other factors should they change.

SOURCE VanadiumCorp Resource Inc.

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