



Well Resources is helping decrease greenhouse gas emissions in the oil and gas industry

Alberta's oil and gas industry is tasked with decreasing greenhouse gas emissions to help meet the federal government's target of achieving net-zero by 2050. Well Resources is helping the petroleum sector decarbonize and diversify with its innovative, patented SELEX-Asp technology.

Well Resources has developed a molecule-based approach that begins by recognizing that not all constituents in a barrel of oil are destined for combustion. Backed by 40 years of research and development, SELEX-Asp upgrades oil by removing natural carbon (asphaltenes) from

petroleum feedstocks. The technology selectively removes dry, granular carbon from heavy crude feedstocks using a high-performance solvent-based separation system. The result is a value-added oil product that requires 50 to 60 percent less diluent during pipeline transport and is easier to process at the refinery, significantly reducing hydrogen and catalyst requirements. As an added benefit, the removed carbon can be used for an assortment of applications, including waterproofing, advanced materials manufacturing, and environmental remediation.

“ A sustainable decarbonization strategy will recognize that not all constituents in a barrel of oil are destined for combustion.”

**- Warren Chung, P.Eng.
President, Well Resources**



Pictured above: Natural carbon produced from the SELEX-Asp

Well Resources was founded in 2006 and its technology has been successfully deployed at commercial scale. SELEX-Asp is patented in Canada, the United States, China, and France, and from 2009 to 2018, the technology was scaled up across five commercial units in Asia. Total installed capacity to date is 36,500 barrels per day (bpd).

SELEX-Asp allows users to meaningfully lower petroleum lifecycle carbon emissions. A significant carbon abatement opportunity is presented when the technology is deployed early in the value chain, as the asphaltenes are normally converted to low-value petroleum coke, which is burned as a solid fuel substitute. For a 25,000 bpd SELEX-Asp unit that removes natural carbon from bitumen-derived residue and uses

this material for non-combustive purposes, it is estimated that up to 1.3 million metric tons per year of CO₂ equivalent emissions can be avoided.

Over the last decade, Well Resources has focused on technology process licensing to deliver solutions to the petroleum sector. While SELEX-Asp has been successfully demonstrated overseas, the company recognizes that the North American market may require a different approach. The company is now considering shifting from its pure process licensing strategy toward operations with an industry partner. This initiative would demonstrate the technology locally while providing project participants with a reliable source of asphaltenes to evaluate local, non-combustive, and value-added applications.

Well Resources holds additional patents relating to the use of the petroleum-derived asphaltenes for environmental purposes and the use of deasphalted oil product for conventional refinery processing. In 2021, it announced a strategic alliance with Edmonton-based Oxygen Solutions. The companies plan to combine prospective uses of

asphaltenes for water treatment with Oxygen Solutions' water oxygenation solutions to enhance productivity in the aquaculture industry.

Headquartered in Calgary, Well Resources is an emerging cleantech company that aims to provide common sense process solutions to tackle society's most pressing issues. The company has adopted a lean approach to research and development, leveraging the established infrastructure of its numerous development partners to rapidly achieve innovation milestones, and using qualified third-party engineering contractors to deliver process licensing products where needed. ■

To learn more about Well Resources and its technology offerings, please visit: www.wellresources.ca.

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