Today, MGX Minerals Inc. reported that its pilot plant for the separation of lithium from oilfield brines is 50% complete. The unit for water purification and pre-treatment has been received and the integration of MGX’s lithium extraction technology is now underway. Once completed, the pilot plant is designed to process 12,000 liters (12 cubic meters) of brine per day and will lay the groundwork for, results dependent, an initial modular commercial plant capable of processing 1.2 million liters of brine per day.

The pilot plant unit for water purification and pre-treatment has arrived to now integrate MGX’s lithium extraction technology.
In case the completed pilot plant demonstrates attractive costs for the extraction of lithium from oilfield brines, MGX Minerals may quickly advance to a major player in the petroleum and lithium sector.

Oilfield brine water, which includes lithium and other minerals, as a by-product from the production of oil and gas is a problem in the oil sector as it must be reinjected into the ground or stored in giant tanks.

A solution to treat brine waters efficiently, and with a profit, is necessary. The extraction and sale of lithium from such brines is thought to make the treatment of oilfield brines profitable.

MGX and its partner PurLucid Treatment Solutions Inc. are confident to have developed an environmentally safe and economically robust process to treat oilfield brines and extract lithium and other valuable minerals.

Both MGX's and PurLucid's integrated technologies are being designed specifically for oilfield environments. In addition to mineral extraction, these combined technologies benefit in cleaning water from oilfield brines, allowing for recycling or potentially controlled release of water, thereby eliminating downhole or alternative storage, which represents one of the largest environmental issues facing the oil and gas industry today.

The first step of the processing involves removing particulate and dissolved material, including dissolved and emulsified oil, colloids and heavy metals, which otherwise may interfere with the mineral extraction phase. This is an essential step in providing a clean and consistent flow of lithium-bearing brine and other minerals to the extraction phase.

The second step of the system has been designed to extract lithium and other valuable minerals from the brine.

The pivotal question is at what costs MGX's technology can extract the lithium from the brine. The pilot plant will soon lay the groundwork to answer this potentially billion dollar question.

Already now, MGX is confident that its technology can produce lithium economically as the company has recently filed a US Provisional Patent entitled “A Method for Extraction of Lithium from Salt Brine”.

The patent covers a proprietary processing method that proposes to recover lithium from brines while altogether eliminating conventional solar evaporation techniques.

The recovery process has been specifically designed and optimized for the highly mineralized brines associated with MGX's Alberta lithium property portfolio. MGX controls mineral rights that encompass more than 376,000 hectares of lithium-bearing oilfield brine properties throughout Alberta. These oilfields currently generate over 1 million barrels per day of salt brine.

MGX is in negotiations, and already has initial agreements in place, with a significant number of major oil and gas operators throughout Alberta.

Once the pilot plant shows robust economics, the commercial units will be scalable and modular, allowing for deployment into small and large oilfields alike.

According to today’s news, MGX and PurLucid have now entered into a definitive agreement which allows MGX to acquire up to 100% of PurLucid. The comprehensive Agreement replaces the binding LOI and outlines an investment plan whereby MGX will acquire an initial 50% interest in PurLucid through investment of up to $5 million CAD over the next 3 years to integrate and commercialize MGX’s lithium extraction technology and PurLucid’s advanced water purification technology.

To date, MGX has invested $90,000 CAD into PurLucid for development and commercialization of its existing patented water purification technology as well as integration of MGX’s patent pending lithium and mineral extraction technology.

Rockstone is looking forward to following the setup and operation of the pilot plant as MGX believes that its technology can extract lithium from oilfield brines profitable thus attracting large volumes of oilfield brines globally.
Petrolithium: The Next Big Innovation In Oil Tech

By Joel Chury on November 9, 2016, for Oilprice.com

When we think of green technology, it’s not often that we picture it pertaining to the oil patch. However, the sector often doesn’t get credit for the massive amounts of innovation that it derives from the brain trusts that are employed by it.

While many consumers are slowly making the switch away from petroleum reliance, to lithium-ion battery powered vehicles, it may come as a surprise to them when they learn that a major breakthrough in lithium production may be bolstered by the big oil interests they’ve made a choice to avoid.

The key connection between these two groups is looking to come from a by-product both parties hold as a concern: brine water.

Often either reinjected into the ground, or stored in giant tanks, brine water is a problem in need of a solution in many parts of the sector. How it is dealt with is a major issue across the continent, when dealing with production of oil in a safe and efficient manner.

Enter the process developed by oilfield innovators MGX Minerals [CSE: XMG] [FKT: 1MG] [OTC: MGXMF], which has been loosely dubbed as “petrolithium.”

By taking on brine water that often accompanies petroleum on its way to the surface, MGX and their processing partners PurLucid Treatment Solutions (whose past clientele included Shell [NYSE: RDS-A, RDS-B], Suncor [NYSE: SU] and Imperial Oil [NYSE: IMO]) are set to rapidly separate out the most valuable minerals and salts from the brine. Among those materials is lithium carbonate, a key component of the green battery storage and vehicle sector.

Not only is MGX setting itself up to potentially partner with big oil and service providers such as Halliburton [NYSE: HAL] or Baker Hughes [NYSE: BHI] in the patch, but also to sell their derived wares to large-scale lithium consumers like Tesla Motors Inc. [NASDAQ: TSLA] or Samsung Electronics.

With a pilot plant set to begin production of lithium in Canada’s Alberta oil patch before the end of the calendar year, MGX is beyond the laboratory stage, and has made a wise strategic move to protect their invention from both a technical and business standpoint.

It’s now not only difficult for other entities to attempt a similar method in the future without the blessing or cooperation of MGX, but it opens up a pathway for a potential big player to take them out entirely. They’re effectively attempting to completely eliminate the solar evaporation phase.

Now, with a combination of land, the method, and an airtight patent, MGX is setting sail for a long play into greener pastures both economically and ecologically within the sector.

Holding the Keys to the Process

Under the terms of the patent, MGX has reserved its rights within the United States (thus protecting them globally) for a year. During that time, MGX will decide which additional countries they’ll want to formally apply for rights in.

If accepted, the patent will then protect the company’s rights to the technology for 20 years.

The patent itself reveals how their plans work in this field, the patent also essentially bolsters MGX into the future as the gatekeepers of using this technology.

What does that mean?

Well, there have been several studies about the legitimacy of lithium production from petroleum brine water done over decades. However, for the most part, those studies have all been done by government offices, and not closely looked at by the private sector.

What MGX has done, is taken the ball and ran with it, by investing in its own R&D, and by securing a massive land position in Alberta’s oil patch to turn into its larger laboratory setting.

While there are brines in other parts of North America, including the often-publicized Clayton Valley in Nevada near Tesla’s Gigafactory, Alberta serves as a perfect setting to grow the process out exponentially.

For starters, there’s already an intricate network of infrastructure in place, including pipelines, electricity, roads,
and several wells already producing oil and water.

Next, former studies have already shown that there are potentially massive commercial levels of lithium just waiting to be sorted out from their current brine state.

Now, thanks to the incoming patent, any group that wants to utilize a similar method of producing lithium will have to gain MGX's blessing or partnership in order to do so.

In essence, MGX just pulled off a major intellectual property coup, and the sector's going to have to line up to deal with them.

And it won't just be oil service companies or producers themselves that stand to be interested in the process. Other sole-lithium producers may also be open to using the technology as well.

How is Petrolithium Different?

The concept of treating by-product water from oil wells isn't new; However, deriving major value from these brines is. Don't think that the lithium producers will ignore this process once it is proven effective.

As it stands, there are two methods of lithium production being utilized today. The first is through solar evaporation, which requires a massive surface land footprint for the ponds, and can have as low as a 50 percent recovery rate of the lithium itself. As well, the process is time intensive, requiring a minimum of 18 months to produce its first sellable lithium carbonate.

The second method is hard rock mining, through conventional mining methods.

So, for consumers of electric vehicles, the source of the lithium that stores the energy in their car to move, isn't a topic they're excited to discuss.

Only a handful of companies are producing lithium in major amounts at the moment. Albemarle [NYSE: ALB] is both producing lithium from the hard rock method in Australia, and producing lithium in the Clayton Valley through solar evaporation methods. Those same solar methods are being used in South America along by SQM [NYSE: SQM] and FMC [NYSE: FMC] as well.

The barrier to entry in this space comes not only in infrastructure setup, but in the economics of production as well. Solar pools are costly to setup, but less costly to produce from, whereas hard rock is less costly to setup, and costlier and labour intensive to produce.

The concept of rapid lithium production from salt brine could be a major game changer, as it's likely to be less expensive to produce as hard rock mining, and exponentially faster, and with a lower footprint than solar evaporation.

The Numbers and Impact

MGX has been aware of the potential of their operation from the very start, as they’ve been working on two fronts: developing the technology, and quietly acquiring land rights to major brine sources.

The projection is to be able to process a million barrels of brine per day, at concentrations of around 50 mg/L, to produce upwards of 14,000 tonnes of lithium carbonate per year.

This is the level of production that MGX has staked its mineral claims over in Alberta, and is working with operators on physical deployment. In terms of deals with existing operators, they’re already in negotiations with most major oil companies in Alberta to meet that million barrels of brine per day projection.

As an example, MGX is already in talks with an operator that is producing 700,000 barrels per day of brine out of a single field. Thus, these numbers are quite significant. And MGX has no plans to stop at just a million barrels, as they plan to expand across the continent and beyond.

Earlier this year MGX announced the acquisition of the Sturgeon Lake project lands, which came with it the potential for 2 million tonne lithium resource attached. Prior to the acquisition, the previous owners came close to celebrating a major resource, before it was deemed non-compliant on the technicality that a demonstrable technology to process the lithium had not been proven yet.

Upon proving that their technology works, it's likely that the compliance regulators will overturn their decision, thus granting MGX the spoils of putting the massive 2 million tonne lithium resource officially on their books—a value of more than $20 billion at the current price of $12,000 per tonne.

But it’s beyond MGX’s own production where the meat and potatoes are. Should MGX achieve their goals, and begin mass producing the equipment they use for the process, they'll be able to move into other markets, and sidle up to even bigger players.

Already, their management has expressed interest in the Smackover Formation, located in East Texas and in Arkansas, as well as off the beaten path in the state of Utah where a handful of smaller producers are eager to better capitalize on their water issues.

Furthermore, there is already a bit of a bottleneck in the sector when it comes to water. The issue of earthquakes caused by drilling activities has been rolled back a bit recently, with the implication that deep level water injection is a more likely cause. The fear from this has caused a log-jam of rapidly filling water storage tanks, especially on the east coast.

Having an option in place that not only allows producers to reintroduce safely treated water back to nature, while also producing valuable minerals definitely gives reason for optimism.

As the project rolls onward in Alberta, look for interest in the petrolithium process to gain major traction quickly, both for the petroleum and lithium sector alike. [Disclaimer]
About MGX Minerals Inc.

MGX Minerals Inc. is a diversified Canadian mining company engaged in the development of large-scale industrial mineral portfolios in western Canada. The company operates lithium, magnesium and silicon projects throughout British Columbia and Alberta.

Previous Coverage

Research #11 MGX assays 34 g/t gold from surface sampling in British Columbia

Research #10 “Official: MGX owns magnesium worth multi-billions of dollars and starts pilot plant shortly”

Research #9 “Ready for significant lithium brine work in Alberta”

Research #8 “Ready for significant lithium brine work in Alberta”

Research #7 “At the forefront of Alberta’s lithium brine riches”

Research #6 “Pioneering Lithium in Alberta: MGX Minerals Teams Up”

Research #5 “Time to Put a Lithium Production Process in Place”

Research #4 “MGX Minerals Taps Into Canada’s Potentially Largest High-Grade Lithium Resources”

Research #3 “MGX Minerals Receives Mining Lease for 20 years (in British Columbia)”

Research #2 “MGX Minerals Accelerates Towards Production”

Research #1 “MGX Minerals Plans To Enter The Magnesium Market In 2016”
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