

Ford Enters a 'Brave New World' in Securing Lithium for Battery Gigafactories to Drive EV Production Surge

written by InvestorNews | May 24, 2023

[Ford Motor Company](#) (NYSE: F) hosted its investor event on Monday and it would appear that in a single investor day presentation the Company has gone from worst to first when it comes to securing battery-grade lithium supplies to scale up its electric vehicle production. I'm pretty sure all these deals didn't come to fruition over the weekend, but they sure made a splash when they were presented on Monday.

In total, Ford announced deals with five separate companies sourcing lithium from all over the world, including Quebec, Chile, Argentina, Australia, and a few U.S. locations sprinkled in for good measure. These latest supply deals announced by Ford complement the [ioneer Ltd](#) (ASX: INR | NASDAQ: IONR) contract [signed in July 2002](#).

Ford Investor Day Lithium Announcements

According to the Ford Investor/Analyst Day presentation transcript (yes I scanned most of the 78 pages and know way more about Ford than I ever wanted to know), they've now sourced about 90% of the nickel and the lithium to meet their future capacity targets, including producing 2 million electric vehicles (EVs) by 2026. On Monday, the Company announced lithium agreements with 3 of the top producing major global suppliers –

[Albemarle Corporation](#) (NYSE: ALB), Chile's [Sociedad Química y Minera de Chile S.A.](#) (aka "SQM") (NYSE: SQM), and [Nemaska Lithium](#).

Nemaska is a joint venture backed by [Livent Corporation](#) (NYSE: LTHM) and the [investment arm of the Province of Quebec](#). According to Ford, these are some of the largest lithium producers in the world with the best quality, existing capacity, and [IRA compliance](#) (although Albemarle does have plenty of Chinese processing capacity but we'll assume Ford knows that).

US-Based Lithium Development Deals

Coupled with these deals with major players to provide stability to its plants, Ford is also investing in U.S.-based development projects through agreements with [Compass Minerals International, Inc.](#) (NYSE: CMP), [EnergySource Minerals LLC](#) (*private*), and the previously announced deal with Ioneer.

The interesting thing about these investments is that Ford is basically pursuing promising technology that has yet to be proven at scale. Ford claims they are developing extraction technologies to further diversify the industry, but if they are betting on the right horse, it could certainly give them a leg up on the competition.

A Bet on Direct Lithium Extraction Technology

Specifically, we are talking about direct lithium extraction (DLE) technology. The Holy Grail for lithium extraction as it seeks to extract the white metal from brine using filters, membranes, ceramic beads, or other equipment that can typically be housed in a small warehouse. It would enable miners to boost

global lithium production with a footprint far smaller than open-pit mines and/or evaporation ponds, which are often the size of multiple football fields.

Compass and ESM are using ESM's proprietary [ILiAD™ adsorption technology](#), which is a DLE technology that competes with what pioneer and [Lithium Americas Corp.](#) (TSX: LAC | NYSE: LAC) are pursuing at their respective projects. The pursuit and potential success of DLE technology is easily an article in itself, and probably well above my pay grade to do it justice.

FIGURE 1: Giga Factory Locations



Source: Ford Investor Day Presentation (May 22, 2023)

Ford to Build 5 New EV Battery Giga Factories

So we'll circle back to the Ford story and talk about why they've locked in several large, multi-year lithium supply contracts. Ford is building 5 new giga factories to produce batteries, with the first two, located in Kentucky and Tennessee, on track to open in 2025. Another plant, in Marshall, Michigan, will be dedicated to producing battery cells using LFP

(lithium iron phosphate) technology.

With respect to the LFP facility, it helps explain one of the lithium announcements noted above, the SQM deal which supplies lithium carbonate. Lithium carbonate is required for LFP batteries versus lithium hydroxide, which is the primary component for the current generation of lithium-ion batteries. Ford now feels it has control of its value chain. Instead of relying on a cell supplier, Ford can now move material around where they need it, so If they wanted to flex more into LFP and use more lithium carbonate, no problem. If the Company wants to swing more towards hydroxide, it can also do that.

Final Thoughts

Granted this isn't original thinking as Elon Musk was the first one out of the gates lining up sources of lithium (and other critical materials) for [Tesla, Inc.](#) (Nasdaq: TSLA), and in January, [General Motors Company](#) (NYSE: GM) [signed a deal](#) with the aforementioned Lithium Americas.

Nevertheless, it seems now that virtually all North American automakers are securing supplies of battery materials to boost EV output as demand for EVs continues to grow, and to take advantage of U.S. tax credits.

It would appear automakers are entering a '[Brave New World](#)'. Which, ironically is a dystopian novel written in 1931 by Aldous Huxley, where the citizens of the World State substitute the name of (Henry) Ford, founder of the Ford Motor Company, wherever people in our own world would say Lord. We shall see if the Ford Motor Company of 2023 will become the messiah of EV production.

Can Standard Lithium's DLE technology be the miracle that helps solve the forecast lithium deficits ahead?

written by Tracy Weslosky | May 24, 2023

The widely forecast [lithium deficits](#) this decade and next will need a miracle to solve the problem. Enter 'Direct Lithium Extraction' or DLE for short.

DLE is a promising new set of technologies designed to extract lithium from projects that are considered unconventional or have lower lithium concentrations. There are several types of DLE such as lithium bonding (adsorption), ion exchange, and solvent extraction.

Today we look at the latest progress of arguably USA's leading DLE company, Standard Lithium Ltd.

[Standard Lithium Ltd.](#) (TSXV: SLI | NYSE American: SLI) is a lithium development company using Direct Lithium Extraction ("DLE") at their projects in the USA. The lithium extraction projects are:

- Southern Arkansas Projects (flagship) – LANXESS JV Project and the SOUTH-WEST ARKANSAS Project.
- Mojave Project – Located at the Bristol Dry Lake in the Mojave Dessert, California.

Standard Lithium uses their propriety 'LiSTR' DLE process and

typically partners with existing projects where they already have a brine product, such as at the LANXESS Project (where Lanxess already produces bromine from brine, but not lithium). Standard Lithium simply ‘bolts’ on their DLE technology to extract the lithium and achieve a high purity lithium chloride solution that can then be converted into battery grade lithium carbonate or hydroxide.

Standard Lithium [state](#) that they have the “most advanced direct lithium extraction technology – industrial scale pre-commercial demonstration plant in installed at the project. Over 5,000 hours of operation.”

Standard Lithium ‘LiSTR’ DLE technology can be used to bolt onto existing bromine or brine operations to extract the unused lithium



Source: [Standard Lithium company presentation](#)

As [announced](#) on September 7, 2022 Standard Lithium is now proceeding with a Front End Engineering Design (“FEED”) Study and a Definitive Feasibility Study (“DFS”) for the first commercial plant, at their LANXESS Project. This progress by Standard Lithium is as a result of their successful demonstration plant validating their technology.

Standard Lithium [states](#):

“This project contemplates processing the brine that is currently being handled by Lanxess at its South Facility, where the Company’s continuously operating pre-commercial Direct Lithium Extraction (DLE) Demonstration Plant is located. The existing brine flow at this location is approximately 3,000 US gallons per minute (usgpm), and using the design criteria of 90% lithium recovery during the DLE process, results in expected

annual production of between 5,000 to 6,000 tonnes per annum (TPA) of battery quality lithium carbonate. This first project at Lanxess South, designated as Phase 1A, forms part of a staged development of commercial lithium projects contemplated by Standard Lithium:

- *Phase 1A Existing brine flow at Lanxess South Plant (design 5-6,000 TPA lithium carbonate);*
- *Phase 1B Expansion at Lanxess South Plant (expected approximately 5,000 TPA);*
- *Phase 2 Lanxess West Plant.....,*
- *Phase 3 Lanxess Central Plant.....“*

Added to this Standard Lithium plan to develop their stand alone South West Arkansas Project (~30,000tpa lithium hydroxide) and others.

The results of the FEED study will be summarized in a NI 43-101 DFS report in H1 2023.

Elon Musk says the lithium refining business (what Standard Lithium is working towards) is a license to print money

In July 2022, at Tesla's Q2 Earnings Call (transcript [here](#)), Elon Musk made his famous comment regarding lithium refiners/processors making great money. He explicitly [stated](#):

“I would like to once again urge entrepreneurs to enter the lithium refining business. The mining is relatively easy. The refining is much harder.....So, it is basically like minting money right now. There is like software margins in lithium processing right now. So, I would really like to encourage, once again, entrepreneurs to enter the lithium refining business. You can't lose. It's licensed to print money.”



[Source](#): Yahoo Finance

All of this is great news for Standard Lithium investors and good news for the auto manufacturers desperate to get future lithium supply.

Of course all of the above takes time and does not solve today's lithium deficit; however, it could be the miracle we need to help solve the increasingly large lithium deficits forecast post-2025.

Standard Lithium trades on a market cap of [US\\$622M](#).

***Disclaimer:** The editor of this post may or may not be a securities holder of any of the companies mentioned in this column. None of the companies discussed in the above feature have paid for this content. The writer of this article/post/column/opinion is not an investment advisor, and is neither licensed to nor is making any buy or sell recommendations. For more information about this or any other company, please review all public documents to conduct your own due diligence. To access the InvestorIntel.com Disclaimer, [click here](#)*

Top 5 lithium junior mines with huge potential in a booming lithium market

written by InvestorNews | May 24, 2023

The lithium sector has been the standout of all sectors in 2021,

led by lithium prices surging higher from about US\$7,000/t to around [US\\$30,000/t](#) in 2021. Ordinarily, you could expect prices to fall back to earth, but in this case, lithium demand is so strong that prices are unlikely to fall back anytime soon.

Bloomberg recently [stated](#): “EVs have lithium booming – and this time, there is no bust in sight. Demand is expected to outstrip metal production for at least the next five years with few new mining projects on the horizon.”

Benchmark Mineral Intelligence recently [stated](#): “Right now lithium demand is growing at three times the speed of lithium supply.”

Furthermore, a November 2020 [UBS forecast](#) is for “lithium demand to lift **11-fold** from ~400kt in 2021 through to 2030.”

Lithium carbonate price graph showing the extraordinary 2021 price gains



Source: [Fastmarkets](#)

Given the above information, it makes very good sense to invest in the potential next tier of lithium miners. Added to this is the trend towards increasing market share of lithium iron phosphate (“LFP”) batteries, which will lead to greater demand for lithium carbonate, best sourced from lithium brine. Right now Argentina offers the best exposure to emerging lithium brine miners.

Top 5 lithium junior miners (in alphabetical order)

1. Alpha Lithium Corporation (TSXV: ALLI)
2. Arena Minerals Inc. (TSXV: AN)
3. Argosy Minerals Limited (ASX: AGY)

4. Galan Lithium Ltd. (ASX: GLN)
5. Lithium South Development Corporation (TSXV: LIS | OTCQB: LISMF)

Alpha Lithium Corporation

Alpha Lithium (Alpha) 100% own 27,500 hectares of the Tolillar Salar in Argentina and 5,072 hectares at one of the leading salars in Argentina, Hombre Muerto. The Tolillar Salar grades are lowish and in the [200-350 mg/L range](#) with Mg:Li ratios between 4.90 and 5.37 which is ok. A big plus is that Alpha has [100%](#) of the Tolillar salar to themselves and has now expanded into Hombre Muerto. Additionally, the two Projects have potential future synergies being only 10 kms from each other.

Alpha is testing their in-house developed Direct Lithium Extraction (DLE) process and has achieved some strong results including lithium concentrations of [9,474 mg/L](#) with significant rejection of impurities. They are also testing DLE with Lilac Solutions (private).

At Hombre Muerto drilling is yet to start but given it is the best salar in Argentina then results could potentially be very good. Alpha's Hombre Muerto tenements are on the outskirts of the POSCO property, noting POSCO paid [US\\$280 million](#) to acquire these from Galaxy Resources. Alpha Lithium is taking a fast-track approach towards reaching production, then planning to ramp up volumes thereafter.

Alpha Lithium trades on a market cap of [C\\$158 million](#) and has loads of potential.

Arena Minerals Inc.

Arena Minerals (Arena) has [two projects](#) in Argentina which are Sal de la Puna (11,000 hectares) in the Pastos Grandes salar, Argentina and Antofalla (6,000 hectares) located immediately

adjacent and south of Albemarle's tenements. Arena also own the [Atacama Copper Project](#) in Antofagasta, Chile.

At the Sal de la Puna Project Ganfeng Lithium has acquired a [35%](#) project share. Ganfeng also owns a [19.9%](#) equity stake in Arena. Lithium Americas also bought [\\$10 million](#) of shares in Arena recently.

Arena Minerals trades on a market cap of [C\\$206 million](#). Great partners but Arena has sold some Project share at Sal de la Puna. Possible takeover target. Copper in Chile is a bonus.

Argosy Minerals Limited

Argosy Minerals (Argosy) owns a 77.5% interest (with a [right to move to 90%](#)) in their flagship Rincon Lithium Project on the Salar del Rincon in Argentina. Argosy also owns the Tonopah Lithium Project in Nevada, USA.

Argosy's Resource is still quite small but should potentially be easily expanded when needed. Lithium grade is a bit below average at 324-369mg/L and the Mg:Li ratio is a bit high. All this means is slightly higher operating costs which is not an issue these days with surging lithium demand and very good lithium prices. Argosy is fully-funded and [45% construction completed](#) towards their plan to expand to 2,000tpa lithium carbonate production with first product by mid-2022. Thereafter the plan is to expand by 10,000tpa lithium carbonate production to have 12,000tpa production.

The big deal about Argosy is that they are already producing at pilot plant stage with large evaporation ponds already built. This makes them one of the most advanced lithium juniors globally.

Argosy Minerals trades on a market cap of [A\\$353 million](#). One of

the very best and most advanced juniors.

Argosy Minerals Rincon Project is already producing battery grade lithium carbonate and working towards 2,000tpa then 12,00tpa LCE



Source: [Argosy Minerals website](#)

Galan Lithium Ltd.

Galan Lithium (Galan) is developing their flagship Hombre Muerto West (“HMW”) Project located on the west side edge of the world class Hombre Muerto Salar. Galan also has the nearby Candelas Lithium Project also at southern edge of the Hombre Muerto Salar. Galan also owns 80% of the exploration stage Greenbushes South Lithium Project which is only 3km south of the world-class Greenbushes mine.

At Hombre Muerto West, Galan has 2.3 million tonnes contained LCE at 946mg/L (very high grade) and a very low Mg/Li ratio of <2.0. When including Candelas, in total Galan has [3.0m tonnes contained LCE @858mg/L](#). Galan completed a very positive [PEA](#) in 2020 with a post-tax NPV8% of US\$684 million.

Galan is doing further drilling in Q4, 2021 with a FS planned for 2022.

Galan Lithium trades on a market cap of [A\\$472 million](#). Top class resource and looking like a future star performer.

Hombre Muerto Salar – Galan tenements (blue outline), Livent (red), Galaxy now Orecobre (yellow), POSCO (white)



Source: [Galan Lithium investor presentation](#)

Lithium South Development Corporation

Lithium South Development Corp. (Lithium South) has 3,287 hectares of tenements [under purchase option](#) at their Hombre Muerto North (HMN) Project, on the northern edge of the Hombre Muerto salar. The Project lies just north of the POSCO and Orecobre projects, and near Livent's very successful lithium mine.

Lithium South has a [M&I Resource of 571,000t contained LCE](#), with a high lithium grade of 756mg/L and a very low Mg/Li ratio of 2.6:1. The Project has potential exploration upside. Lithium South is trialing DLE technology in parallel with proven evaporation technology. Their environmental baseline study is also underway with [Phase 1 recently completed](#). The Hombre Muerto North Project PEA ([based only on](#) some of the claims) resulted in a [post-tax NPV8% of US\\$217 million and 28% IRR](#), based only on 5,000tpa lithium carbonate production over a 30 year mine life. Initial CapEx was estimated at US\$93.3 million and OpEx at US\$3,112/t lithium carbonate. These are excellent numbers, albeit for an initial smaller size production project. Lithium South is working to further expand the resource following some good [TEM study results](#).

Lithium South trades on a market cap of [C\\$67 million](#). Looks very attractive on such a low market cap.

Closing remarks

The above top 5 lithium juniors all have lithium brine projects located in Argentina. All still have reasonably low market caps and all have great potential in the years ahead. The usual risks apply to lithium juniors such as country risk, exploration risk, funding risk, permitting risk, production risk etc. In the case of these juniors, many have run up in price recently so buying in stages can add safety in case there is a price pullback.

If looking to diversify away from Argentina then some other good juniors such as Critical Elements Lithium Corporation (TSXV: CRE | OTCQX: CRECF) (Canada lithium spodumene project), Global Lithium Resources (ASX: GL1) (Australian spodumene project), and Lithium Power International Ltd. (ASX: LPI) (Chile JV lithium brine high grade project) are worth considering.

Best to take a 5 year time frame and remember to diversify. The EV boom has only just begun so lithium still has a great decade ahead.

Disclosure: The author is long all of the stocks mentioned in the article (except Livent and POSCO).