Exro Technologies on making EV motors smarter, through next generation power electronics

It’s a revolution!

If you believe the pundits, the internal combustion engine will be replaced in short order by electric vehicles (EV)…that’s if you believe the pundits. BUT we can safely assume that the trend towards EVs is unstoppable.

Exro Technologies Inc. (TSXV: EXRO | OTCQB: EXROF) is working to make sure that happens. But it turns out, it’s not as easy as you thought. **Just like the evolution of the internal combustion engine, electric motors also need to evolve** – thank goodness for technology.

Remember when cars used to have a carburetor? Darned things too…carburetor jets, bowl floats, one or two barrels etc. And how did you get better performance? You put on a bigger carburetor! Or two. Or more, all leading to way better performance but other complications (ask me how I know…). Then technology saved us and the same engine from the 1980s that received digital computer control (fuel injection etc.) now gets 30% or better fuel economy more horsepower and all sorts of adaptive gewgaws to make driving even more fun, or economical or whatever you need it for.

Surprisingly, the electric motor for transportation also needs a similar technology evolution. The basic design (still valid) of 100+ years ago can be improved and Exro is doing it. The company has been granted 17 patents with another 18 patents pending, so this team clearly knows what they are doing.

What is it? **Exro makes electric motors smarter, through next generation power electronics**. The company has developed a new controller that they call the "Coil Driver". It dynamically enables a single electric motor to have multiple power settings using patented hardware and software. In real-time, measuring torque demand, one motor is now two different motors in the same case. The Coil Driver can automatically select the appropriate configuration so that torque demand and efficiency are optimized. A single motor can repeatedly change configurations on-the-fly and under demand to optimize performance at low speed or high speed. This is instead of having two motors for low or high-speed applications, gearboxes or other expensive technologies.

Wherever electric motors are used, this technology is applicable. It can be as small as scooters/e-bikes to electric busses and long-haul trucking (large) and everything in-between. The company has entered into eight commercial partnerships with leading companies in all of these segments. Imagine, a high-performance electric motorcycle, or an electric snowmobile. These are just two examples of end users of the technology, as the company continues to move forward with proof of concept across all segments. A widely anticipated application will be for use in EVs – the Coil Driver for an electric vehicle in Mexico City is expected soon.

Exro became public through a reverse takeover in 2017 and recently moved to the TSX Venture Exchange (TSXV). The company also raised new equity in July 2020, so the Company is funded for future development costs and ongoing R&D. While the immediate focus is transportation related, Exro is also making significant strides in battery management technology and generator technology. Generators are just like electric motors and can be similarly optimized to gain efficiency and performance, particularly in wind turbines. Thirdly, the company can use its intelligent energy management to improve

battery technology to manage the charge and discharge levels of every cell in a battery pack. Using continuous adjustments, this will provide for a more efficient and longer life span, particularly given the concern for battery life and replacement (and recycling) in EVs.

The company currently expects to be EBITDA positive in the second half of 2023. It currently has a market capitalization approaching C$300 million, although this has seen a near-double as the company has had some positive news in the past two months. While it is too early to say that this is the company to own in your portfolio, management strives to be best-in-class through disruptive technology, perpetual innovation and a focused mission for intelligent electrification. They have clearly figured out electricity and multiple commercial partnerships with global corporations in everything from e-bikes to buses and long-haul trucks makes them the one by which all others will be measured.

Arafura's Rare Earths Resource Intrinsically Competitive

Gavin Lockyer, Managing Director of Arafura Resources Ltd. (ASX: ARU) in an interview with InvestorIntel CEO Tracy Weslosky discuss the Nolans Bore Project's competitive advantage. The asset supplies neodymium and praseodymium. These two rare earths are essential to the magnets found in motors running on graphite batteries. Arafura's extraction program takes advantage of the phosphate infused ore by using the phosphate to digest the ore from within. This cost

effective technique creates residual phosphate acid, providing revenue from the fertilizer industry. Gavin tells us to anticipate the continuation of piloting activities and an upcoming feasibility study.

Tracy Weslosky: It's fantastic to see you all the way over from Australia. For those out there in InvestorIntel, we've been with Arafura for years. You're one of the original rare earth companies we started following in 2008-2009.

Gavin Lockyer: We think that InvestorIntel does a great service. We were happy to support them in any way we can.

Tracy Weslosky: The InvestorIntel audience may remember the boom in the rare earth industry where we went from approximately 7 to 10 rare earth companies to over 500. Can you provide us with an overview of Arafura's competitive advantage?

Gavin Lockyer: I think the obvious one Tracy is around our resource itself. Very few other projects out there are enriched in neodymium and praseodymium as Arafura's Nolans Bore project is. That's a natural competitive advantage. Combine that with the phosphate that gives us operating credit, I think we've got some real advantages over our competitors.

Tracy Weslosky: I'd like to bring up our analyst, Lara Smith, who recently had a headline: "Massive Cash Injection For Anticipated Rare Earth Development." What exactly does she mean by that?

Gavin Lockyer: We came and tested the market earlier this year and we were pleasantly surprised that on the back of the lithium and the battery technology metals the market's now starting to understand that all those batteries must drive an electric motor and that electric motor to be efficient must have neodymium-praseodymium magnets in…to access the full interview, click here

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