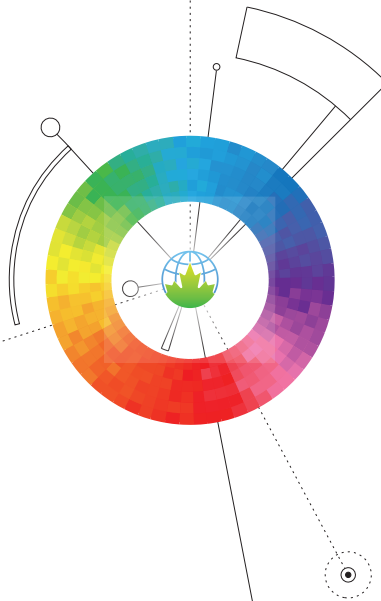


2017
CANADIAN
CLEAN TECHNOLOGY
INDUSTRY REPORT



GUEST EDITORIAL:
EXRO
TECHNOLOGIES



What Do Intelligent Electric Motors and Generators Look Like in the Twenty-first Century?

Tony Hoft

Business Development Lead, Exro Technologies

The renewable energy sector is under continuous pressure to innovate and drive down the costs of energy capture, storage, and use. Despite depressed worldwide oil and gas prices, and vast new US reserves of shale gas, long-term strategies to develop cleaner alternatives will be driven by air pollution in major cities in Asia and elsewhere, the geopolitical advantages of energy independence, and a global consensus on climate change, notwithstanding isolated pockets of climate skepticism.

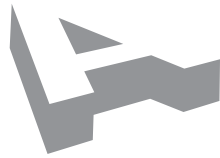
Renewable sources such as wind farms are highly sensitive to the efficiency of energy capture and downtime associated with dated technology and equipment failure. In the past, energy capture improvements of a moderate 2–4 percent led to almost universal adoption of variable pitch blades for large wind turbines, despite the associated capital costs. Exro Technologies' power electronics technology offers the same, if not greater, potential for energy capture improvement and universal adoption. Downstream applications for the technology include variable speed electric motors and reversible motor-generators such as those used in electric vehicles.

Exro designs and integrates its proprietary "intelligent machine" technology into customers' existing electric machine and power electronics equipment, to improve efficiency, weight, and reliability, and deliver the associated environmental benefits across a broad range of renewable resources including wind, run of river, wave, and tide. We license the technology with selected global-reach partners to generate a revenue stream based on economic and environmental benefits to its users that supports our R&D expansion and growth.

We have partnered with a leading producer of unmanned aerial vehicle propulsion systems to integrate our technology into the electrical generation system of a world class product, to deliver a significant competitive advantage and environmental benefits. In discussion with a European organization with vast megawatt class renewable operating assets in Europe, Asia, and elsewhere, we have also identified a potential export market for our technology in the renewable energy sector.

Our technology specialists will work with customer specialists and renewable energy technology partners in academic institutions to build application-specific knowledge through modeling, prototype testing, and implementation. We anticipate proposing modeling and testing projects at the US National Renewable Energy Lab, likely with a US wind partner.

We are optimistic that recent federal moves to price carbon emissions, together with a renewed commitment to increase funding for renewable technology innovation, will re-energize the sector and open space for private investment and high-quality jobs in a critically important sector of the future economy.



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