



Acceleware Backgrounder (TSXV: AXE)

BACKGROUND

Acceleware is an innovator of transformative clean-tech enhanced oil recovery (EOR) technology, focused on contributing to a cleaner global energy future. The Company's RF XL technology uses radio frequency (RF) energy to heat and mobilize heavy oil and bitumen, resulting in **low-cost, low-carbon** production.

RF XL is based upon electromagnetic principles that are well-understood and commonly-used in technologies and daily applications, including soil reclamation and food disinfection.

MISSION

Acceleware will use transformational technology to usher in a new era of responsible and cost-effective petroleum development, resulting in a cleaner brand of energy

HISTORY

Acceleware was founded in 2004 by renowned applied computational electrodynamics and RF expert, Dr. Michal Okoniewski, and three colleagues.

The Company's high-performance computing solutions support companies in the electronics, medical and energy industries. Acceleware's innovations include high-performance electromagnetic (EM) modeling software and pioneering the use of a graphics processing unit (GPU) as a computational platform.

Its initial product, AxFDTD™, earned the distinction of being the first FDA-approved EM modeling software used by manufacturers to ensure the safety of electromagnetic devices. Over the past decade, **this software has been relied upon by cutting-edge companies such as Blackberry, Samsung, LG, Nikon, Merck, Boeing and Lockheed Martin** with applicability in cell phones, wireless devices, aerospace, MRI and other medical imaging machines. It continues to be used in billions of dollars of product development annually and now provides the ability to accurately simulate the use of EM energy in oil production.

In 2010, Acceleware began an extensive research and development program, to design an RF heating technology platform for the oil and gas industry. The engineering team has been focused on a robust surface and well design that has been successfully proven in mechanical, electrical and field testing. This testing demonstrates that RF XL technology can supply reliable energy to oil sands and heavy oil reservoirs safely and efficiently at low cost and with dramatically reduced carbon emissions.

In 2016, Acceleware announced a partnership with GE Research to develop, prototype, test and commercialize revolutionary electronics for RF XL using highly efficient silicon carbide transistors.

Acceleware expects to energize its commercial-scale pilot deployment at Broadview Energy's Marwayne heavy oil site in the second half of 2020, with commercialization anticipated in 2023.

RF XL TECHNOLOGY

RF XL provides reliable heat and cleaner production for the extraction of heavy oil. It is a patented and patent-pending thermal EOR technology that has been under development for over ten years. In that time, Acceleware has undertaken extensive simulation studies, lab and bench scale testing, and has completed a successful high-power field test.

RF XL can result in dramatically cleaner and lower-cost production relative to traditional steam-assisted gravity drainage (SAGD) and can be easily integrated to expand existing SAGD projects. Compared to SAGD, RF XL can reduce GHG emissions by 25 to 100%, eliminate freshwater use, lower overall energy utilization, and improve energy efficiency by 40 to 60%. Benefits of RF XL include up to 67% less land usage compared to SAGD, 50% lower capital cost intensity due to significantly lower requirements for surface facilities, and 40% lower operating costs compared to SAGD, with lower fluid handling and treatment costs, as well as less maintenance.

RF XL meets and/or exceeds all regulatory and safety requirements, including Alberta Energy Regulator (AER), International Commission on Non-Ionizing Radiation Protection (ICNIRP) and Alberta Environment and Parks (AEP).

HOW RF XL WORKS	<p>RF XL uses electromagnetic energy to create steam in-situ using water that is naturally present within the reservoir. This process will mobilize the bitumen or heavy oil, allowing it to flow to the producing well by gravity drainage. The RF XL process involves drilling two RF heating lines into the target zone which are then connected to a power source on the surface. Unlike SAGD, RF XL generates steam right in the formation and does not require the injection of steam into the target zone, eliminating the need for water source wells, water treatment equipment, and steam generators, and avoiding costly chemicals or solvents. In addition to operating and capital cost savings, RF XL can immediately reduce greenhouse gas (GHG) emissions compared to SAGD or other steam-based heavy oil or bitumen extraction processes.</p> <p>Acceleware is also applying machine learning to analyze the process, giving operators better results year-after-year.</p>	
IP PROTECTION	Two patents held; 14 patents pending and applications for an additional eight patents currently being prepared	
OFFICERS	<p>Geoff Clark - Chief Executive Officer Dr. Michal Okoniewski – Chief Scientific Officer & Co-Founder Mike Tourigny – VP, Commercialization, RF Heating Laura McIntyre – VP, Engineering Tracy Grierson – Chief Financial Officer</p>	
EMPLOYEES	17 employees and long-term contractors	
HEADQUARTERS	<p>435 - 10th Avenue S.E. Calgary, AB, T2G 0W3 CANADA Main +1 (403) 249-9099 info@acceleware.com</p>	
FUNDERS	<p>Sustainable Development Technology Canada (“SDTC”) Emissions Reduction Alberta (“ERA”) Major oil sand producer (Name undisclosed) (“MOSP”) <i>Secured non-repayable joint funding from SDTC (\$5.25MM) and ERA (\$5MM); \$2MM from MOSP</i></p>	
KEY PARTNERS	<p>GE Research - https://www.ge.com/research/ Broadview Energy - https://www.broadviewenergy.ca/ Schmid & Partner Engineering AG (SPEAG) - https://speag.swiss/ Scovan - https://scovan.ca/ Computer Modelling Group. (CMG) - https://www.cmgl.ca/ Codeco-Vanoco - https://codeco-vanoco.com/</p>	
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SOCIAL MEDIA	<p>https://twitter.com/acceleware https://www.instagram.com/acceleware/</p>	<p>https://www.linkedin.com/company/acceleware/ https://www.youtube.com/user/AccelewareLtd</p>

TRADING INFORMATION		CAPITAL STRUCTURE	
Symbol	TSXV: AXE	Market capitalization	\$7.9 million
Shares outstanding (basic + diluted)	105.5 million	Net debt (Dec 31/19)	\$0.15 million
Recent price	\$0.075	Management ownership	19%