INTELLIGENT ELECTRIC HEATING:

Invest in an incredible new electrification technology to economically decarbonize industrial heating.

TSX-V: AXE

Industrial Heat is Going Electric:

For over 75 years, companies, academia, and governments from countries around the world have been researching how electrification via radio frequency (RF) energy could improve performance **and** economics in high-cost industrial processes. These include large scale agricultural drying, heavy oil or oil sands processing, and thermal fracturing/drying in mining, among multiple other industrial heating applications.

"THE NEXT HALF-TRILLION-DOLLAR MARKET – ELECTRIFICATION OF HEAT"

Michael Liebreich, Sr. Contributor, Bloomberg NEF

ECONOMICS

The global push towards RF originally stemmed from a drive for improved efficiency versus combustion-based heat.

... and DECARBONIZATION

Now, there is greater imperative and interest in RF heat than ever before, driven by the need to eliminate GHG emissions from fossil fuel combustion.

A BIG PROBLEM:

- Heat accounts for 50% of the world's total energy consumption and 40% of global energy-related carbon emissions, meaning its decarbonization is vital to tackle climate change.[1]
- Industrial heat accounts for 50% of all heat, where it is an essential component of manufacturing, including refining raw materials, smelting metals and producing chemicals.[2]
- This heat results in enormous amounts of energy (and water) waste globally, every day.
- New and transformative innovations are necessary for the sector to economically electrify and decarbonize.
- The market size and impact of decarbonizing heat easily matches what we've already seen in the solar, wind and electric car revolutions.

Acceleware has begun development on several CTI applications.
(see over)

ELECTRIFICATION FOR LARGE-SCALE INDUSTRIAL HEATING

We can deliver **highly economic, decarbonized, electrified RF heat** via CTI, and at very large scale. Our 2 MW CTI has been field tested over several months, and the design can scale up to 10 MW of power. For context, a 2 MW CTI dryer could process 15.5 tonnes of grain per hour using 50% of the energy required by natural gas driven dryers, or could be used to power about 2,000 homes in Alberta.[3]

[1 & 2] Why heat is a challenge in the fight against climate change, and what we can do about it

[3] Energy Resources: Facts and Stats

INTELLIGENT ELECTRIC HEATING

The CTI is the Key to Economic Decarbonization for all Acceleware Heating Applications

RF XL

Heavy Oil Commercial-Scale Pilot of RF XL at Marwayne, Alberta to develop the use of RF energy via CTI on heavy oil heating and production.

Environmental Benefits:
Zero direct GHGs with clean power, eliminates water, less land.

Economic Benefits:
50% lower Capex, 40% lower Opex.

Project Value to Date:
$27 million

Project Operation Start Date:
April 2022, following ten years of R&D

Estimated Completion Date:
Q4, 2023

Market Size:
>$38.8B USD/year

Source: GrandView Research, 2021

Project Stage:
The CTI has been successfully proven and tested up to 2MW over several successive months. A downhole workover of the full RF XL system is underway. Once complete, we will enter final steps of RF XL testing. The CTI can scale up to 10MW of power.

HYDROGEN

Collaboration with Aurora Hydrogen is underway to integrate CTI-driven RF as the energy input for a pyrolysis reactor which could result in the cleanest, most flexible, highly scalable and most economic hydrogen globally.

Environmental Benefits:
Zero direct GHGs, eliminates water requirements.

Economic Benefits:
Could become the world's lowest-cost zero GHG hydrogen.

Project Value:
$4 million

Project Start Date:
TBA

Estimated Completion Date:
Q2, 2025

Market Size:
>$15T USD/year by 2050

Source: Goldman Sachs: Sept 2020

AGRICULTURAL DRYING

Collaborations are in development. CTI for agricultural drying is being explored to improve the efficiency, lower emissions and lower the cost of these drying processes.

Environmental Benefits:
Zero direct GHGs, reduces/eliminates water.

Economic Benefits:
Opex reductions up to 50% PLUS carbon tax elimination = Opex reductions of 70% or more.

Project Value:
TBD

Project Start Date:
TBA

Estimated Completion Date:
Q2, 2025

Market Size:
>$10B USD/year

Source: Market Data Forecast, 2022

MINING

Project underway with the International Minerals Innovation Institute (IMII). CTI, due to its unique ability to scale from 100 kW to 10 MW, could support even very large mining operations by delivering very high power at low operating cost to dry ore or produce thermal fracturing; significantly reducing or eliminating direct GHG emissions.

Environmental Benefits:
Zero direct GHGs, reduces or eliminates water requirements.

Economic Benefits:
Up to 50% lower Opex PLUS zero carbon tax = reductions >70%.

Project Value:
TBD

Project Start Date:
TBA

Estimated Completion Date:
TBD

Market Size:
>$1.3B USD/year

Source: Fact.MR, 2022

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That's Innovation. That's ACCELEWARE.