

Jericho Energy Ventures Leads Investment into New Class of Electrolyzer for Hydrogen Production with Chris Sacca's Lowercarbon Capital and New Energy Technology

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Jericho's Investment Highlights Differentiated Deal Flow and Public Investor Access to Early-stage, High-growth, Hydrogen-related Companies

NEWTOWN, January 18, 2022 - Jericho Energy Ventures (TSXV:JEV)(Frankfurt:JLM0)(OTC PINK:JROOF) ("Jericho" or "JEV" or the "Company") is pleased to announce it has led a Seed Series fundraising round for Supercritical Solutions, Ltd., ("Supercritical"), a Company focused on developing its new class of water electrolyzer for the production of low-cost clean hydrogen. Jericho's USD\$1.78 million lead investment is joined by Chris Sacca's Lowercarbon Capital and New Energy Technology for a total commitment of USD\$3.6 million, which Supercritical intends to use to support ongoing development of its disruptive electrolyzer technology. Existing investors include global mining company Anglo American and Deep Science Ventures.

An underappreciated and fundamental flaw in electrolyzer design is the inability to output hydrogen at the pressures required for storage, transportation, and most end-use-cases. This is due to a number of factors, including the sensitivity of most electrolyzers' membranes to high pressures. As a result, expensive and maintenance-intensive compressors are required to be co-located with almost all electrolyzers, increasing the true cost and complexity of clean hydrogen. Supercritical has developed a new class of electrolyzer who's proprietary membraneless design enables it to exploit the benefits of supercritical water, outputting gases at over 200 bar of pressure. This delivers a step-change in efficiency for the production of hydrogen and eliminates expensive hydrogen compressors in most applications. Supercritical's technology takes direct aim at decarbonizing industrial hydrogen use cases - already a \$120 billion market today. Hydrogen for use in ammonia production and hydrocarbon refining requires pressures of 70-230 bar, with most gaseous storage applications ranging from 350-700 bar.

Big Picture

Hydrogen is a required molecule for our global Net Zero ambition - that's why over 70 Countries have outlined Hydrogen Roadmaps for their decarbonization goals to utilize hydrogen as a fuel, feedstock, and store of energy. Bank of America¹ estimates that hydrogen could inhabit 24% of total global energy needs by 2050, creating as much as \$11 trillion in investment opportunities over the next few decades.

Clean hydrogen is produced by splitting water (H₂O) via renewable supplies of electricity in an electrolyzer. While the market for hydrogen is expected to grow 8x by 2050, with <1% of hydrogen production currently "clean," electrolyzer markets have the capacity to grow 800x, based only on replacing the current carbon emitting hydrogen production used in industrial applications (e.g., ammonia and refining). Increasing applications to include heating gas, biofuels or in mobile or stationary power drives a further potential growth 1000x-4000x larger than current demand, according to a November 2021 report by Jefferies Equity Research². Current industrial hydrogen demand equates to 550-1800GW of electrolysis while global total electrolyzer capacity is estimated at only 3GW today.

Why is this technology disruptive to the Hydrogen ecosystem?

Today's electrolyzers largely use a traditional membrane-based architecture and output hydrogen in the 10-40 bar pressure range. However, the set of applications for low-pressure hydrogen is limited. Almost every hydrogen storage, transportation, or application modality requires expensive multi-stage gaseous

compression which can represent \$1-1.50 / kg or upwards of 25% of the delivered cost of clean hydrogen. For example, in the generation of ammonia (NH₃), a \$70 billion market representing 55% of today's hydrogen utilization, 200 bar pressure hydrogen is required at the input of the Haber-Bosch conversion process. Similar 200-250 bar pressures are seen throughout industry, and 300-700 bar pressures are common in storage and transportation applications.

Takeaway: Due to its low volumetric density (read: it takes up a lot of space), the storage, transportation, and utilization of hydrogen are nearly universally combined with compression for higher pressures. Fully eliminating or significantly reducing the need for costly and fault prone gaseous compression is critical to achieving the lowest cost of pressurized clean hydrogen for most applicable use cases. Supercritical's electrolyzer is the only technology to solve this.

How does the technology actually work?

Supercritical's unique electrolyzer design is able to tolerate and exploit the benefits of electrolysis of water under thermodynamic supercritical conditions - that is, water at high temperature and pressure. Importantly, the bonds between the hydrogen and oxygen atoms of water are weakened and as such require less electrical energy (i.e., lower cost) to split the bonds and free hydrogen atoms. This is important because 70-80% of the levelized cost of generated hydrogen is operating expenses, primarily driven by the cost of electricity.

The challenge traditional electrolyzers face, operating at supercritical conditions, is that their membranes or diaphragms would disintegrate, and their physical structure would fail under these relatively high pressures and temperatures, resulting in failure of the electrolyzer.

Takeaway: Supercritical's innovative design enables the pressurization and heating of the feed water, the performance of electrolysis with reduced electrical energy, while separating the gases and recovering both the oxygen and hydrogen at high pressure.

A video highlighting Supercritical's breakthrough technology can be viewed [here](#).

Don't just take our word for it, other groups are taking notice^{#8230};

Supercritical has already won multiple government grants and accolades with participating partners including the UK Governments Green Distilleries Program with Beam Suntory for USD\$3.97 million, OZ Minerals Experiment "Hydrogen Hypothesis" finalist, "Top 50 to watch for climate action" (Cleantech Group), Top5 Zero Emission Solution to watch in 2022 (StartUS Insights) and Runner-up and People's Choice in Shell's 2021 New Energy Challenge.

Quote

"Jericho Energy Ventures provides a unique opportunity for retail investors to gain exposure to and support innovative, early-stage companies that are on the leading edge of the energy transition. Our emphasis on high-growth hydrogen related themes with a global reach makes sustainable investing simple for every investor," said Ryan Breen, Head of Corporate Strategy at Jericho Energy Ventures. "We are thrilled to lead the Seed fundraising round for Supercritical Solutions and believe the company's new class of electrolyzer has the potential to disrupt the large incumbent industrial hydrogen market, in addition to the exponential opportunity associated with increasing global clean hydrogen production. The blend of world-class co-investors, seasoned management team and first-of-its-kind technology at Supercritical provides a rare investment opportunity that we look forward to supporting and growing."

¹ "The Special 1 - Hydrogen primer," BofA Securities, September 23, 2020

² "Plugging into the Hydrogen Ecosystem," Jefferies International, November 9, 2021

About Jericho Energy Ventures

Jericho Energy Ventures (JEV) is a publicly traded, deep-tech venture capital and incubator platform,

backing world-class Companies, founders, and technologies, leveraged to long-term decarbonization themes including hydrogen, carbon capture and energy storage. We believe the energy transition is complex and needs a specialist approach - making sustainable investing simple for every investor.

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