



NEWS RELEASE

Advent Technologies Announces Availability of Next-Generation HT-PEM MEAs

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BOSTON--(BUSINESS WIRE)-- Advent Technologies Holdings, Inc. (NASDAQ: ADN) ("Advent" or the "Company"), an innovation-driven leader in the fuel cell and hydrogen technology space, is pleased to announce the availability of its next-generation Membrane Electrode Assembly ("Advent MEA"). These MEAs have already been provided for testing to select strategic partners. The Advent MEA is currently being developed within the framework of L'Innovator, the Company's joint development program with the U.S. Department of Energy's Los Alamos National Laboratory (LANL), Brookhaven National Laboratory (BNL), and National Renewable Energy Laboratory (NREL).

Sample of the new Advent MEA – the heart of the fuel cell (Photo: Business Wire)

The first-year milestones already achieved were:

- Accelerated stress testing confirmed the potential for significant (>5x) improvement in lifetime versus current HT-PEM MEAs.
- Strong potential for 2x and 3x power density increase versus current HT-PEMMEAs.

Commercial Progress:

- Advent distributed samples of its MEAs to major Original Equipment Manufacturers for test and evaluation. Advent is now in various discussions for Joint Development Agreements in the Genset, Heavy Duty Automotive, Marine, and Aviation markets.
- Advent intends to scale up the production capacity of Advent MEA in the order of 100s of kilowatts (fuel cell power equivalent) per month in mid-2023 and megawatts per month by the end of 2023.

- Advent intends that both its own products (SereneU, Honey Badger, MZERØ) and 3rd party products will be able to use the new Advent MEAs in mass-production from 2024, according to the Company's growth plan.

Dr. Vasilis Gregoriou, Advent's Chairman and Chief Executive Officer, said, "To put it simply for the sake of our current and future customers and investors, we will soon be able to manufacture fuel cells that last at least three times as long and have double the power density of our previous systems. This development will revolutionize the fuel cell industry. These will be the first PEM-based fuel cells worldwide that can consistently operate above 100oC for more than 10,000 hours and are ideal for heavy-duty mobility. In addition, the HT-PEM technology can support multiple fuels, efuels, and low-grade hydrogen on board and operate under extreme conditions (-38oC to +50oC). The above is essential for mobility and off-grid applications and clearly separates us from current PEM technology competitors. Since our IPO only a year ago, our goal has been to reduce the total cost of ownership of fuel cells to the point that we can replace diesel generators and combustion engines. The mandate from the aerospace, marine, and heavy-duty automotive industry is clear: they want to move to high-temperature fuel cell technology. We believe that we will be able to provide the best product at the best price. We are looking to form Joint Development Agreements with select strategic partners that will enable them to bring the next generation of fuel cells to the market, therefore replacing the need for conventional fuels while producing clean power."

In addition, Advent announced significant progress with its MEA manufacturing scale-up plan, notably:

- A Boston-based team is working on the MEA manufacturing scale-up. The Hood Park, Massachusetts-based facility, is scheduled to be operational in Autumn of 2022. Until then, Advent will use toll coating partners for the first phase scale-up.
- A Patras-based team is working in recently upgraded facilities to produce the necessary monomers, polymers, and ionomers for the MEAs.

Highlighting the progress on the development of the new Advent MEA, Dr. Emory DeCastro, Advent's Chief Technology Officer, stated, "We are delighted about the progress of the L'Innovator program and our long-term partnership with Los Alamos National Laboratory. In the context of our ongoing collaboration, we had the opportunity to share progress updates with leading National Laboratory scientists, including Dr. Yu Seung Kim, Research Scientist at Los Alamos National Laboratory and one of the inventors of the new HT-PEM technology, who expressed the belief that Advent is on the right path for commercialization. We are expecting to continue and increase our collaboration with Los Alamos and the U.S. Department of Energy. At the same time, we are also proud about the completion of our polymer scale-up facility in Patras, Greece, since it will enable us to support the production of nearly 1 M.W. of power per month."

Due to the high-temperature operation, Advent's MEAs – the heart of the fuel cell – can work with impure hydrogen that can be reformed onboard from (e)methanol, natural gas, and other renewable fuels. Once commercialized, the

new Advent MEA is expected to redefine the MEA market globally and further validate Advent's leading position in the electrochemistry components business. Among other things, the new Advent MEA will be able at least to match the performance of today's LT-PEM MEAs, to successfully operate at conditions never thought possible, as well as to significantly exceed the lifetime of Advent's existing MEAs.

About Advent Technologies Holdings, Inc.

Advent Technologies Holdings, Inc. is a U.S. corporation that develops, manufactures, and assembles complete fuel cell systems, and the critical components for fuel cells in the renewable energy sector. Advent is headquartered in Boston, Massachusetts, with offices in California, Greece, Denmark, Germany, and the Philippines. With more than 100 patents issued for its fuel cell technology, Advent holds the I.P. for next-generation HT-PEM that enables various fuels to function at high temperatures and under extreme conditions – offering a flexible “Any Fuel. Anywhere.” option for the automotive, aviation, defense, oil and gas, marine, and power generation sectors. For more information, visit www.advent.energy.

Cautionary Note Regarding Forward-Looking Statements

This press release includes forward-looking statements. These forward-looking statements generally can be identified by the use of words such as “anticipate,” “expect,” “plan,” “could,” “may,” “will,” “believe,” “estimate,” “forecast,” “goal,” “project,” and other words of similar meaning. Each forward-looking statement contained in this press release is subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statement. Applicable risks and uncertainties include, among others, the Company's ability to maintain the listing of the Company's common stock on Nasdaq; future financial performance; public securities' potential liquidity and trading; impact from the outcome of any known and unknown litigation; ability to forecast and maintain an adequate rate of revenue growth and appropriately plan its expenses; expectations regarding future expenditures; future mix of revenue and effect on gross margins; attraction and retention of qualified directors, officers, employees and key personnel; ability to compete effectively in a competitive industry; ability to protect and enhance Advent's corporate reputation and brand; expectations concerning its relationships and actions with technology partners and other third parties; impact from future regulatory, judicial and legislative changes to the industry; ability to locate and acquire complementary technologies or services and integrate those into the Company's business; future arrangements with, or investments in, other entities or associations; and intense competition and competitive pressure from other companies worldwide in the industries in which the Company will operate; and the risks identified under the heading “Risk Factors” in Advent's Annual Report on Form 10-K/A filed with the Securities and Exchange Commission on May 20, 2021, as well as the other information filed with the SEC. Investors are cautioned not to place considerable reliance on the forward-looking statements contained in this press release. You are encouraged to read Advent's filings with the SEC, available at www.sec.gov,

for a discussion of these and other risks and uncertainties. The forward-looking statements in this press release speak only as of the date of this document, and the Company undertakes no obligation to update or revise any of these statements. Advent's business is subject to substantial risks and uncertainties, including those referenced above. Investors, potential investors, and others should give careful consideration to these risks and uncertainties.

Advent Technologies Holdings, Inc.

Elisabeth Maragoula / Chris Kaskavelis

press@advent.energy

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