

Symbio unveils its NextGen Hydrogen Fuel Cell technology at CES

Next Gen StackPacks, highly compact, boost global performance

LYON, FRANCE – December 20, 2022 – Symbio, a top five global player in Fuel Cell technologies, will unveil its updated fuel cell system technology and H2Motive product roadmap at CES 2023 in Las Vegas.

Its fuel cell StackPacks are designed to meet the needs of all mobility applications, covering a large power range from 40kW* to 300kW* that are both highly compact and customized for each customer use case.

Hydrogen fuel cells are widely recognized for enabling decarbonized mobility, addressing the most pressing environmental challenges. Symbio partners with pioneering OEMs to accelerate their deployment of sustainable and competitive H2-powered solutions, without compromising on the mobility experience in terms of range, fast refueling and cargo volume.

Symbio unveils benchmark fuel cell system technology roadmap meeting its customers' needs, pioneering H2-powered mobility



Symbio, a Faurecia & Michelin joint venture, announces that its upgraded StackPack 40 product ("T5") will be mass production ready by the end 2023, in alignment with plans of its key customer and launch partner, Stellantis, to ramp up use of hydrogen fuel cell technology on different platforms. Offering 3.9kW/L stack power density, the lifetime of this 40kW* system has been boosted to reach 7,000 hours despite the extremely demanding use cycles of light commercial vehicle applications.

Symbio is also confirming the development of its NextGeneration StackPack and is announcing more ambitious performance targets for this new technology.

Philippe Rosier, Symbio CEO



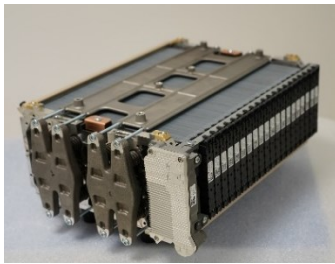
Symbio's over 30 years of system engineering experience and 6 million kilometers road-testing enable us to optimize the size, weight, power and energy efficiency to customize our fuel cell solutions and their integration into every specific vehicle architecture. Furthermore, our product portfolio, which offers unmatched performance, coupled with our fully integrated industrial capacity, provides our customers with a competitive hydrogen-powered mobility and allows to build a more positive future together."

The first version NextGen StackPack (NG1) will be shipped to customers for testing in Q2 2023 and will reach production readiness for small fleets as early as the first half of 2024. Boasting 4.9kW/L stack power density and durability of 20,000 lifetime hours, this 75kW* system can be used in bus, coach and commercial vehicle applications. Symbio will also offer a 150kW* twin-stack system and 300kW* twin-system solutions.

A second version NextGen StackPack (NG2) is already in development. Its market-leading metal bipolar plate technology will enable its stack to achieve a power density of more than 6kW/L. Additionally, its proprietary Membrane Electrode Assembly (MEA) technology will support operating temperatures over 100°C and a lifetime of more than 20,000 hours.

NG2 will allow Symbio to offer benchmark single-stack net power output from 130kW* to 160kW*, needed for the most demanding applications including SUVs, pick-up trucks and heavy-duty trucks. The first systems will be shipped to customers for testing in the first half of 2024, and the start of mass production is expected for the end of 2026.

Launch of a brand-new Full Stack Monitoring (FSM) technology enabling increased stack durability



Finally, Symbio is presenting its brand-new Full Stack Monitoring (FSM) technology that will be deployed on all NextGeneration StackPacks. Thanks to impedance measurement between cells, the FSM enables optimized stack operation, prognostics on future maintenance, and remote diagnostics in case of expected performance variations. These key features of the FSM will make Symbio's fuel cell technology ready for large fleets of vehicles, increasing stack durability by up to 20% compared to existing solutions on the market. Production will start in Symbio's world class gigafactory in 2023.

Rob Del Core, Symbio North America General Manager



Customers who use Symbio's hydrogen fuel cell technology have already logged more than 6 million kilometers of on-the-road testing. We expect that the upgraded StackPacks we are announcing today will help us rapidly expand our marketshare with automakers in the U.S. – especially in the popular SUV and light-duty pickup market segments.”

Symbio is strongly investing in Europe and reaffirms commitment to invest in North American manufacturing

Symbio is investing 1 billion EUR in France, to fast-forward its industrialization and cutting-edge innovation and bring its total manufacturing capacity to 100,000 systems per year in France, all supported by the French and the European Union. Furthermore, the Group plans to expand its manufacturing footprint globally, including the U.S. By 2030, Symbio's goal is to reach 1.5 billion EUR in annual sales with global production capacity of more than 200,000 systems annually.

Philippe Rosier, Symbio CEO



*Symbio's Saint-Fons Gigafactory south of Lyon, France will start operations in the second half of 2023. This plant will be the largest world-class Fuel Cell System manufacturing plant in Europe. All the above-mentioned product and process innovations and Symbio's Saint-Fons Gigafactory are benefiting from the strong support of the French government and European Commission as part of Symbio's Hymotive IPCEI **.”*

Symbio is pleased to participate for the first time at CES at a time when the fight against climate change is gaining momentum in the U.S. Symbio is determined to offer its technology and its expertise to support the country's zero-emission efforts. Symbio North America is therefore gearing up its operations that will greatly contribute to the Group's 2030 objectives.



Symbio North America is building its first manufacturing line in Poway, California -scheduled to be fully operational by early 2023. The company has also been selected for award by the California Energy Commission (CEC) to fund the extension of its manufacturing capacity to assemble fuel cell vehicles and target to reach an annual capacity of 2,000 fuel cell systems by 2025.

The company is leading the vehicle integration effort under the “Symbio Central Valley Express” project that aims at putting a hydrogen fuel cell, regional-haul Class 8 truck demonstrator on the road before the end of 2023. Under this project, also supported from the CEC, Symbio will design, develop, and integrate its fuel cell stack technology, coupled with Faurecia's hydrogen storage system and Michelin's low resistance tires into a Freightliner Cascadia platform. The long-haul truck is to run for 12 months on a challenging 400-mile route in California, showcasing how hydrogen is perfectly suited to decarbonize heavy duty mobility, matching 15-liter diesel truck performance and bringing distinctive advantages including more range autonomy, higher payload, a shorter refueling time and a reduced total cost of ownership relative to other alternative sustainable options (see [Press Release](#)).

Rob Del Core, Symbio North America General Manager



All of these projects demonstrate Symbio's commitment to build a solid ecosystem for fuel cell technologies and accelerate the adoption of the Hydrogen powered mobility in major markets around the world.”

To learn more about Symbio and its technology, come visit us:
CES 2023 / Booth 5400 LVCC, WEST HALL

Or contact us: contact@symbio.one

() Net system power output at beginning of life (**) IPCEI: Important Project of Common European Interest. Hymotive project is funded by the European Union (Next Generation EU), and the French government (France 2030, France Relance)*



ABOUT SYMBIO

Symbio, a Faurecia & Michelin joint venture, is a leading innovative partner for mobility pioneers, with more than 30 years of experience and 6 million kilometers driven. A world reference in hydrogen fuel cell systems, Symbio combines industrial leadership and innovation excellence with entrepreneurial agility to deliver zero-emission mobility.

Whether on-road or off-road, from trucks, vans, buses to logistics equipment or passenger vehicles, its wide range of compact StackPack fuel cell systems meet all requirements for power, durability and range. Symbio is a Stellantis partner in the deployment of the world's first hydrogen-powered light commercial vehicle program.

Symbio has nearly 600 employees committed to building a positive future, helping their customers accelerate the deployment of a clean mobility that respects our environment, our air and our health, without compromising on performance.

Symbio's H2Motive range covers all power and durability needs with single- and multi-stack systems engineered with the associated power management systems, electronic control units, cooling, air, and hydrogen loops that generate and control the electrical power.

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