

For Release: Wednesday, January 19, 2022 at 2:00 p.m. ET

GM Plans to Broaden Electrification, Expanding Fuel Cells Beyond Vehicles

GM's HYDROTEC-based mobile and fixed power systems designed to charge EVs, power worksites, data centers, support the military and even provide emergency power

DETROIT – GM continues to accelerate its growth as a platform innovator and announced today new commercial applications of its HYDROTEC fuel cell technology. HYDROTEC projects, which are currently in development, from [heavy-duty trucks](#) to [aerospace](#) and [locomotives](#), are being planned for use beyond vehicles for power generation.

GM is planning multiple HYDROTEC-based power generators, all powered by GM's Generation 2 HYDROTEC fuel cell power cubes, including:

- A Mobile Power Generator (MPG) to provide fast-charge capability for EVs without installing permanent charge points
- The EMPOWER rapid charger to help retail fuel stations add affordable DC fast charging without expanding the grid
- A palletized MPG to quietly and efficiently power military camps and installations

These fuel cell generators could ultimately replace gas- and diesel-burning generators with fewer emissions at worksites, buildings, movie sets, data centers, outdoor concerts and festivals. They could also back up or temporarily replace grid-sourced electricity for residential and small commercial enterprises at times of power disruption.

Each of these HYDROTEC-based power generators feature zero emissions electric power generation output ranging from 60 kilowatts to 600 kilowatts, along with low noise¹ and heat signatures².

“Our vision of an all-electric future is broader than just passenger vehicles or even transportation,” said Charlie Freese, GM executive director of the global HYDROTEC business. “Our energy platform expertise with Ultium vehicle architectures and propulsion components and HYDROTEC fuel cells can expand access to energy across many different industries and users, while helping to reduce emissions often associated with power generation.”

Mobile Power Generator

GM is supplying HYDROTEC fuel cell power cubes to Renewable Innovations of Lindon, Utah to build the Mobile Power Generator. GM will combine its fuel cell hardware and software with Renewable Innovations' power integration and management systems to create a generator that can provide fast-charging capability for EVs without having to expand the grid or install permanent charging assets in places where there's only a temporary need for power.

Multiple development projects involving the MPG are already in process, including a demonstration of the technology as a mobile charging station for EVs, funded in part by the Michigan Economic Development Corporation and the U.S. Army Combat Capabilities Development Command Ground Vehicle Systems Center. This version of the MPG is expected to first be demonstrated in mid-2022.

“As pioneers and innovators in the hydrogen power space, Renewable Innovations sees exciting opportunities across consumer, business, government and industrial markets,” said Robert Mount, CEO and co-founder of Renewable Innovations. “We've seen that there's a need for EV charging in places where there's no charging equipment, and now we're committed to bringing the best technology and game-changing applications to market with GM to accelerate the company's vision of a zero emissions future.”

The California Energy Commission is funding a separate demonstration program of four additional MPGs through its Mobile Renewable Backup Generation systems program to show how hydrogen-based mobile power can help offset the loss of energy during the planned power shutoffs used to mitigate wildfires throughout the state.

This demonstration is being led by the Electric Power Research Institute, the preeminent independent, non-profit energy research and development organization, collaborating with stakeholders like GM and Renewable Innovations to help ensure the public has safe, reliable, affordable and equitable access to hydrogen-generated electricity.

Retail EV charging stations

In addition to mobile EV charging, GM and Renewable Innovations have collaborated on the EMPOWER rapid charger. Intended to help retail fuel stations add more affordable DC fast charging capability, the EMPOWER rapid charger will help deploy necessary fast charging without significant investment in nonrecoverable electrical infrastructure upgrades, like larger feed wires, transformers and potentially new substations.

EMPOWER rapid chargers can be installed at existing fuel stations or along corridors frequented by travelers only part of the year, such as near national parks or vacation destinations.

The EMPOWER rapid charger, powered by eight GM HYDROTEC power cubes, consumes hydrogen from internal tanks and can DC fast charge as many as four vehicles simultaneously starting at 150 kW with an estimated target full charge time of 20 minutes³. More than 100 EVs can potentially be charged by the EMPOWER rapid charger before the unit would need to be resupplied with hydrogen.

Renewable Innovations plans to deploy 500 EMPOWER rapid chargers across the country by the end of 2025.

Palletized Mobile Power Generator System

GM is designing a separate, palletized version of the MPG and in partnership with GM Defense, will offer this and EV solutions to defense and other customers, such as the U.S. Army Combat Capabilities Development Command Ground Vehicle Systems Center (GVSC), which is currently evaluating the technology. GVSC is also exploring how this version of the MPG can power heavy-duty military equipment and camps. This prototype is equivalent in size to a 60-kW generator and produces nearly 70 percent more power than traditional diesel generators. This MPG variant also contains features not typically found on diesel generators, like battery backup and output regulation.

Powered by a HYDROTEC power cube, this MPG prototype converts offboard, bulk-stored hydrogen to electricity generated with no emissions in operation. It generates less noise than a conventional diesel engine at full load and emits water which can be captured and repurposed in the field.

GM will produce HYDROTEC fuel cell systems using globally sourced parts at its Fuel Cell Systems Manufacturing joint venture with Honda in Brownstown, Michigan. Renewable Innovations will produce the trailer-based MPG and the larger, modular EMPOWER rapid charger at their facilities in the Salt Lake City metro area.

General Motors (NYSE:GM) is a global company focused on advancing an all-electric future that is inclusive and accessible to all. At the heart of this strategy is the Ultium battery platform, which powers everything from mass-market to high-performance vehicles. General Motors, its subsidiaries and its joint venture entities sell vehicles under the [Chevrolet](#), [Buick](#), [GMC](#), [Cadillac](#), [Baojun](#) and [Wuling](#) brands. More information on the company and its subsidiaries, including [OnStar](#), a global leader in vehicle safety and security services, can be found at <https://www.gm.com>.

About Renewable Innovations – Our goal at Renewable Innovations is to accelerate the growth and opportunities within the renewable economy. Our team of industry leaders brings extensive experience and invaluable connections across the Renewable, Hydrogen, and Alternative Energy sectors. Along with our partners, investors, and clients, we are making major technological advancements with products and solutions to lead the world into a new and exciting carbon-free future. Learn more at <http://www.renewable-innovations.com>.

Cautionary Note on Forward-Looking Statements: This press release and related comments by management may include “forward-looking statements” within the meaning of the U.S. federal securities laws. Forward-looking statements are any statements other than statements of historical fact. Forward-looking statements represent our current judgement about possible future events and are often identified by words such as “anticipate,” “appears,” “approximately,” “believe,” “continue,” “could,” “designed,” “effect,” “estimate,” “evaluate,” “expect,” “forecast,” “goal,” “initiative,” “intend,” “may,” “objective,” “outlook,” “plan,” “potential,” “priorities,” “project,” “pursue,” “seek,” “should,” “target,” “when,” “will,” “would,” or the negative of any of those words or similar expressions. In making these statements, we rely upon assumptions and analysis based on our experience and perception of historical trends, current conditions, and expected future developments, as well as other factors we consider appropriate under the circumstances. We believe these judgements are reasonable, but these statements are not guarantees of any future events or financial results, and our actual results may differ materially due to a variety of factors, many of which are described in our most recent Annual Report on Form 10-K and our other filings with the U.S. Securities and Exchange Commission. We caution readers not to place undue reliance on forward-looking statements. Forward-looking statements speak only as of the date they are made, and we undertake no obligation to update publicly or otherwise revise any forward-looking statements, whether as a result of new information, future events, or other factors that affect the subject of these statements, except where we are expressly required to do so by law.

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1. When comparing a typical diesel truck at 40 mph at 50 feet.
2. When comparing diesel combustion exhaust temperature to any point of GM’s HYDROTEC fuel cell power cube.
3. Actual charge times will vary based on battery condition, output of charger, vehicle settings and outside temperature.

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