

GM'S NEW INSANE BATTERIES

General Motors (GM) has been very open about its ambition to spice up the quality of its deals and lineups. GM has always desired to compete on higher levels with brands like Tesla regarding the quality of cars and the profit maximization it will bring. A statement issued by General Motors in 2020 outlined an electric vehicle strategy designed to boost sales in California. The CEO of General Motors, Mary Barra, had pointed out that GM would invest \$20 Billion into optimizing and building better electric and automated vehicles that will dominate the major EV (Electric Vehicles) markets in the US and China. She drew out a plan where this would be achievable in five years. The key to this strategy is a joint venture with LG Chem of South Korea, which aims to increase driving distances to 400 miles or more while reducing costs.

In her words, she said, "We believe climate change is real. The company's aggressive move into EVs will dramatically change the future of this company and our industry." In addition, the state of California and other coastal states have been more receptive to having EVs. This has provided an opportunity for GM to maximize this opportunity and optimize for faster growth beyond this region.

With all of these put together in place, there has not been a clear-cut innovation that will tip them higher than major market participators like Tesla. Well, that changed in 2022 as Mary expounded on the breakthrough GM is working on. This innovation will put them ahead of major market participators. As part of an "EV Day" event in Detroit, the Detroit-based automaker provided details on the battery technology that will be used to power future products like the upcoming Hummer EV, among others. Mary Barra, the general manager of General Motors, says that her company will be selling more EVs than anyone else, including Tesla, by mid-decade.

Since the COVID-19 pandemic in 2020, General Motors has been steadily reeling new products. They took advantage of the recession and made huge money from it. According to Mary, her opinion is that the GM is playing the long game here, and they are playing to WIN. Well, she is indeed winning. GM introduced an update about a new



battery platform for an upcoming EV model. This innovation will help lower the project costs of the vehicle, increase its range and improve the energy viscosity. In the automobile industry, this is a very strong claim.

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Tim Grewe, the General Director of Electrification Strategy and Cell Engineering at General Motors, said, "We're at what we call the STS development center where principally we bring all the constituents for Ultium together and make sure that they work duly together and as individual factors."

The basic truth is Electric Vehicles need batteries. It is an existent reality that determines the functionality of EVs. This is exactly what GM is working on. GM has partnered with LG Chem, their long-term partners, to produce a personal Ultium Battery. This battery will be fixed on GM's third-generation EV platform. The battery cells are crafted using new low-cobalt chemistry. It is projected to be produced for \$100/kWh. This is a breakthrough in the EV market as earlier models of GM's batteries, the Bolt EV batteries, were around \$145/kWh

It is not for a battery to be great; it also has to be cost-effective to succeed when commercialized. That creates a need to have a platform where it can be ground on a standard armature on various vehicles. GM's BEV3 platform will be utilizing its in-house designs for its EVs. In addition, the "performance all-wheel drive" vehicles will be supported, along with different variations of frontal, hind, and all-wheel drive. The things you'll see will include everything from exchanges and SUVs to cross-overs and buses.

The company's first generation of its EV program will be very profitable and open up the



company to further cumulative growth. This innovation can help them meet the market demands and even surpass their initial goal of selling 1 million vehicles by 2025.

GM plans to release as many as 30 new EV models by 2025, saying it will only produce ICE passenger vehicles as heavy-duty replacements by 2035. By comparison, the new Ultium system will cost close to \$100 per kWh, a tenth of what the batteries for the 2010 Volt cost, and at a price point that will eventually lead to profitable EV deals.

Compared to the standard EV, its cost is reduced by more than 90 percent, giving it a significant price advantage over Tesla's EVs. However, Tesla is still challenged by the price of 4680 batteries, and GM can use this weakness to compete with it to be the market leader.

Let's take a look at the major advantages of GM's new battery innovation:

- Firstly, the Ultium battery has an optimal design. GM's high-energy battery cells have a modular design, unless the conventional spherical battery cells. With this design, the cells are compact and are stacked up like slices of toast. This arrangement makes it easy to optimize the vehicle's layout, energy viscosity and, consequentially, further long hauls to a single charge at a lower cost.
The Ultium battery system uses a poke-type lithium-ion cell with a size of 23 by 4 by 4 dimensions and a weight of about three pounds, with a gross energy capacity of 0.37-kilowatt-hours. Ultium packs will have a functional capacity ranging from 50 to 200 kWh and have a range of 450 long hauls.
- Another special feature of the Ultium battery is its flexible engineering. The battery's electronic factors will be embedded within the modules, alleviating 80% of the battery pack wiring compared with current batteries. GM's ability to mound long poke cells vertically or horizontally in modules is unique in its aim to conserve space.
- The third advantage GM's Ultium has is ethical providence. The company is



committed to making ethical and prepared investments in batteries so you can drive the EVs you love. The Ultium battery cell technology utilizes a state-of-the-art nickel, cobalt, manganese, aluminum, or NCMA chemistry that reduces cobalt content by more than 70 percent.

LG Chem will manufacture Ultium cells at two new GM plants in Ohio and Tennessee. In addition to the 30 gigawatt-hours of capacity, the facility will enable in-house battery manufacturing, which is crucial to increasing the affordability of EVs. Auto and motorists estimate that the shops will be able to power about 750 000 vehicles with a combined capacity of 70 gigawatt-hours 'worth of batteries per time by 2023.

Since the introduction of the volt, GM has purchased batteries and numerous other components from LG, and during this time, both the chemistry and size of the cells have evolved drastically.

Ultium batteries are really commodities to look at regarding their charging time performance and price. Ultium batteries provide up to 450 miles of range on a charge while weighing a quarter of the weight and costing about 40 percent less than GM's previous batteries. A vehicle that can go 450 long distances on a single charge would be considered a long-range vehicle in America. As it is, the Tesla Model S can go only 405 miles on a single charge. In any case, GM's Ultium battery pack does have a per-kilowatt-hour cost of less than a hundred dollars. If you are counting on it and the home competition, GM's Ultium will be in a different league as it will drive more demand for its EVs.

Mary noted that most of the vehicles sold in the United States last year were luxury models bought by people who owned at least two vehicles each. General Motors' current models fall into that category. For example, the company offers an electric Hummer pickup that sells for around \$110,000 and a luxury sport-utility, the Cadillac Lyriq.

For electric vehicles to capture 100 percent or even 50 percent of the market, she said



there must be affordable models. You must provide entry-level models in the market.

According to Guidehouse Insights analyst Sam Abuelsamid, GM's strategy should result in cost advantages in the long run. Still, it is unclear just how significant the savings will be and how long the advantage will last. Nevertheless, the timing seems to be right for the moment for customers to be interested in electric trucks.

GM and LG will build four battery plants together this year, with the first starting in Lordstown, Ohio. In addition, there are plans to use the packs in three Chevrolet SUVs coming out next year that GM is hoping will sell briskly - a pickup truck, the Equinox, and the Blazer.

General Motors plans to produce batteries at three more plants in 2023, 2024, and 2025. These plants will supply the company with equipment to equip more than a dozen electric vehicles it plans to market in the United States. Which type of battery do you suppose will dominate the EV request in the future, GM's Ultium or Tesla's LFP. Let me know in the comment section below.

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