



## Microvast makes batteries smarter and safer: New battery management system BMS 5.0 improves safety and extends battery lifetime

September 19, 2022

- Microvast's new BMS 5.0 is a smart device increasing battery lifetime.
- BMS 5.0 meets **automotive functional safety "ISO 26262"** and **automotive cybersecurity "ISO 21434"** standards.
- Fully **configurable for all Microvast cell chemistries and battery characteristics**.

STAFFORD, Texas--(BUSINESS WIRE)--Sep. 19, 2022-- Microvast Holdings, Inc. (NASDAQ: MVST), a technology innovator that designs, develops and manufactures lithium-ion battery solutions, today announced the fifth generation of its Battery Management System, called BMS 5.0. The system is expected to be available late 2023.

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(Photo: Business Wire)

The **Battery Management System (BMS)** is the **brain of the battery pack**, a critical component that measures cell voltages, module temperatures, and battery pack current. It also detects isolation faults and controls the contactors and the thermal management system. The battery management system consists of electronics and software to protect the operator of the battery-powered system and the battery pack itself against overcharge, over-discharge, overcurrent, cell short circuits, and extreme temperatures.

### Highlights and differentiators of BMS 5.0:

Microvast's new **BMS 5.0 supports a lower total cost of ownership by extending the battery pack lifetime** through more efficient and accurate measurements of the state of charge, health, and power. The BMS 5.0 has been developed with safety and security first engineering practices, which improves overall vehicle safety and eliminates catastrophic failures through **meeting automotive functional safety "ISO 26262" and automotive cybersecurity "ISO 21434"** standards. Microvast's BMS 5.0 has **built-in digital twin** technology, which **enables early prediction and prompt maintenance**.

- **De facto battery state estimation standards:** State of charge estimation accuracy with a minimal error rate using the closed-loop SOC estimation strategy based on Kalman filtering, ampere-hour integration, static correction, two-terminal correction, and proprietary algorithms. Data-driven machine learning and physics-based models with cloud support, including self-learning online simulations and computation of capacity and internal resistance, monitoring remaining useful life (RUL) and state of health (SOH) with negligible accuracy error rate.
- Fully **configurable for all Microvast cell chemistries and battery characteristics**.
- **Microvast's 3P** (Predict-Prevent-Protect) safety management: Microvast's Digital Twin **protects** cells from damage, abuse or failure by actively intervening with software controls and specialized electronics to **predict** internal resistance, failures and isolating the failing components to **prevent** failures for the rest of the battery pack. BMS 5.0's thermal runaway detection identifies cell failures and supports two-way wake-up of primary and replica boards during hibernation with pressure detection sensors.
- **State of the art equalization:** Maximum battery pack capacity based on the custom consistent power balancing strategy.

### About Microvast

Microvast is a technology innovator that designs, develops, and manufactures lithium-ion battery solutions. Microvast is renowned for its cutting-edge cell technology and its vertical integration capabilities which extend from core battery chemistry (cathode, anode, electrolyte, and separator) to modules and packs. By integrating the process from raw material to system assembly, Microvast has developed a family of products covering a

breadth of market applications, including electric vehicles, energy storage, and battery components. Microvast was founded in 2006 and is headquartered near Houston, Texas. For more information, please visit [www.microvast.com](http://www.microvast.com) or follow us on LinkedIn or Twitter (@microvast).

#### **Cautionary Statement Regarding Forward-Looking Statements**

This communication contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements include, but are not limited to, statements about future financial and operating results, our plans, objectives, expectations and intentions with respect to future operations, products and services; and other statements identified by words such as “will likely result,” “are expected to,” “will continue,” “is anticipated,” “estimated,” “believe,” “intend,” “plan,” “projection,” “outlook” or words of similar meaning. These forward-looking statements include, but are not limited to, statements regarding Microvast’s industry and market sizes, future opportunities for Microvast and the combined company and Microvast’s estimated future results. Such forward-looking statements are based upon the current beliefs and expectations of our management and are inherently subject to significant business, economic and competitive uncertainties and contingencies, many of which are difficult to predict and generally beyond our control. Actual results and the timing of events may differ materially from the results anticipated in these forward-looking statements.

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Sarah Alexander  
[ir@microvast.com](mailto:ir@microvast.com)  
(346) 309-2562

Source: Microvast Holdings, Inc.