Best Electric Machine (BEM) Launches SYNCHRO-SYM™ — A Physics Proven Electric Motor Breakthrough

Best Electric Machine (BEM) launches SYNCHRO-SYM commercialization program, the only active-rotor motor with no rare-earth, twice nominal power, low cost & loss

Best Electric Machine Logo – Representing SYNCHRO-SYM™

BEDFORD, MA, UNITED STATES, October 28, 2025 /EINPresswire.com/ -- Best Electric Machine (BEM) today announced a democratized commercialization-funding initiative to bring its patented SYNCHRO-SYM™ electric-motor system into production. Unlike every other EV-motor architecture built around the asymmetry of a passive rotor using rare-earth permanent-magnets (RE-PM), slip-induction windings, reluctance saliencies, or DC field windings, SYNCHRO-SYM employs an optimum, symmetric circuit and control design in which both stator and rotor actively perform power conversion. The clear result, in accordance with physics: twice the power density with roughly half the loss and cost per kW, and zero rare-earth magnets—all within the same voltage, frequency, and package as conventional systems.

Backed by decades of development and verified through theoretical studies, prototype testing, and CAD-based cost modeling, SYNCHRO-SYM delivers 2× the nominal performance-to-price of today's RE-PM motor systems while eliminating inverter DC-link losses and supply-chain dependence on critical rare-earth materials.

"Where competitors rearrange package geometry, we optimize to the physics," said Frederick W. Klatt, CTO of BEM. "SYNCHRO-SYM technology doubles the real nominal working power from the

same package geometry, improves efficiency and lowers cost because both sides of the machine work. It's the only technology that breaks the rare-earth permanent-magnet bottleneck without sacrificing performance."

BEM's commercialization program focuses on EV propulsion, including in-wheel motor systems, followed by wind-turbine and electric-aircraft markets, using its patented MOTORPRINTER™ additive-manufacturing process for reprogrammable, just-in-time U.S. production of axial-flux configurations. The company seeks partners and early-access customers to aggregate an initial 2,000 units from the ten-million-unit annual market for its first production run of the gearless 72 kW (144 kW peak) to 280 kW (560 kW peak), 2,700 Nm torque, 21 kg (46 lb), 335 mm (14 in.) diameter × 100 mm length SYNCHRO-SYM motor "system" platform (including integral controller).

Key Highlights
• Symmetric circuit & control: Both stator and rotor deliver real power—inherently integrated and symbiotically unified circuit and control architecture, not today's afterthought.
• RE-PM-free: Eliminates neodymium and dysprosium dependence, improving sustainability and freeing a majority of these materials for other strategic applications.
• Fully-Integrated BRTEC™ controller: Direct AC-to-AC conversion, no DC-link, controls only half the current.
• Proven design: Validated by classical electromechanical theory, CAD simulation, and prototype testing. Supported by more than a century of academic validation of symmetric energy conversion.
• Manufacturing ready: 3D-printing by MOTORPRINTER™ process for rapid, domestic production—enabling amorphous or nanocrystalline cores.

BEM is currently engaging commercialization investors and OEM collaborators to scale domestic production and accelerate SYNCHRO-SYM deployment across next-generation EV and renewable-energy platforms.

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About Best Electric Machine DBA Engineering Devices Inc.
Best Electric Machine develops and manufactures advanced symmetric electric-machine systems and integrated controls for mobility, wind, and aerospace applications.
For more information, visit www.bestelectricmachine.com or contact info@bestelectricmachine.com.

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