

Best Electric Machine (BEM)



8/2/2026

Commercializing The First Brushless Active-Rotor Electric Motor-Generator System Architecture

SYNCHRO-SYM™

- Rare-Earth-Free Electric Machine (Motor-Generator) Systems
(EMS)

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DBA Best Electric Machine



The EMS Problem

Today's Electric Vehicle Industry Depends on:

- Conventional passive-rotor EMS architectures
- Rare-earth permanent magnets

Approximately 85% of EVs utilize the rare-earth permanent-magnet EMS.

Today's Passive-Rotor Challenges:

- Rare-earth supply-chain concentration
- Strategic-material dependence
- Cost and supply-chain volatility
- Supply-chain and domestic manufacturing risk
- Passive-rotor architecture near practical performance limits

Manufacturers seek alternatives that reduce rare-earth dependence without sacrificing performance.



The EMS Solution

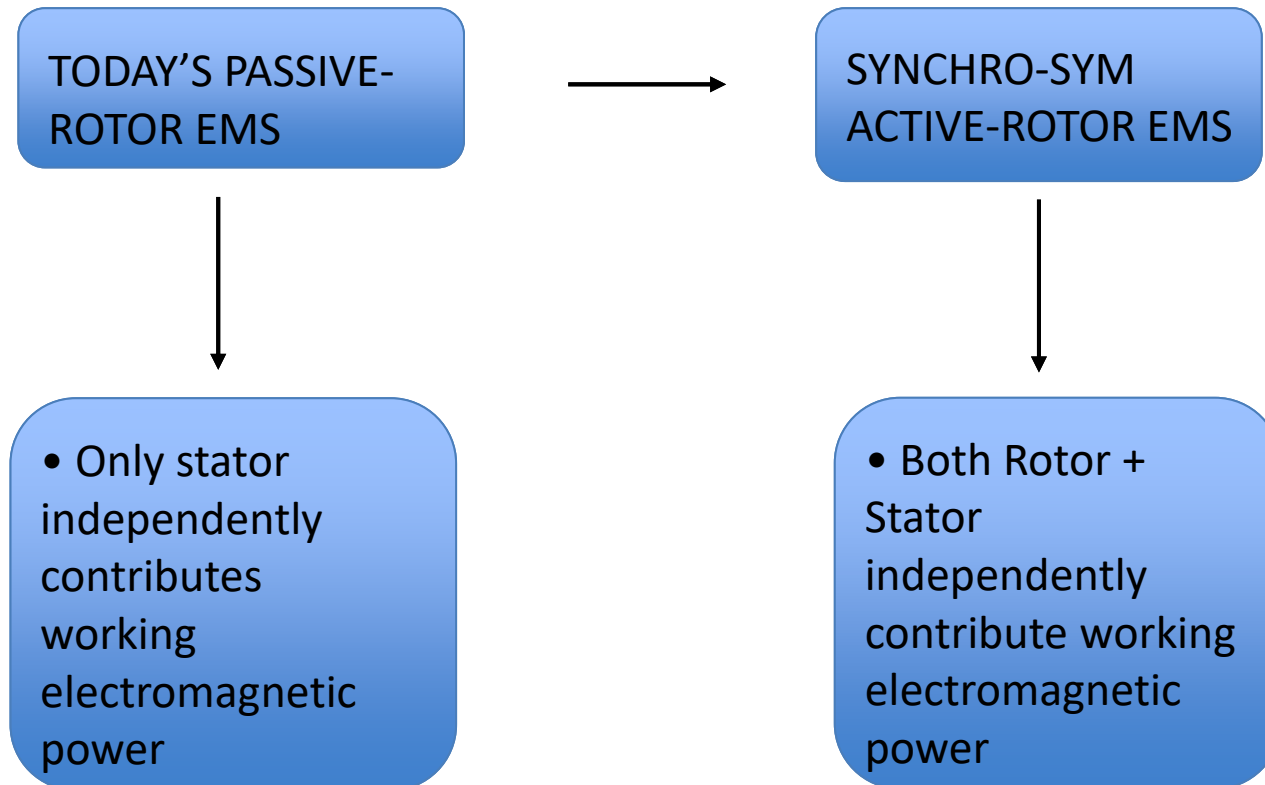
Conventional EMS	≠	SYNCHRO-SYM™
Passive Rotor – Establishes Airgap Flux	≠	Active Rotor – Establishes Airgap Flux + <u>Contributes Directly to Torque and Power</u>
Dependent on Rare-Earth For Best Performance	≠	Independent of Rare-Earth
	≠	Better Utilization of Core
Stator Rated Power = 1x Power Rating	≠	Stator + Rotor Rated Power = 2x Power Rating
	≠	Reduced Material, Higher Efficiency per kW

SYNCHRO-SYM™: Both the active-rotor and active-stator independently contribute working electromagnetic power

Integrated Technology -Electromagnetically



8/2/2026



Integrated Technology -Architecturally



Asymmetric EMS
- Today

Active-Stator
•Independently
contributes
working
electromagnetic
power

Passive-Rotor
•Does not
Independently
contribute
working
electromagnetic
power

Induction

Reluctance

RE-PM

interchangeable

Field-Winding

Symmetric EMS
- SYNCHRO-SYM

Active-Stator

Active-Rotor

•Both the active-rotor and
active-stator independently
contribute working
electromagnetic power

Next Logical Progression

Asynchronous Principles

Synchronous Principles



Why Now?

SYNCHRO-SYM™ Technology Enablers:

- Modern power electronics, high-frequency magnetics
- BRTEC™
- BEM-CAD™
- MOTORPRINTER™

SYNCHRO-SYM™ Strategic Drivers:

- Rare-earth geopolitics
- Electrification market growth
- Supply-chain concerns
- Domestic Manufacturing, U.S. Technology Leadership

What was once a long-range technical vision is now commercially achievable.

Validation



1984

1996

2000-2020

2020-2025

Today

- First Active-Rotor Patent

- Lincoln Electric
- \$4M Proposal
- 8% Royalty

- BRTEC™
- BEM-CAD™

- Axial-Flux Form
- MOTORPRINTER™

- Commercialization

Commercialization risk has been substantially reduced through four decades of development, validation, and engineering refinement.

Technology Platform Opportunity



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\$130 Billion Annual Opportunity

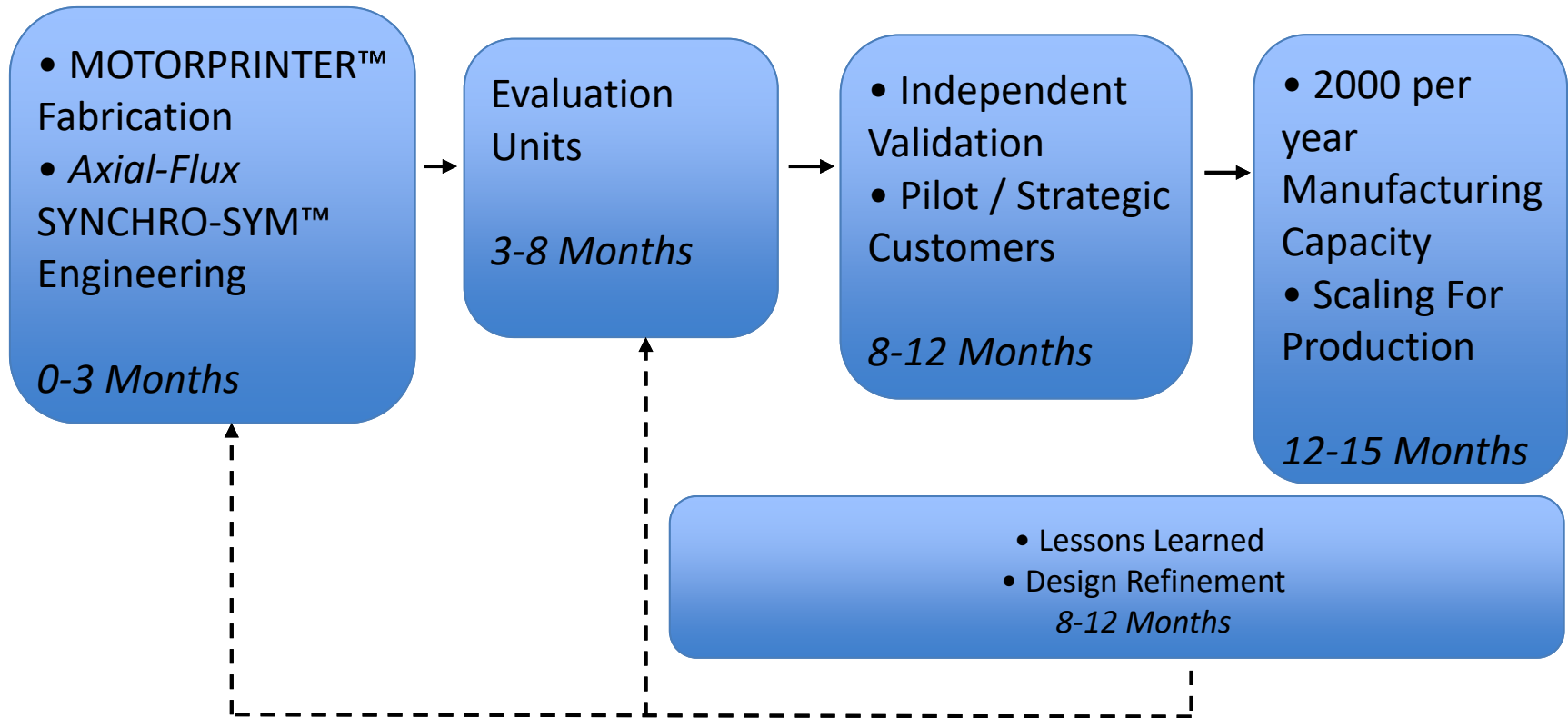
Applications:

- Electric vehicles
- Marine propulsion
- Aerospace propulsion
- Defense systems
- Industrial drives

BEM is not commercializing another motor-generator system. BEM is commercializing the first practical active-rotor electric machine platform technology.

\$10M Commercialization Plan

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Unlike conventional programs, BEM's \$10M program simultaneously delivers both production-ready technology and programmable domestic manufacturing capability.₉

Competitive Position



Conventional EMS	≠	SYNCHRO-SYM™ EMS
Passive Rotor	≠	Active Rotor
<u>No Direct</u> Rotor Contribution to Torque or Power	≠	<u>Direct</u> Rotor Contribution to Torque and Power
Rare-Earth Dependent For Performance	≠	Rare-Earth Free
RE-PM supply-chain risks	≠	Eliminates RE-PM supply risks
Conventional Manufacturing → optimized for radial-flux form	≠	MOTORPRINTER™ → enables axial-flux form
Passive-Rotor Architecture Near Performance Limits	≠	Substantially Greater Remaining Performance Potential

Significantly improve performance while reducing dependence on strategic materials.



What We Are Seeking

Strategic Relationships Are As Valuable As Capital

Strategic:

- Accelerators
- Introductions
- Independent evaluators

Commercial Support:

- Manufacturing partners
- Long-term investors
- Pilot customers

Success Metrics:

- Independent validation
- Customer adoption
- Production manufacturing



Our Vision

Commercialize the next generation of rare-earth-free, brushless active-rotor EMS architecture.

Mission:

- Create the next generation of rare-earth-free electric propulsion systems.

Current Focus:

- Commercialization of the axial-flux implementation of SYNCHRO-SYM™ using MOTORPRINTER™ manufacturing technology.

Fred Klatt, CTO

www.BestElectricMachine.com