

ecm

Printed Circuit Board Stator Technology

REDEFINING ELECTRIC MOTOR DESIGN

Motor as software

ECM PCB Stator Technology redefines how engineers **interact with motors.**

Purpose built solutions

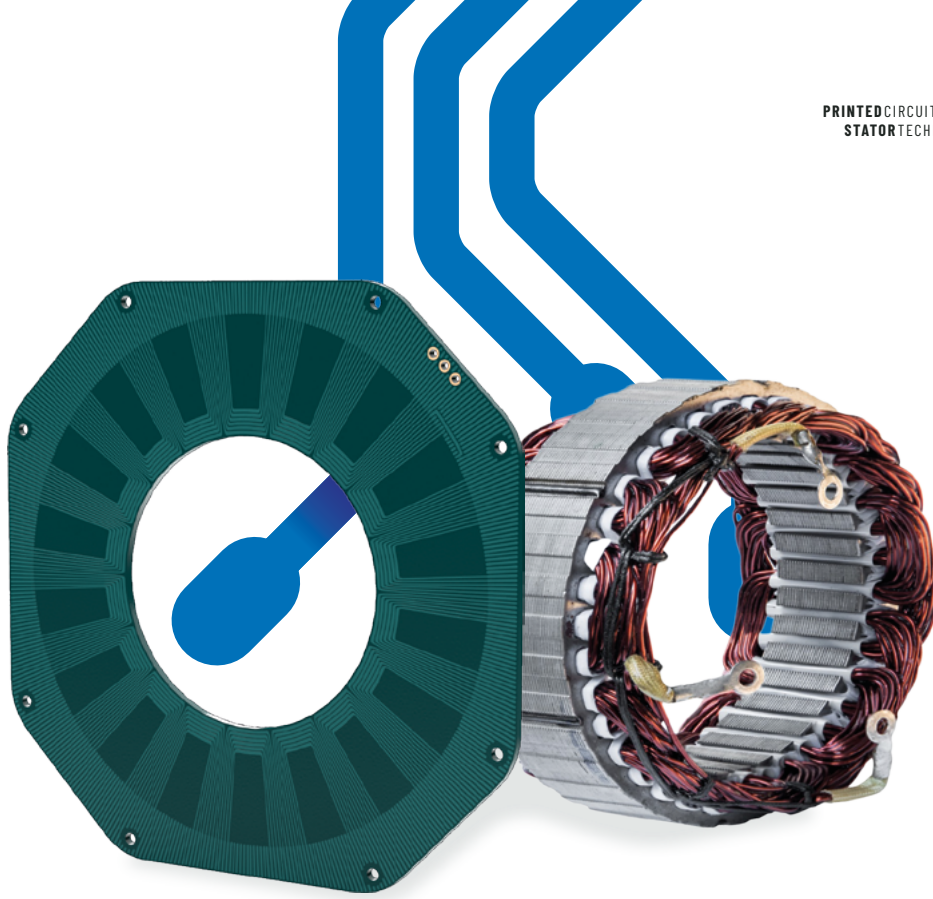
ECM's proprietary software platform, **PrintStator**, drives the design and manufacture of optimized printed circuit board (PCB) stator motors for many electrified applications.



DESIGN
GERBER

**CUSTOMIZED
STATOR**

OPTIMIZED
SOLUTION



Eliminate wire windings

ECM PCB Stator motors eliminate the need for wire-windings and iron laminations used in conventional motors, **making way for the next generation of axial flux motors**

Efficiency at its core

PCB Stator motors offer premium energy efficiencies and increased design flexibility at a fraction of the manufacturing cost.

With PrintStator, the integration of PCB Stator motors is an efficient process that requires less labor and utilizes existing manufacturing techniques and machinery.

WEIGHT
SAVINGS UP TO | **70%**

EFFICIENCIES
GREATER THAN | **90%**

USE LESS RAW
MATERIALS UP TO | **80%**



PrintStator motor CAD

ECM's advanced design and manufacturing software, **PrintStator**, significantly reduces production cycle time, eliminates human error, and rapidly **transforms** end-use specifications into **optimized motor designs**.

Production ready

From basic motor requirements, including torque and speed, and design constraints, such as weight and efficiency targets, PrintStator creates purpose-built PCB Stator motor designs that are immediately ready for production.

Benefits

Motors designed with PrintStator have already provided ECM partners with benefits including up to 15% increases in efficiency, a 66% reduction in weight, a 70% reduction in axial length and significant decreases in audible noise.

Design flexibility

Beyond designing an exact motor for your job, the PrintStator platform offers unmatched design flexibility, time-to-market, and scalability.

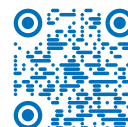


Design your own PCB Stator motor

ECM's **PrintStator software** will transform your specific application requirements into an **optimized, purpose-built PCB Stator motor**.

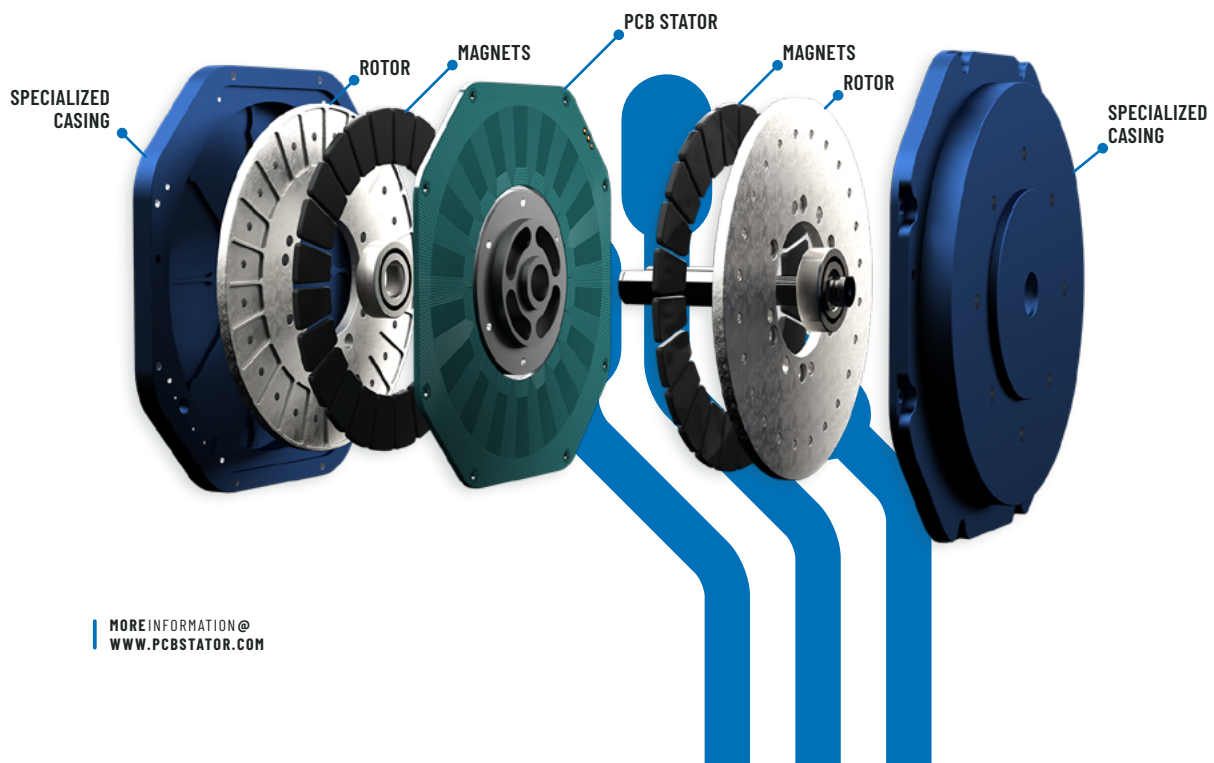


Scan here to design your own PCB Stator Motor:



Competitive advantages

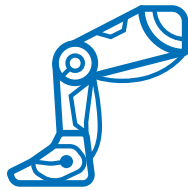
- Premium Efficiency**
ECM's PCB stator technology has been integrated in motors with efficiencies greater than 90%
- Lightweight**
PrintStator optimizes the use of copper and other materials to provide superior torque with less mass.
- Durability**
ECM PCB Stator's continuous coil design and encapsulated windings eliminate many common failures and increase life expectancy.
- Superior Motion**
ECM motors have zero cogging and smooth torque for a superior quality of motion compared to conventional machines.
- Design Flexibility**
PrintStator reduces design cycle time and improves design flexibility, producing an optimized solution for every application.
- Low EMI & Acoustics**
PCB Stator motors produce significantly less electromagnetic interference and acoustic noise is up to 30db quieter.
- Torque Density**
PrintStator designs motors that deliver more torque with less mass. ECM machines reduce up to 70% of the mass over competing designs.
- Manufacturing Ease**
ECM's technology leverages manufacturing methods used in the construction of all PCBs for cost-effective and reliable production.



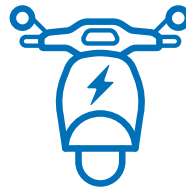
Applications & solutions



HVACR



MEDICAL



E-MOBILITY



RENEWABLES



MARITIME



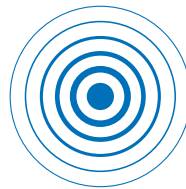
CONSUMER APPLIANCES



AEROSPACE + DEFENSE



ROBOTICS



HAPTICS + PRECISION MOTION



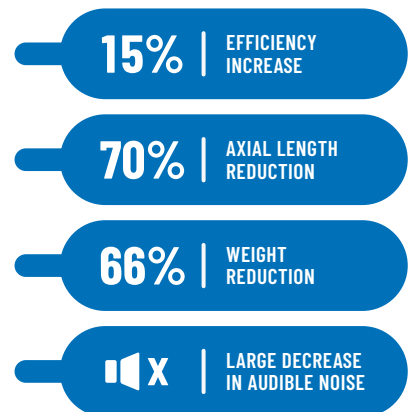
FITNESS EQUIPMENT

Infinite possibilities

With ECM's software platform, a nearly infinite number of motor designs are possible. Whether improving an existing system or creating an entirely new technology, motors designed and developed with PrintStator provide remarkable system level efficiency improvements in a significantly smaller package than an off-the-shelf motor.

Diverse applications

To date, ECM has designed and optimized over 100 unique electric motors for diverse applications.





Industry feedback

“The result of this collaboration, using **PrintStator to create a custom PCB Stator solution**, is a major step forward for both the film industry and high torque, high precision haptics.”

Boyd Hobbs: CEO and Founder



“ECM’s innovative technology is changing the way the industry thinks about motors. We are excited to be a design and manufacturing partner.”

Todd Cooper : President, Advanced Technology Solution



“After years of run time with our current propulsion systems, we turned to ECM in 2019 and **asked them to design a motor optimized especially for our IVER4-900 series** of autonomous underwater vehicles [AUVs]. We needed the propulsion system to be **highly efficient, super quiet, and more compact**. ECM delivered [leveraging PrintStator for a **unique, advanced solution**]

Following exhaustive testing, both in the lab and in water, **we have standardized on the ECM-design.**”

Daryl Slocum: Ocean Server & Director of Product Development



PrintStator simplifies the design and manufacture of advanced PCB Stator electric motors, ultimately providing innovators with the exact solution for their needs.

To learn more about **PrintStator** and how you can begin leveraging it today, visit our website or get in touch.



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