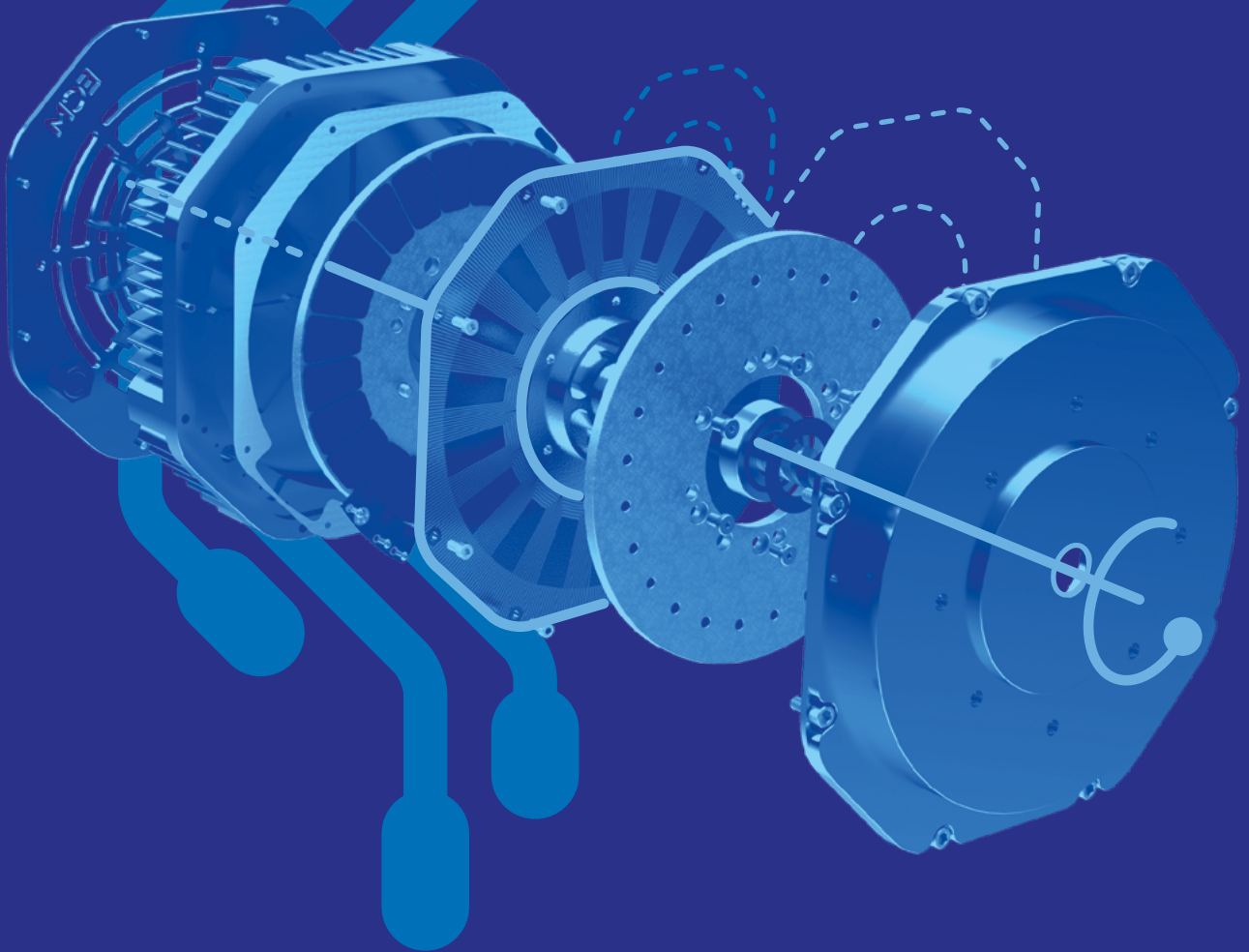




**ecm**

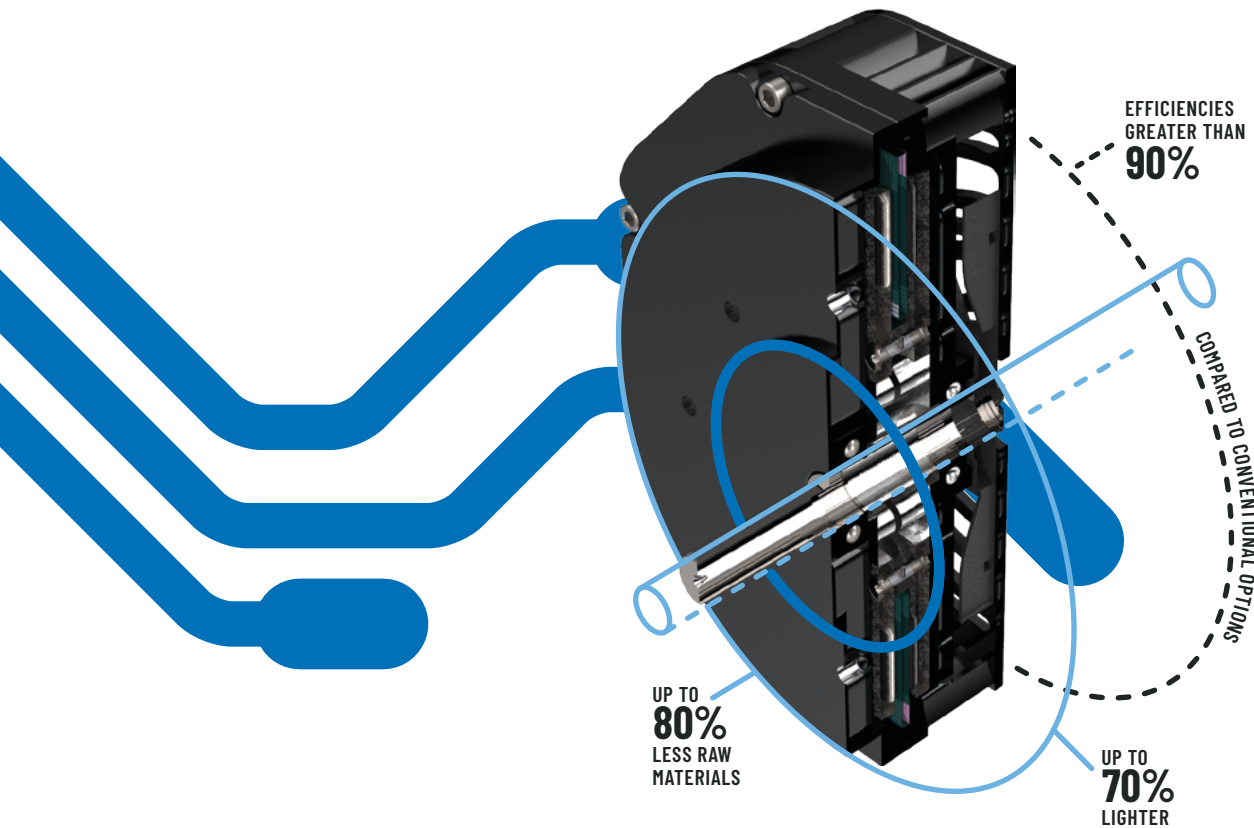


**PRINT  
STATOR**

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**Advanced Motor  
Design Software**

**REDEFINING ELECTRIC MOTOR DESIGN**



# Motor as software

ECM's advanced motor CAD software, **PrintStator**, is an innovative SaaS platform that transforms user specifications into optimized printed circuit board (**PCB Stator motor designs**).

### Breaking convention

Motors incorporating ECM's printed circuit board innovation are:

WEIGHT SAVINGS UP TO | **70%**

EFFICIENCIES GREATER THAN | **90%**

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



# Design faster build better

With **PrintStator**, users have access to unmatched design freedom and time-to-market for advanced PCB Stator motors. As a result, **advanced prototyping projects can now be pursued with improved accuracy and significantly reduced time frames and budgets.**

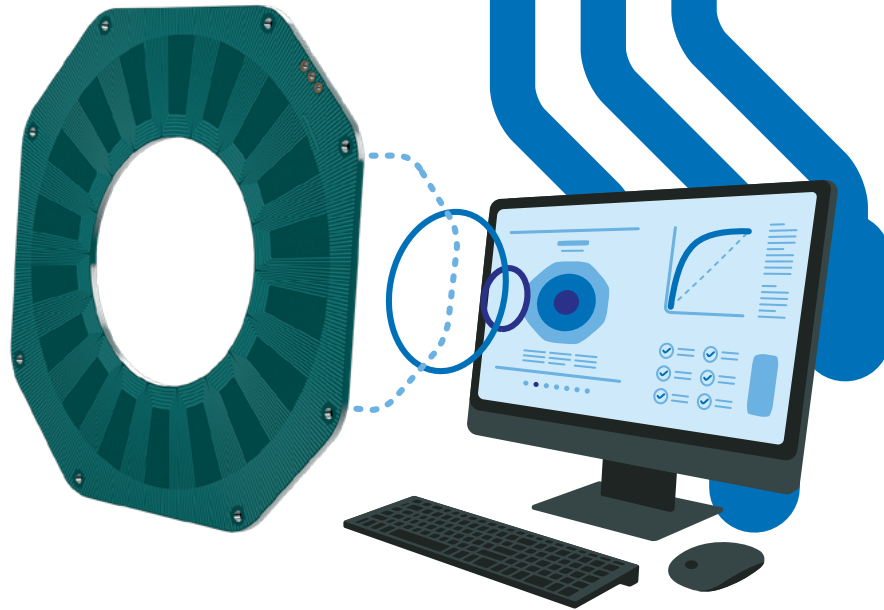
## Design locally prototype globally

PrintStator streamlines manufacturing PCB Stator motors by developing manufacturing files which can be used to prototype the motor globally.

## Purpose built solutions

As a simplified design tool, **PrintStator** enables users to easily create complex electric motor designs from any set of motor parameters. The software uses proprietary design algorithms to quickly develop purpose-built PCB Stator motor solutions for each application.





# Interface with innovation

**PrintStator** offers a **user-friendly interface** that facilitates electric motor innovation. Engineers can **create entirely unique motor designs** for their specific solutions **or access a library of existing designs and customize** them as per their requirements.

## Customization options

The software provides a range of customization options, including and not limited to:

- **motor dimensions**
- **voltage/current restraints**
- **performance specifications**
- **target efficiency**
- **specific magnetic material integrated**

## Rapid design iteration

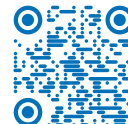
**PrintStator** analyzes the motor's electromagnetic, thermal, and mechanical behavior to provide users with accurate predictions of motor performance, and enable rapid design iteration.



# Simple design to manufacture



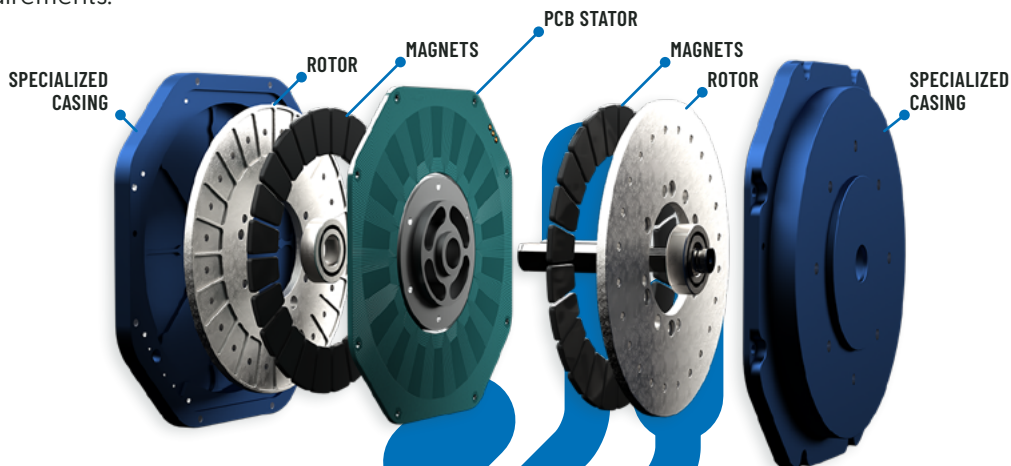
Scan here to design your own  
PCB Stator Motor:





# Features & optimization

- Exact Motor Designs**  
PrintStator's advanced modeling algorithms transform discrete motor specifications into optimized PCB motor stator designs without the risk of human error.
- Design Flexibility**  
PrintStator provides users unparalleled design flexibility, allowing users to design a motor around their system rather than designing their system around a motor.
- Simulation Tools**  
PrintStator accurately simulates the performance of each motor design under a variety of operating environments, allowing users to quickly optimize solutions to better fit their specific application.
- Optimization**  
PrintStator's users can optimize motor designs for a variety of characteristics including weight, efficiency, torque density, size, current, and/or a combination of criteria depending on application requirements.
- Rapid Design Cycle**  
PrintStator enables swift iterations on designs through the input of altered parameters. With PrintStator, complete models are ready in a matter of hours and functioning prototypes are just weeks away.
- Simplified Manufacturing**  
PrintStator produces unique Gerber files with each motor design. These files can be sent to PCB manufacturers worldwide for immediate prototyping—offering a simplified manufacturing process and rapid design-to-prototyping cycle.
- Software Updates**  
As a cloud-based software, PrintStator has an integrated feedback loop that ensures the continued improvement of modeling accuracy and optimization capabilities. PrintStator users can expect regular software updates.

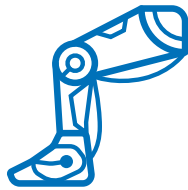




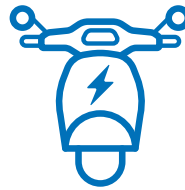
# Applications & solutions



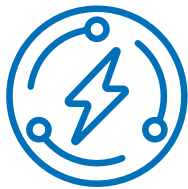
HVACR



MEDICAL



E-MOBILITY



RENEWABLES



MARITIME



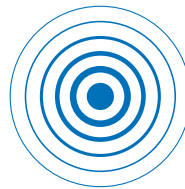
CONSUMER APPLIANCES



AEROSPACE + DEFENSE



ROBOTICS



HAPTICS + PRECISION MOTION



FITNESS EQUIPMENT

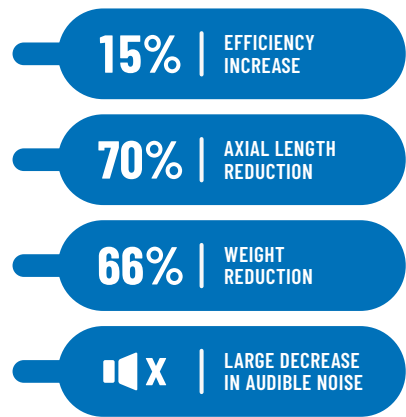
## Industry improvements

PCB Stators offer improvements in motors, brakes, generators, and actuators for many diverse industries. Some of these include HVAC, robotics, unmanned vehicles, precision motion control, e-mobility, physical therapy, and healthcare.

As of Q2 2023, **PrintStator** has been leveraged to design PCB Stator motors ranging from 4W to 20kW.

## Competitive advantage

ECM's partners use **PrintStator** to gain competitive advantage. The implementation of solutions designed through **PrintStator** has provided benefits including:





# 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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