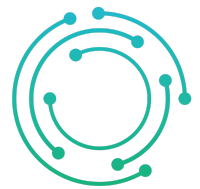


HIGH POWER DENSITY AXIAL FLUX MOTOR PROTOTYPE



EM-TECH



Higher power density with lower rare earth dependency



Cost-efficient design ready for scalable high volume production



Compact, modular architecture adaptable to multiple vehicle platforms

THE CHALLENGE: developing an axial flux motor with two traditionally conflicting objectives — achieving higher power density while reducing rare earth materials. In typical motor design, engineers face a trade-off: more power density requires more rare earth magnets. This posed a significant technical hurdle.

THE SOLUTION: TRAXIAL's engineering team successfully developed an innovative axial flux motor prototype that achieves both objectives. The team created a compact, modular design adaptable for different vehicle applications, providing Original Equipment Manufacturers (OEMs)—companies that build vehicles—with a viable solution for electric drivetrain development.

Having conquered the core technical challenge, TRAXIAL's engineers focused on practical manufacturability for real-world production. The team successfully integrated advanced

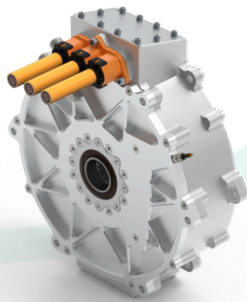


Figure 1: Axial flux motor

manufacturing techniques including plastic laser welding and stator overmolding into the prototype design. Their work proved these processes effective for volume production scenarios while reducing material usage and simplifying manufacturing procedure.

KEY BENEFITS:

- Enhanced Power Density - Prototype achieves improved performance per unit weight and volume
- Reduced Rare Earth Dependency - Significant reduction in rare earth material requirements while maintaining performance
- Manufacturing Readiness - Advanced production processes suitable for scalable manufacturing

IMPACT AND NEXT STEPS:

The EM-TECH axial flux motor demonstrates that high power density and sustainability can coexist. By cutting rare earth usage and enabling cost-efficient mass production, TRAXIAL's solution supports greener mobility while strengthening Europe's supply chain resilience.

Prototype validation in real-world environments, followed by integration with advanced inverters and e-axle systems during the project confirmed the performance targets and prepare the technology for industrialization. With this foundation, TRAXIAL is ready to bring a new generation of sustainable, high-performance electric drivetrains to the market.



Funded by the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101096083. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

LinkedIn

emtechproject.eu