

CHALLENGES AND OPPORTUNITIES IN ELECTROMOBILITY

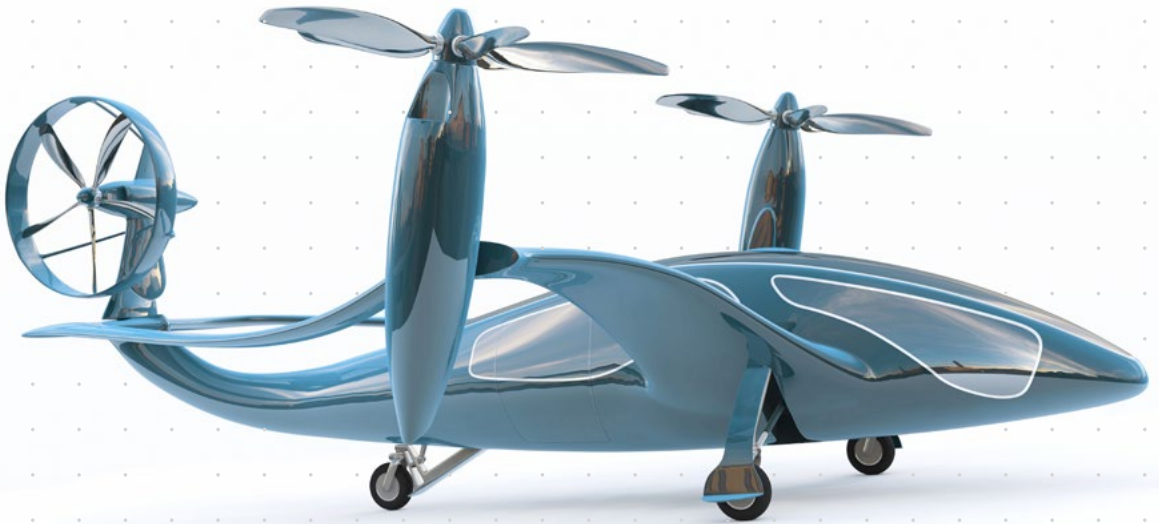


EWI[®]

We Manufacture Innovation

E-MOBILITY: A New Direction in Propulsion

The demand for electric propulsion solutions in transport systems is growing at an unprecedented pace. The need to accelerate production is pushing the introduction of newer, lighter materials, and the redesign of batteries, cable and wire harness systems, and motors – all of which creates a new set of challenges for **OEMs and suppliers**.



By 2030, more than **55%** of all cars sold will be fully electrified.

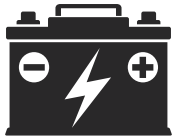


Shifting from fossil-fuel to electric aircraft could result in a **90%** cut in fuel costs and completely eliminate emissions.

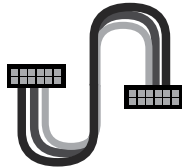


By 2029 the market for electric and hybrid-electric boats and ships will exceed **\$2 BILLION**.

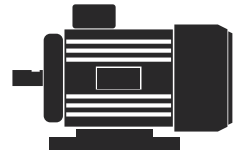
TODAY'S E-MOBILITY CHALLENGES



- 1 Inspecting every connection for absolute assurance in a complex system with more joints than traditional batteries
- 2 Evaluating tradeoffs between performance, constructability, and durability in designing custom battery cells and packs
- 3 Providing cooling and structural protection for battery boxes while fitting into elaborate architecture



- 1 Developing monitoring systems to ensure fail-safe wire harnessing that supports cell balancing and health monitoring
- 2 Meeting fluctuating material, joint configuration, and strand count specifications
- 3 Developing weld connections for high-reliability applications including flexible hybrid electronics



- 1 Reducing design and production costs enough to make high-volume production viable
- 2 Improving the power-to-weight ratio of electric motors to reduce the overall system weight
- 3 Managing and eventually streamlining the diversity of motor designs

FINDING THE RIGHT EXPERTISE

The complexities of electric propulsion systems require advanced approaches to welding and joining, material selection and validation, control technologies, and quality testing. Where can your development team get help to meet the rapidly shifting requirements of e-mobility?

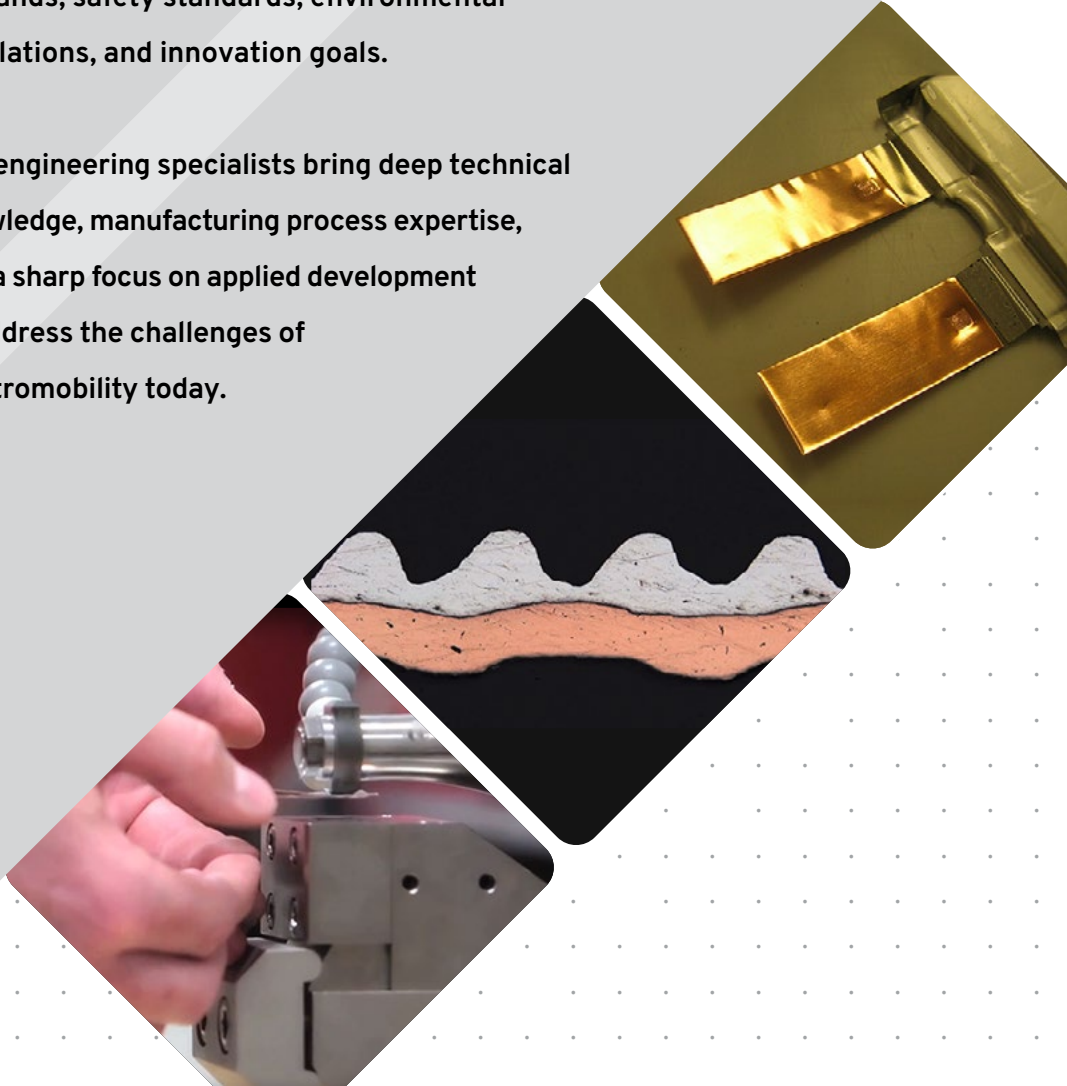


SOURCING ADVANCED ENGINEERING SOLUTIONS

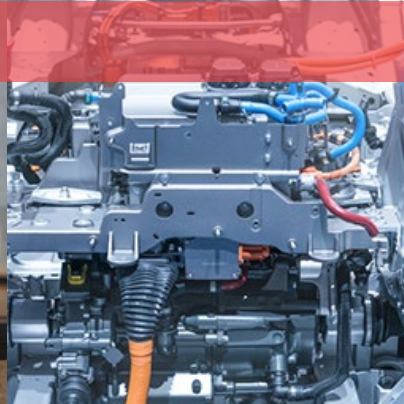
EWI Can Help

The advanced technology team at EWI has more than 30 years of work experience in electric power systems across industry to meet commercial demands, safety standards, environmental regulations, and innovation goals.

Our engineering specialists bring deep technical knowledge, manufacturing process expertise, and a sharp focus on applied development to address the challenges of electromobility today.



WHAT EWI BRINGS TO THE THE CHALLENGE



BATTERIES

- Thermal management solutions for battery packs and enclosures
- Inspection technologies to provide assurance that every joint is reliable
- Full range of joining technologies to address complex battery packaging systems

MOTORS

- Ability to develop customized solutions that efficiently take clients from feasibility to demonstration through adoption
- Access to numerous technologies that can reduce system weight, for example by replacing castings with an additively-manufactured structure.
- Solid-state joining options for reducing system weight by developing solid state joining technologies to couple motors to the drivetrain

CABLES/WIRE HARNESES

- Advanced welding capabilities for secure terminal connections that eliminate traditional crimp-on connectors
- Decades of experience in developing ultrasonic weld solutions for complex wire systems
- Proven expertise in both wire consolidation and wire-to-terminal joining

EWI— An Extension of Your Engineering Team

WHAT IS YOUR KEY CHALLENGE IN E-MOBILITY?

Contact EWI today to explore the best options and find the right solution for your application: info@ewi.org or **614.688.5152**.

EWI provides comprehensive engineering services to help companies identify, develop, and implement the best options for their specific applications. With unmatched expertise, state-of-the-art lab facilities, and technology resources, we offer customized solutions that deliver game-changing results.



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