MPMA Creates New Emerging Technology Committee Focused on eVTOL

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Ted Angel, Executive Director of NAACME, speaks at the 2025 MPT Expo.

Electric Vertical Takeoff and Landing (eVTOL) aircraft are rapidly moving from concept studies to flight testing and early certification, driven by advances in electrification, autonomy, and lightweight materials. While often discussed in the context of urban air mobility (UAM), eVTOL development presents a wide range of engineering challenges that intersect aerospace, automotive, and industrial power transmission disciplines. MPMA is starting its fifth emerging technology committee to explore the driveline technology that propels the new class of air mobility. It will be called the Air Mobility Technology Committee, to keep the scope broad to new designs and new vehicles in this space.

While the first meeting of the committee was held in January of 2026, discussions began in 2025, culminating with an Aerospace Committee presentation at the Motion + Power Technology Expo (MPT Expo). Ted Angel is the executive director of the National Advanced Air Mobility Center of Excellence (NAACME). During his panel presentation, he discussed NAAMCE's collaborative space in Springfield, OH, that currently houses 15 tenants crossing the supply chain for air mobility from government entities to research, and suppliers to eVTOL makers, including JOBY. The facility has created an FFA-approved 225 square mile area where these vehicles can be tested up to 18,000 feet. They have even implemented their own Ground-Based Detech and Avoid system funded through an AFRL and ODOT partnership. They even have a Vertipad prototype and flight simulators. MPMA hopes to further the collaboration with NACCME.

MPMA will similarly evolve this committee to the development of its most recent Electric Vehicle Technology Committee: Study the technology, as information is available, with an emphasis on the use of gears and bearings to see how it advances and where novel concepts arise; monitor the industry to keep track of important players like JOBY, Archer, BETA Technologies, and others; and bring to the MPMA audience speakers relevant to this topic.

The association wants to provide information to its members, as electric motors used in eVTOL applications operate at high speeds and power densities, often exceeding those found in automotive or industrial systems. Gear reduction is frequently required to match optimal motor speed to rotor efficiency, placing strict demands on gear accuracy, surface durability, and thermal performance. Weight constraints drive the use of compact gearboxes, advanced alloys, and optimized tooth geometries, while reliability requirements push designs toward aerospace-grade safety factors and fault tolerance.

Thermal management is another critical challenge. Continuous high-power operation during takeoff and landing generates heat in motors, power electronics, bearings, and gears. Engineers must balance cooling effectiveness with weight and aerodynamic penalties, often using integrated thermal paths and multifunctional structural components.

The Air Mobility Technology Committee will also serve as a conduit for bringing knowledgeable speakers to the wider MPMA events, bridging the technology from emerging technology committee to networking events, the Fall Technical Meeting (FTM), and MPT Expo 2027. Through presentations, discussions, and shared research, the committee aims to provide members with timely insights into an industry that is moving rapidly toward commercialization.

As eVTOL technology continues to evolve, MPMA's new committee ensures that motion and power transmission manufacturers have a seat at the table to help shape understanding, readiness, and innovation in one of the most dynamic segments of aerospace development today.