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August 30, 2025

## PropWings High-Lift Device for Electric and Hybrid-Electric Aircraft

### Messaging:

**Value Proposition:** PropWings' propeller slipstream technology creates more lift for the same motor thrust, enabling electric aircraft to fly further, carry more, and operate more safely.

**Company Mission:** To advance Urban Air Mobility through innovative aerodynamic technology, enabling electric aircraft to fly further, carry more, and operate more safely.

### Advantages and Benefits:

#### Context - Urban Air Mobility (UAM) and Advanced Air Mobility (AAM) Aircraft

- **Aircraft Type:** The UAM and AAM landscape is likely to be dominated by electric and hybrid-electric Vertical/Short Takeoff and Landing (eV/STOL) aircraft, both piloted and autonomous.
- **Applications:** Typical applications include air taxis, regional transport logistics, search and rescue, emergency response, defense, policing, precision agriculture, and personal transport.
- **Fast Growing Market:** The UAM/AAM market is experiencing rapid growth, making it a prime target for this technology.

#### Invention:

- **Aerodynamic Solution:** PropWings is an aerodynamic device intended for electric and hybrid-electric V/STOL tiltrotor and tilt-wing aircraft to significantly increase lift and efficiency.
- **Addresses Performance Limits:** The invention aims to address range and payload performance limitations in eV/STOL aircraft due to battery weight, energy density, and cost challenges.
- **Enhanced Range and Payload:** The invention has the potential to increase flight range and payload capacity from existing batteries or energy sources such as fuel cells.
- **Flight Transitions:** It has the potential to offer safer, quicker, and more controlled transitions between vertical and horizontal flight modes.
- **Improved Flight Dynamics:** The increased lift offers improved maneuverability, delayed stall characteristics, and steeper climb rates.
- **Proven Foundation:** The invention is based on established aerodynamic principles, existing technologies, and conventional component design.
- **Adaptable Design:** The design allows for a high degree of adaptability and integration into current and future aircraft designs.

**Technical Features:**

- **Uses Unused Propeller Energy:** The invention optimizes the propeller slipstream energy that would not otherwise be used, to increase flying range without additional energy usage.
- **Repurposing Thrust Energy:** In essence, the device repurposes energy already expended by the propeller in generating thrust, for additional lift.

**Opportunities:**

- **Reducing propeller-wash swirl:** The wings and struts components of the invention present design opportunities to directly increase propulsive thrust efficiency by reducing rotational energy in the propeller-wash swirl.
- **Air Braking Function:** In helicopter-type vertical landing mode, the invention may function as an air brake to slow the aircraft's horizontal flight momentum for vertical landing.

**Impact:**

- **Performance Improvement:** This invention has the potential to deliver notable performance improvements for electric and hybrid-electric V/STOL aircraft.
- **Competitive Advantage:** Adoption of this technology could offer meaningful competitive advantages to aircraft manufacturers and operators that adopt the technology.