

Hydraulic Propulsion System for Multirotor VTOL Aircraft

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Categories:

- Aeronautics
- Mechanical Engineering

Keywords:

- Aerial Manipulation
- Aeronautics
- Aircraft
- Drones
- Energy Efficient
- Green Technology
- Hydraulics
- Mechanical Engineering
- Propulsion

Vertical take-off and landing (VTOL) aircraft are drones suitable for unmanned applications. Current multi-rotor VTOL aircraft utilize electric propulsion systems that are expensive, unstable, unreliable, and are not environmentally friendly. There is need of a method for addressing the shortcomings of electric propulsion systems on multi-rotor VTOL aircraft.

Researchers at Purdue University have developed an inexpensive, recyclable hydraulic propulsion system for the multi-rotor VTOL aircraft. The propulsion system utilizes hydrostatic transmission, a lighter weight and more reliable option, to distribute engine power throughout the rotors, providing thrust for the aircraft and allowing the rotors to each spin at different speeds. The speed of each motor can be controlled individually with faster response by the flight controller or human operator and can run at constant speeds, extending the engine lifetime. This provides both aerodynamic lift and attitude control, eliminating the need for an additional moving control surface or weight shifting device and resulting in a more stable flight and more useful load.

Advantages:

- Light-weight/inexpensive
- Recyclable
- Stable flight
- Reliable

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Potential Applications:

- VTOL aircraft

People:

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Intellectual Property:

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