

## Energy efficient remote pilot aircraft systems with enhanced flight time

### Key Features

- Innovative Remote Pilot Aircraft Systems (RPAS) design that provides an approximately 200% improvement in energy efficiency over existing platforms of a similar size
- Superior flight time and hovering stability, generating extra utility
- Simple design that is high efficiency and lightweight

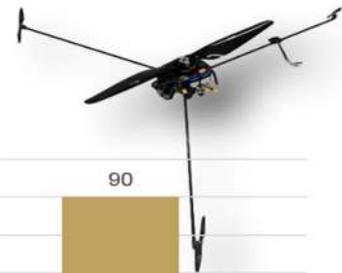
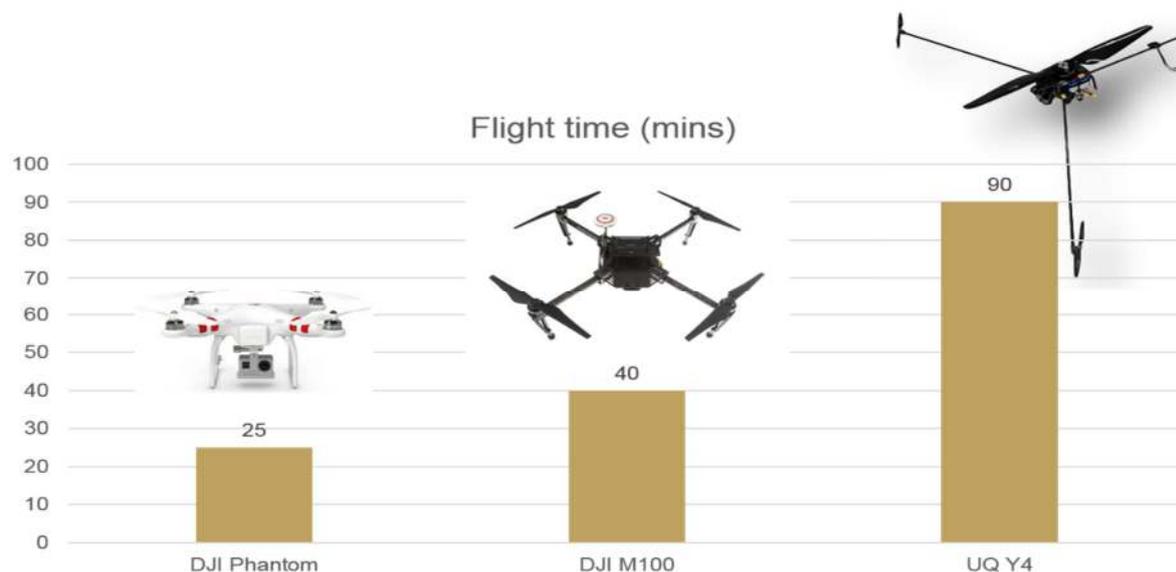
### Technology overview

Commercial use of remote pilot aircraft systems (RPAS) is currently limited by flight time. The current flight time of RPAS is typically around 10-40 minutes, creating a utility barrier where the operational cost is not offset by gains from its application.

Researchers at The University of Queensland have patented an innovative configuration of RPAS which combines features of a standard helicopter and a standard quadrotor. The 'Y4' design



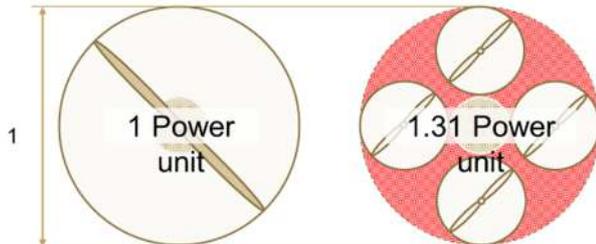
comprises a triangular quadrotor with a single large main rotor for high efficiency, and three small rotors for control and counter-torque. The Y4 has an approximately 200% improvement in energy efficiency over existing state-of-the-art systems. It can perform any task done by a conventional quadrotor or remote helicopter; however, it has superior flight times and remarkable hovering stability, positioning it for many commercial/industrial applications.





## Features and specifications

The Y4 has a triangular frame with rotors on each vertex (multiple control rotors), augmented by a much larger central rotor (main thrust rotor). This configuration performs especially well on small scales, making it particularly useful for micro-RPAS.



## Applications

- Precision agriculture/farming
- Cinematography
- Ariel surveillance/asset inspection
- Parcel delivery

## Addressable market

Production of drones for personal and commercial use is growing rapidly, with global market revenue expected to increase 34 percent to reach more than \$6 billion in 2017 and grow to more than \$11.2 billion by 2020. Almost three million drones will be produced in 2017, 39 percent more than in 2016.

## Commercialisation strategy

Commercialise IP through a start-up company. Target market is commercial-use RPAS due to the substantial value added by a longer flight time, and the higher per unit price (order of \$10,000) compared with civilian drones (order of \$100-\$1,000).

## RESEARCH TEAM

The Y4 has come out of **Dr Paul Pounds'** Robotics Design Laboratory in the School of Information Technology and Electrical Engineering. Dr Pounds' research focuses on dynamics, control and propulsion of RPAS, specialising in rotorcraft. Along with the Y4 design, Dr Pounds has 10 patents



including a 'safety rotor' system which improves the safety of rotor blades on RPAS and a force-sensing pad for improved motion control of RPAS.

## ABOUT UNIQUEST

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