

# **Monash University**

## **Centre for Telecommunications and Information Engineering**

### **Company overview:**

The Centre for Telecommunications and Information Engineering (CTIE) at Monash University was founded over 20 years ago. Since that time it has had extensive involvement with industry in telecommunication standards and applications through consulting and involvement in Federally funded Cooperative Research Centres the most recent of which is the Australian Telecommunications CRC. CTIE is based in the Department of Electrical & Computer Systems Engineering at Monash University.

### **Company Focus:**

CTIE has a wide focus including all aspects of telecommunications systems with particular emphasis on interoperability and video communications. The Aerobotics Group within CTIE was established in part because of the telecommunications aspects of UAV operations, but also because of the engineering challenges this area offers for graduate students in interdisciplinary engineering research and development.

The Group has developed a number of medium endurance (2 hours) electrically powered flight in the 2-5Kg class with payloads to 1.5Kg. Particular attention has been placed on operations in accordance with CASR-101 and flight safety including flight termination. Current aircraft may be flown as computer assisted, requiring only modest flying skills, or fully autonomously. The Group believes ease of use is paramount if the broader, particularly civilian, uses of UAVs are to be realised. The Group's flight control systems (FCS) use a combination of inertial and IR sensors and are intended for VFR operation. The Group's FCSs require minimal setup and are being benchmarked against commercially available systems.

Monash manages the UAV CASA approved airspace in Port Welshpool (NOTAM D371A and D371B) and has set in place operating protocols with the RAAF and CASA under an MOU. This airspace is available for use by other UAV developers.

The Group has comprehensive aircraft monitoring with associated telemetry and camera systems which were used in two Monash University sponsored [FAI World Records](#) for electrically powered aircraft; these records are held by a member of the Group.

All staff members of the Group are qualified FAI accredited pilots. The Group is acutely conscious of the practical issues associated with training and operations by those conducting research using UAVs.

CTIE hosts the [Lawrence Hargrave WWW Site](#). This site at Monash details the History of Aviation and Aeromodelling and has been preserved for posterity as part of the Australian National Library's Pandora Collection. It currently has over 11 million accesses per year.

### **Quality Approvals:**

**Generally operating under CASR-101.**

### **Core capabilities/technologies:**

- UAV design
- Wireless and optical communications (IPV6)
- Electromagnetic compatibility
- Communications protocols (IPV6)
- Video compression
- Image processing
- Software engineering
- Flight control systems
- Computer architecture
- Avionics
- Materials engineering
- Aerodynamics

Customers/project involvement:

Telecommunications – numerous including Ericsson, Seimens, Agilent, Telstra, Optus, NEC, Radio Frequency Systems, Samsung etc.  
UAV - [Aerosonde](#)

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