

Name of Project or Group:

Blackbird UAV

Name of Applicant:

Derek Ancrum

Position of Applicant:

Team Manager

Email of Applicant:

derekancrum@cmail.carleton.ca

How many Undergraduate Engineering students are involved? Specify Departments and/or programs if possible.

30+, even spread between Aerospace, Mechanical, Electrical, Systems and Computer Science

Description of Proposal:

Blackbird UAV is a primarily undergraduate student extracurricular team which designs and builds unmanned aircraft for use in the annual Unmanned Systems Canada student competition. The team is formed by a group of over 30 Carleton engineering students from a wide variety of disciplines.

Funds are requested for the purchase of a new, compact, high-quality camera to use as our main payload system, and for a Senior Telemaster Plus airframe to serve as an avionics test-bed and backup aircraft at competition. The total amount being requested is \$1,285.59 CAD.

Proposal Benefits:

Blackbird UAV represents Carleton Engineering at the annual Unmanned Systems Canada student competition. This competition is attended by universities from across the country as well as leaders in the Canadian UAV industry. Performing well in competition looks favorably on the students involved in this project and on Carleton Engineering, and helps to establish Carleton as a leader in the development of unmanned aircraft.

The keys to success at this annual competition are the strong work ethic of the students, and the quality of the system that is brought to competition.

The camera onboard the aircraft is a key component to the missions our aircraft fly. The small, lightweight Aerocont Vision high quality camera and lens proposed for purchase will allow our next generation of aircraft to be much smaller and more versatile, while still providing the high quality images needed for ground target identification.

Since the team flies experimental, custom designed aircraft with heavily modified autopilot and avionics systems, we require an airframe on which to test all of our modifications without putting the competition aircraft at risk of being damaged. The Senior Telemaster Plus is a large, stable, off-the shelf aircraft that would be able to fit all of our avionics components as they would exist on the competition aircraft. The Senior Telemaster Plus would also serve as a backup airframe in the event of a crash during competition.

Estimated Equipment Lifespan:

Camera: 5 years, Airframe: 3 years

Implementation Schedule:

Camera: Once purchased, a new more efficient airframe will be designed around it to make the most of its compact size. Depending on student involvement, we hope to have this aircraft functional for this years' competition in May 2015.

Airframe: The airframe will be retrofitted with our custom avionics package over the winter and will be ready to conduct flight tests by Spring 2015.

Additional Information:

Faculty Supervisor: Prof. Laliberte, email: jlaliber@mae.carleton.ca

Cost Breakdown: Item, Any funding from other sources, Multiple funding options:

Listed below are the items being proposed for funding and links to the suppliers website. They appear in the order of priority. Should only partial funding be awarded, it is requested that the cost of the camera and its lens be covered first.

Camera & Lens:

Arecont Vision AV10115DNAIV1 Dual Mode 10 Mp Camera - \$599.99 USD (\$673.70 CAD)

http://www.bhphotovideo.com/c/product/913757-REG/arecont_vision_av10115dnaiv1_dual_mode_10.html

Arecont Vision MPL 6.0 1/2" Manual Iris Lens - \$194.95 USD (\$218.90 CAD)

http://www.bhphotovideo.com/c/product/631616-REG/Arecont_Vision_MPL6_0_MPL6_0_1_2_6mm_F1_4.html

Airframe:

Senior Telemaster Plus - \$349.99 USD (\$392.99 CAD)

http://www.hobbyexpress.com/senior_telemaster_plus_oversize_1034837_prd1.htm