Proxy to test swarming UAV system

Darren Lake looks at the latest innovations from Proxy Aviation Systems and reviews the latest developments elsewhere in the unmanned systems community.

▲ *SkyRaider was developed to meet the demand for greater payload capacity.* (Photo: Proxy Aviation)

According to Donald Ryan, CEO of Proxy Aviation Systems, the company will be conducting trials of its SkyForce Distributed Management System next month. SkyForce is Proxy's attempt to answer some of the requests coming out of the US Department of Defense for the technology to operate groups of UAVs both collaboratively and with greater autonomy.

Ryan said that Proxy's approach is to equip each vehicle with a 'virtual pilot processor' that is programmed with a set of fundamental rules plus any additional user-specific requirements. He added that SkyForce would be able to operate up to 12 UAVs at one time.

Proxy will begin with a demonstration in November of one real UAV working collaboratively with three simulated vehicles. If the trials prove successful, the company will look to operate two real UAVs with two virtual aircraft in February next year.

Proxy is also pushing forward with its family of UAVs. The existing SkyWatcher UAV has been joined by SkyRaider in the company's inventory. SkyRaider is a larger aircraft that Ryan said was deemed necessary because of the payload demands being made by customers. The internal payload capacity of SkyRaider is in the region of 32 cu ft. Initial flights were conducted last month, and further tests will be carried out in December.

Ryan reported that there is interest in SkyRaider from the US Air Force and that the UAV already has one classified customer, who is procuring the vehicle for heavy payload work.

CANADA BUYS DANISH SPERWER FLEET

The Canadian Forces (CF) has doubled the size of its fleet of Sagem Défense Sécurité Sperwer tactical UAVs by acquiring Denmark's complete inventory at a bargain price of only DKK40 million.

Denmark acquired 10 Sperwers in 2002, but the air force suspended flights in February 2005, after only 124 hours of flying, because of a series of 'operational' difficulties. The service has spent DKK425 million, including acquisition, operations and manning, on the project, and the Defence Command could not afford the investment needed to bring the systems up to operational standard.

Sagem has been awarded a contract to modify the Danish drones to the Canadian CU-161 configuration. The CF acquired the Sperwer as its first UAV system in September 2003 to meet an urgent requirement to support Canadian troops deployed with the NATO-led International Security Assistance Force in Afghanistan. The initial C$33.8 million purchase through Oerlikon Contraves Canada included four (later increased to six) air vehicles, two launchers, two ground data terminals, two ground control stations and one forward maintenance facility. The Sperwers operated in the Kabul region during 2003-2004, and two were lost in Category A crashes.

Late last year, in preparation for a new deployment to Afghanistan, 408 Tactical Helicopter Squadron, based in Edmonton, Alberta, formed a TUAV Flight, manned by personnel from the squadron and the Royal Canadian Artillery. In December, Canada bought five additional Sperwer air vehicles from Sagem at a cost of C$2.6 million each. Since March, the TUAV Flight has generated an average of two sorties a day in the Kandahar region.

FULLY INTEGRATED SIDM TAKES FLIGHT

EADS and IAI have completed the first flight in France of the new Eagle 1 medium-altitude, long-endurance UAV system that the companies are developing for the Délégation Générale pour l'Armement (DGA), the French armaments procurement agency. Also called the Système Intérimaire de Drone Male (SIDM), the UAV was flown from the Istres air base on 9 September. It was equipped with a full communication package, including satellite communications and line-of-sight data links. The integration

▲ *SIDM's maiden flight. (Photo: EADS)*

work of these elements is the responsibility of IAI.

The aircraft was controlled from the operational SIDM ground control station, and the companies said that the flight test also demonstrated the integrity of the system, including its automatic take-off and landing, satellite communication, and integral command and control functions. Further flights from Istres are planned over the coming months so that the DGA can validate the system.

The SIDM will have a payload of around 250 kg. The operating altitude of the vehicle will be in the range of 15,000 ft to 25,000 ft, with a maximum speed of 120 kt. The payload includes a day/night camera, laser designator and synthetic aperture radar/moving target indicator.

SCHIEBEL SHOWS STRENGTH OF UAV BUSINESS

Austria's Schiebel Industries officially opened its new dedicated UAV manufacturing facility on 7 September. The new plant is a recognition of the company's increasing success with its Camcopter S-100 vertical take-off and landing UAV.

Schiebel, which was founded in 1951, has its heritage in mine-detection equipment, but more recently, it has become widely known for its Camcopter system. Until the opening of the new facility at Wiener Neustadt, south of Vienna, the assembly of the UAV had taken place at the company's offices in central Vienna.

The new factory was officially opened by Hans Georg Schiebel, president of Schiebel Industries; Dr Veit Sorger, president of the Federation of Austrian Industry; and Dr Erwin Pröll, governor of Lower Austria.

'Due to the worldwide great interest in our Camcopter S-100, a new production facility became absolutely necessary,' Hans Georg Schiebel explained. In addition to the current annual production of 50 helicopters in Abu Dhabi, UAE, he said that another 120 will leave the new Austrian plant each year.

BENTAL BUILDS ON ELECTRONICS STRENGTHS

Israeli company Bental Industries is, according to Michael Armon, vice-president of marketing and sales, one of the few suppliers able to deliver and integrate all of the electronic systems for UAV platforms. The company began looking at the UAV market around four years ago and has been producing a variety of electronic systems for this sector.

Bental recently launched new electric propulsion motor systems for UAVs ranging in weight from 0.5 kg to 50 kg. According to the company, the systems are unique in their power to size/weight ratio and are comprised of a permanent magnet brushless motor and its driver/controller, either in a single package or as two separate components.

Armon confirmed that although Bental has built a number of its own demonstrator platforms, it is not interested in becoming a UAV manufacturer. He said that the company's expertise lay in the electronic systems for UAV platforms weighing up to 50 kg.

MICROPILOT LAUNCHES MINIATURE VTOL AUTOPILOT

In an attempt to continue its leadership in the development of small UAV autopilots, MicroPilot has developed what it says is the world's smallest vertical take-off and landing (VTOL) autopilot. The new offering, which the company has been working on for two years, is a development of the existing MP2128 and is dubbed the MP2128HELI.

Howard Loewen, president of MicroPilot, explained that the project has been a challenging one because of the added complexity of VTOL systems. 'They are much less stable than fixed-wing platforms, and your altitude estimates, etc, have to be much more accurate.'

The company said that despite its small size (the system only weighs 28g), the MP2128HELI, which provides 150 MIPS of processing power, incorporates more functionality than is commonly found in larger UAV autopilots. It is based on the company's fixed-wing UAV autopilot technology, and Loewen was keen to emphasise that it can fly both fixed-wing and VTOL vehicles (including rotary-wing and ducted-fan designs).

The MP2128HELI comes with MicroPilot's HORIZON UAV ground control software and is fully integrated with all the sensors, including the IMU, fitting into the system. For autonomous take-off and landing, the autopilot is equipped with an ultrasonic altitude sensor. The company expects to start shipping the MP2128HELI in November.

MOBILEROBOTS GETS A HAND FROM OCEANEERING

At the recent Association for Unmanned Vehicle Systems International exhibition in Orlando, Florida, MobileRobots demonstrated its Seekur indoor/outdoor robot with a Terabot arm supplied by Oceaneering Space Systems. MobileRobots believes that the system is the first robot to be designed specifically to patrol inside and outside storage facilities and outbuildings.

According to company officials, Seekur is a 'sturdy, all-weather platform that can handle everything from open fields to parking garages. Ideal for intelligent navigation, it offers space, power and networking for up to five EBX form factor PCs, opening the way for onboard vision processing, radio-based communications, laser range-finding, DGPS and other autonomous functions.'

The vehicle runs for up to seven hours on its nickel-cadmium batteries and has four large omni-directional wheels mounted on steel suspension that are designed for speeds up to 2.2 m/s and slopes up to 20% with good response, even with a 50 kg payload.

The version on display at the exhibition was equipped with a Terabot arm that allows Seekur operators to pick up 'interesting or dangerous objects'. The arm has a five-degree-of-freedom, all-electric manipulator with a pneumatic gripper. ◂