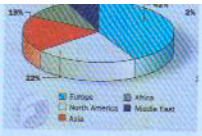


Safran engines group joins the Mexican wave
BUSINESS P34

NANO AIR VEHICLES

DARPA pushes on with flapping wing

Bio-inspired design heralds 'revolutionary' aircraft

The US Defense Advanced Research Projects Agency has contracted AeroVironment to design and build a flying prototype 75mm (3in) flapping-wing air vehicle system to advance its nano air vehicle programme.

DARPA's NAV programme looks to develop and demonstrate an extremely small (less than 75mm), ultra-lightweight – less than 10g (0.35oz) – air vehicle system employing novel, bio-inspired, conventional and unconventional configurations with the potential to perform indoor and outdoor military reconnaissance missions. DARPA also wants to advance technologies that enable collision avoidance and navigation systems for use in GPS-denied environments.

AeroVironment's NAV is designed to weigh no more than 10g and have the ability to carry a payload of up to 2g. The company's NAV team also developed the Black Widow and Wasp micro air vehicles for DARPA.

According to DARPA, the NAV programme will push the limits of aerodynamic and power conversion efficiency, endurance, and manoeuvrability for very small air vehicle systems: "NAV platforms will be revolutionary in their ability to harness low-Reynolds number physics, navigate in complex environments, and communicate over significant distances."

The $636,000, six-month phase II contract to build and demonstrate a prototype could be extended for an additional 18 months. The award follows a $1.7 million phase I contract under which AeroVironment completed a preliminary design review. ■

Read more on unmanned air vehicles at flightglobal.com/uav

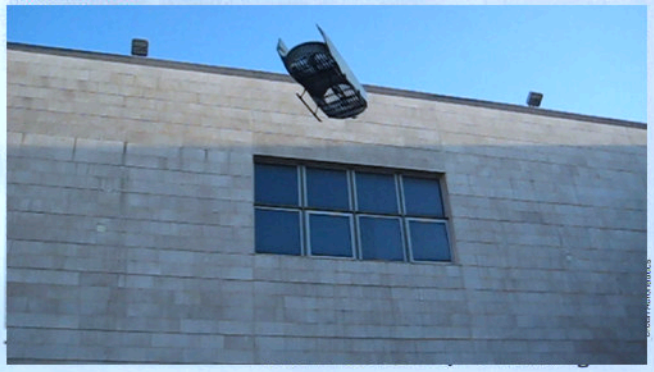
UAVS **ARIE EGOZI** TEL AVIV

Panda prototype takes to the sky

Urban Aeronautics' prototype ducted fan Panda unmanned air vehicle has successfully completed its first series of test flights, with testing to resume once flight-control computers are adjusted.

The Panda is 1.5m (4.91ft) long and 800mm (31.5in) wide. Its ducted fan uses an electric motor and two rotors, each with a span of 500mm. It has a maximum take-off weight of 22kg (48.4lb) that includes its 1.5kg payload. It is a smaller version of Urban's Mule.

Chief executive Rafi Yoeli says the ducted fan technology allows stable hovering and the installation of sensors in various without the risk of rotor downwash interference. ■



TECH NOTES

SPACEDEV AWARDED DARPA SATELLITE EXTENSION

PROPULSION The US Defense Advanced Research Projects Agency has extended Spacedev's High Delta-V (HiDVE) satellite programme contract with a $3.6 million option following a successful critical design review. The HiDVE goals are to develop a space qualified, low-cost, modular solar thermal propulsion (STP) system and integrate it into a small spacecraft. The award is for a six-month extension to develop the STP and its nano-satellite bus further.
darpa.gov

SIKORSKY TO DEVELOP ENHANCED ROTOR BLADES

RESEARCH Sikorsky is to develop enhanced helicopter rotor durability and capability under a $11.4 million contract over 42 months with the US Army aviation applied technology directorate. The work will attempt to increase rotor blade life in erosive environments, provide a reliable and maintainable ice protection system, and create an improved methodology for assessing and repairing battle damage. Other team members include the Army Research Laboratory, BAE Systems, Engineering Consulting Services, Integran, Ross Technology, Sanova, South West Research Institute and United Technologies Research Center. Most of the work will occur at Sikorsky's headquarters with support at United Technologies' test facility in East Hartford, Connecticut.
sikorsky.com

BOEING CLAIMS FIRST WITH C-130H MOUNTED LASER

DIRECTED ENERGY Boeing Integrated Defense Systems fired a chemical laser from a Lockheed Martin C-130H for the first time on 13 May while it was on the ground at Kirtland AFB, New Mexico, achieving a milestone for the US Department of Defense's Advanced Tactical Laser advanced concept technology demonstration programme. After conducting a series of additional laser tests on the ground and in the air, and later this year, the chemical laser will be fired in-flight at mission-representative ground targets. The test team will fire the laser through a rotating turret that extends through the aircraft's belly. Last year, the high-energy laser concluded laboratory testing at Kirtland, demonstrating reliable operations in more than 50 firings.
boeing.com/ids

BLEEDING GLASSFIBRES 'HOLD KEY TO SELF-REPAIR'

COMPOSITES A self-repair technique developed through a three-year £171,000 ($338,000) UK Engineering and Physical Sciences Research Council-funded project, called Bleeding Composites: Damage Detection and Repair Using a Biomimetic Approach, could be available for commercial use in about four-years, say its developers. Aerospace engineers at Bristol University developed the technique during the project that ended in April. It involves filling the hollow glassfibres contained in fibre reinforced composite (FRC) aerostructures' with a resin and its hardener. If the FRC fibres break the resin and hardener ooze out and then cure, enabling the composite to recover up to 90% of its original strength. By mixing ultra-violet fluorescent dye into the resin, while any repairs would not show up in normal lighting conditions, coloured patches that pinpoint damage could be located and a full repair carried out if necessary. The Bristol team is working with UK company Hexcel Composite. The resin used to date is an off-the-shelf, Araldite-like substance but a custom-made resin optimised for the system is in development.
epsrc.ac.uk