Defense Systems
NEWS DIGEST

23 May 2017 - THE LATEST IN DEFENSE SYSTEM NEWS

Defeating the Threat of Small Unmanned Aerial Systems

Unmanned aerial systems (UAS) offer new or improved military capability in many airpower applications. Contemporary UASs range in size from aircraft with wingspans exceeding 150 feet to vehicles that fit into the palm of an operator's hand. Medium-sized unmanned aircraft such as the MQ-1B Predator have become icons of American counterterrorism warfare, but small unmanned aerial systems (SUAS) have performed significant roles in militaries around the globe as well. SUAS provide...

Advanced Materials

Ford Motor Company's New Room-Sized 3D Printer Upends Additive Manufacturing

Additive manufacturing holds the promise of shorter lead times, increased customization and lighter weight parts, among other efficiencies. Unsurprisingly, there's a lot of blue-sky thinking out there, and still not a ton of actionable data. But that's changing -Ford has a new tool in its arsenal, the Stratasys Infinite Build 3D Printer...

Want to Cut Carbon Emissions? Try Growing Cement Bricks With Bacteria

One of biggest contributors of greenhouse gases on the planet is cement. Its production creates more carbon emissions than all the airplanes and ships in the world. bioMASON, a biotechnology startup in Raleigh, North Carolina, has spent the past four years using bacteria to grow cement and make bricks. This microbial business...

Autonomous Systems

AI at the Edge: NVIDIA Jetson T2 Small Supercomputer for UAVs and Robots

Nvidia announced the Jetson TX2, a high-performance single board computer designed to be the brains of self-driving cars, selfie-snapping drones, Alexa-like bots for the privacy-minded, and other applications that require a lot of processing on a significant power budget. The TX2 is a tiny board bolted to a credit-card sized heat sink. For anyone who is already using the Jetson TX1, the TX2...

How 1960s Nuclear-Fallout Math Influences Today's Drone Regulations

As countries around the world establish drone regulations, they seem to have settled on using a mass of 250 grams, or about half a pound, as the threshold to require registration and/or further permission to fly. That covers all but the smallest of consumer toy drones. But a research report from DJI, the world's largest drone company, suggests that weight is far too conservative—by a factor of almost 10x. The report offers an interesting...

Directed Energy

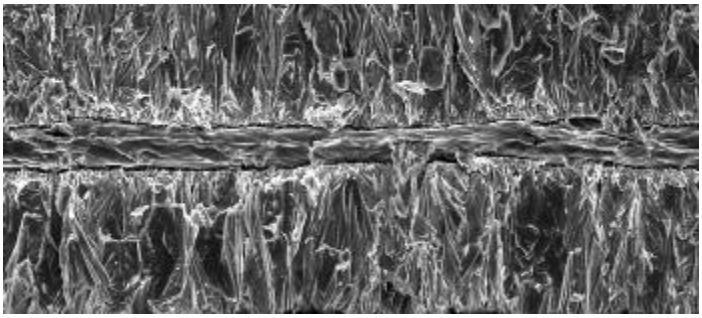
Navy Laser Mine Detection Now Operational

The Airborne Laser Mine Detection System (ALMDS) developed by Northrop Grumman for the MH-60S Seahawk helicopter has reached initial operational capability, according to Navy spokesman Alan Baribeau. The ALMDS makes use of the motion of the aircraft and advanced bathymetric laser pulse technology to identify and localize mines in shallow areas, such as littoral zones and geographic choke points. The blue-green laser...

UES Researching Materials to Protect Sensors and Weapons from Lasers

Electro-optics experts at UES Inc. are conducting materials experiments to help safeguard U.S. and allied sensors and military systems from lasers and laser weapons. Officials of the U.S. Air Force Research Laboratory at Wright-Patterson Air Force Base, Ohio, announced a $44.7 million contract to UES Friday for research work involved in the Laser Materials for Blue Systems Survivability (LaMBSS) project. LaMBSS seeks to investigate...

Energetics



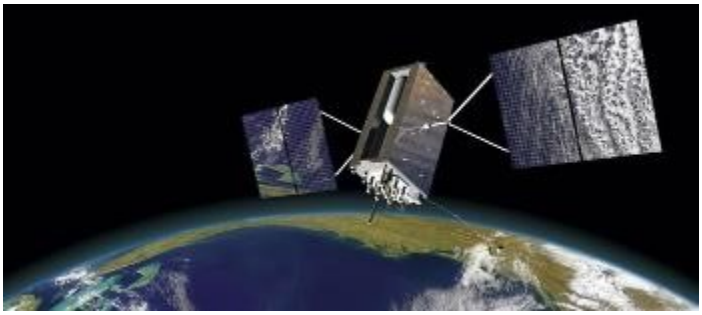
Electroplating Delivers High-Energy, High-Power Batteries

Researchers at the University of Illinois, Xerion Advanced Battery Corporation and Nanjing University in China developed a method for electroplating lithium-ion battery cathodes, yielding high-quality, high-performance battery materials that could also open the door to flexible and solid-state batteries. “This is an entirely new approach to manufacturing battery cathodes, which resulted in...

How Fear of Nuclear Power is Hurting Our Ability to Generate Clean Energy

"We're not in a clean energy revolution; we're in a clean energy crisis," says climate policy expert Michael Shellenberger. His surprising solution: nuclear. In this talk, he explains why it's time to overcome longstanding fears of the technology, and why he and other environmentalists believe it's past time to embrace nuclear as a viable and desirable source of clean power. Have you heard the...

Military Sensing



Space and Air Ops Teams Integrating to Fight ISIS

Integration of space, air and cyber teams, within the guise of the paradigm shift of multi-domain command and control chief of staff of the Air Force Gen. David Goldfien has pushed, is becoming a reality in the fight against the Islamic State group. In a “war story,” Gen. Goldfein described how an MQ-9 Reaper was flying an armed reconnaissance mission over Iraq in early January when...

WVU Researcher to Study Computer Vision-Related Image Recognition

Self-driving cars use images from on-board cameras to navigate through cities. Research at West Virginia University could help solve a problem for those autonomous vehicles—recognizing the same image in different pictures. Victor Fragoso, an assistant professor in the Lane Department of Computer Science and Electrical Engineering at WVU, said a computers inability to identify...

Non-Lethal Weapons

Army Plans to Shoot Supplies to its Own Soldiers Inside Hollow Mortars

The U.S. Army is researching a new way to resupply troops: by bombing them with mortars. The service was recently granted a patent for a method that uses hollow artillery shells, GPS, and parasails to deliver goods to soldiers pinned down on the battlefield. In this era of automatic weapons, it's relatively easy to run out of ammunition. A soldier's basic load of 180 rounds for his weapon might run low during a firefight, prompting a need for...

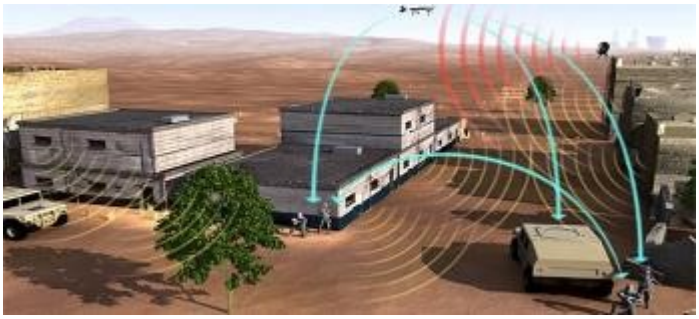
Department 13 Completes Successful Tests of MESMER Counter-Drone Solution

Department 13 conducted a series of sales demonstrations and operational tests in Australia of its recently launched flagship counter-drone product, MESMER Version 1.0 ("MESMER"). MESMER is a unique patented, low power, non-jamming, non-line of sight, non-kinetic drone mitigation solution, enabling an effective and safe method of protecting personnel and infrastructure from dangerous drones. "Mesmer performed at the highest...

RMQSI

Cold Spray Repairs Save Time and Money

A new method of patching metal components with a cold spray process called Kinetic Metallization is saving the Naval Aviation Enterprise time and money in repairing aircraft components and returning them to the fleet. Kinetic Metallization, generically referred to as cold spray, is an additive, solid-state thermal spray process that restores components' critical dimensional features lost to corrosion, wear or mechanical damage. The process bonds metal to metal in a relatively low-heat...



How the Army's Legacy Systems Take on 21st Century Threats

Despite the high-tech threats facing U.S. forces, the Army continues to operate platforms and vehicles that are decades old. The threat from electronic jamming or electronic warfare is significantly more advanced than decades past, with adversaries such as Russia demonstrating capabilities that have worried commanders. The Army Reprogramming Analysis Team (ARAT) works to keep legacy radars and systems relevant in this highly...

Survivability & Vulnerability

NRL Develops Lighter, Field Repairable Transparent Armor

Research chemists at U.S. Naval Research Laboratory (NRL) have developed and patented a transparent thermoplastic elastomer armor to reduce weight, inherent in most bullet-resistant glass, while maintaining superior ballistic properties. Thermoplastic elastomers are soft, rubbery polymers converted by physical means, rather than a chemical process, to a solid. Consequently, the solidification is reversible and enables damaged armor...

Air Force Academy Cadet Creates Goo That Stops Bullets

A gooey substance normally wouldn't seem like it could stop a bullet, but an Air Force Academy cadet has created just that. Cadet 1st Class Hayley Weir's interest in bullet-stopping materials was piqued when she took a chemistry class at the academy in 2014. The class was given three materials to combine in a way that could stop a bullet. The students were given an epoxy, Kevlar and carbon fiber — materials that would harden together to...

Weapon Systems

Army Developing Laser-Guided, Precision Mortar

The Army has closed its initial solicitation phase for designs to create a next generation precision mortar that will allow Soldiers to put their rounds on target with extreme accuracy. The 120 mm high explosive guided mortar, or HEGM program, is intended to replace the current precision-guided HE mortar, the accelerated precision mortar initiative or APMI. The solicitation period, which ended Jan. 27, sought feasible designs from the private...

Navy Pursues Advanced Drone Ship Mine-Hunting Tech

The Navy is continuing to move forward with development of the Unmanned Influence Sweep System (UISS) countermine technologies as part of its overall effort to create a fleet of unmanned vehicles capable of enhanced coordination while performing a wider range of technical operations. The Navy most recently affirmed its commitment to the UISS and the unmanned vehicle fleet concept by granting a $14,820,302 contract modification to...

Announcements & Events

OpenWERX Challenge: Jump the Dog

OpenWERX Challenges provide a forum for groups to use open source / open hardware / creative commons building blocks to develop all new hardware, electronics and software and earn cash prizes. Jump the Dog is focused on development of a Canine Oxygen Mask for High Altitude High Opening (HAHO).
DATE: June 1, 2017

9th Annual GVSETS & APBI

The Ground Vehicle Systems Engineering and Technology Symposium (GVSETS) and Advanced Planning Briefings for Industry (ABPI) brings over 1,000 executives, program managers, engineers, and other key decision-makers together to discuss initiatives, programs, plans, and technologies for manned and unmanned systems in the ground domain.
DATE: August 8-10, 2017

4th Biennial Strike Challenge

Strike Challenge affords industry an opportunity to provide interactive demonstrations of domestic capability (DOMOPS) and specialized response systems. The focus is on man-pack and light mobility support equipment designed for light responder / specialized unit use in emergency response, survivability, security, search and rescue, and 'special' operations.
DATE: August 15-17, 2017

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