

Defense Systems

NEWS DIGEST

19 December 2017 - THE LATEST IN DEFENSE SYSTEM NEWS



The Death of American Conventional Warfare

Conventional warfare is officially dead. This has become an obvious trend with innumerable adversaries engaging the American military and its allies in unconventional ways with unconventional means. The long-held notion of the decisive battle that brings the combat power of two nations against each other for a winner-take-all slugfest lies in the next grave. Even wars of attrition, in the model of the American Civil War, First and Second World Wars, and Korea are gone...

Advanced Materials



Unique High-Brilliance X-Ray Sheds New Light on Additive Manufacturing Process

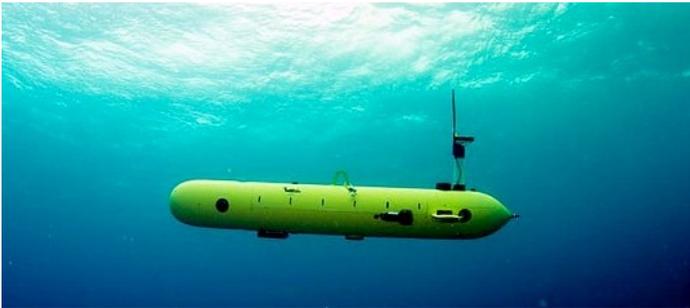
3D printing technology is improving; however, it is not yet mature enough for practical warfighter use. Complications arise due to the way printed layers keep their shape when bonding to each other. Material porosity, weak blending, and other factors can result in poor bonding between layers, weakening the overall structure of the...



GE Sees Potential in 'Self-Inspecting' Metal Additive Manufacturing Systems

General Electric (GE) researchers are working to combine computer vision and machine learning to develop a metal additive manufacturing system that can self-inspect its manufacturing process in real-time. The goal is machine only produced perfect parts (100% yield), eliminating the need for post-processing and inspection...

Autonomous Systems



Israel's First Underwater Robotic Vehicle

Ben-Gurion University (BGU) has developed the "HydroCamel II", Israel's first autonomous underwater vehicle (AUV). The AUV will be commercially available through BG Robotics (BGR) for use in the military, security, and oil and gas sectors, as well as in environmental applications and marine research. The eight-foot-long AUV combines full autonomy and maneuverability with quick integration of specialized payloads such as sonars, sensors, cameras, and a specimen collection arm...



Boeing and Lockheed Martin Build Extra-Large UUVs for Long-Endurance Missions

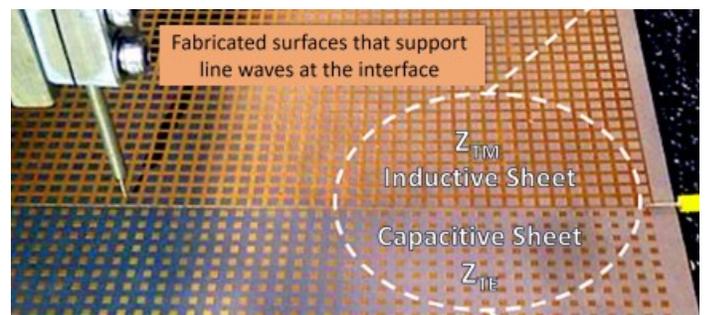
Undersea warfare experts at two of the nation's largest defense contractors are designing prototype extra-large unmanned underwater vehicles (UUVs) with the potential to undertake long-endurance missions to deploy sensors or other UUVs. Extra-large UUVs typically are autonomous mini-submarines that measure about seven feet in diameter - sometimes larger. They are designed for launch from shore or from large military ships with well...

Directed Energy



Navy Lasers, Railgun, and Hypervelocity Projectile: Background and Issues

The Navy is developing three potential new weapons that could improve the ability of its surface ships to defend themselves against enemy missiles—solid state lasers (SSLs), electromagnetic railguns (EMRGs), and hypervelocity projectiles (HVPs). Any one of these, if successfully deployed, might be regarded as a "game changer" for defending surface ships. If two or three of them are successfully deployed, the result might be a revolution...



Squeezing Light Into Infinitesimally Thin Lines

Researchers have demonstrated a new mode of electromagnetic (EM) wave, called a "line wave," which travels along an infinitesimally thin line along the interface between two adjacent surfaces with different EM properties. Scientists expect that line waves will be useful for the efficient routing and concentration of EM energy, such as light, with potential applications in areas ranging from integrated photonics, sensing and quantum processes...

Energetics



First Four Space Launch System Flight Engines Ready To Rumble

Flight preparations for the four engines that will power NASA's Space Launch System (SLS) on its first Orion integrated flight are complete. The engines are assembled and ready to be joined to the deep space rocket's core stage. All five structures that form the massive core stage for the rocket have been built including the section where the RS-25 engines will attach. The SLS team has constructed major parts of the rocket, such as the...



Fuel Cells - the Future of Carbon Capture?

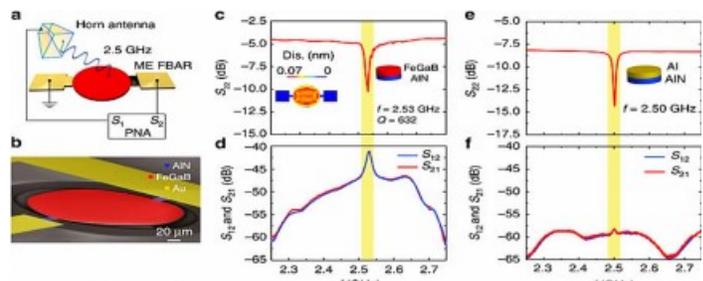
On paper, the idea is brilliant: Capture carbon dioxide molecules from a power plant's emissions before they reach the atmosphere, while also generating power. The concept, formally known as carbon capture, is simple. Its execution, though, is challenging. Despite the challenges, could fuel cells help cut global emissions? ExxonMobil scientist Tim Barckholtz thinks so. ExxonMobil and FuelCell Energy are tapping the power of utility-scale fuel cells to capture carbon emissions. Existing technolo-

Military Sensing



Ocean of Things Aims to Expand Maritime Awareness Across Open Seas

DARPA announced its Ocean of Things program, which seeks to enable persistent maritime situational awareness over large ocean areas by deploying thousands of small, low-cost floats that could form a distributed sensor network. Each smart float would contain a suite of commercially available sensors to collect environmental data—such as ocean temperature, sea state, and location—as well as activity data about commercial vessels...



Acoustically Activated Ultra-Compact Magnetolectric thin-film bulk Acoustic Wave Resonators (ME FBAR) and Antenna Measurement Setup

Acoustically Actuated Ultra-Compact NEMS Magnetolectric (ME) Antennas

Acoustically actuated nanomechanical ME antennas with a suspended ferromagnetic/piezoelectric thin-film heterostructure receive and transmit EM waves through the ME effect at their acoustic resonance frequencies. The antennas also sense the magnetic fields of EM waves, giving a voltage output. ME antennas demonstrate 1–2 orders of magnitude miniaturization over state-of-the-art compact antennas without performance degradation...

Non-Lethal Weapons



DOGO Robot Will Pepper Spray Targets

Israeli firm General Robotics has unveiled its Less-Lethal Weapon (LLW) module for its DOGO robot. The LLW has a variety of non-lethal capabilities to assist special forces and police using the 22-pound DOGO. These include a remote-controlled pepper spray with a range of 18 feet, and a bright light to daze targets. "With the DOGO LLW module, the system enables special forces full discretion of the lethality level that is to be used under the circumstances, as activating an accurate lethal or less lethal..."



Digital Ally Awarded U.S. Patent on Wirelessly Conducted Electroshock Weapon

Digital Ally has been issued a patent on a wirelessly conducted electronic non-lethal weapon system designed for law enforcement use to control noncompliant subjects. The radio frequency controlled launcher fires a wireless direct contact projectile to administer the shock. The design is compact, easy to carry, reduces projectile velocity at launch, provides improved accuracy, and allows the officer to wirelessly control the shock...

RMQSI



Sensors and Sensibility Keep Today's Jet Planes Working Hard

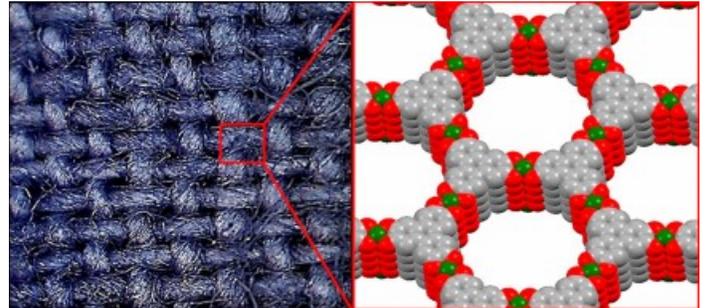
Passenger and freight plane jet engines may seem the antithesis of the digital economy. Twenty years ago, Rolls-Royce introduced its Total Care package, with maintenance provided to customers using information from digital sensors. As a result, Rolls-Royce and rivals such as Pratt & Whitney know more than most about the challenges and opportunities presented by the internet of things (IoT). Other sectors can learn from their experiences...



Royal Navy Being Eaten Away by 'Cannibalization' of Ships for Spare Parts

The Royal Navy is increasingly forced to cannibalize its own warships and submarines for spare parts as funding has been cut, a Government spending watchdog has said. Instances of ships being stripped of parts for other vessels more in need have risen by half in the past five years. The National Audit Office (NAO) investigation was published as a former First Sea Lord said it was further evidence the Armed Forces were being hollowed out...

Survivability & Vulnerability



Army, Cornell Researchers Study Octopus Skin to Use in Camouflage

Researchers are studying texture-changing octopus skin to see if the military can use its camouflaging properties. They were inspired by how easily an octopus can change the texture and color of its skin to blend in with its surroundings. The new mesh-based silicone material can inflate and deflate into various shapes. The basic research is in the early stages, but the team hopes to have the material change color and texture at the same time...

New Soft Electronic Textiles Could Offer Advanced Protection for Soldiers

A research team has created new smart fabrics—named SOFT, for Self-Organized Framework on Textiles—and demonstrated simultaneous detection, capture, pre-concentration and filtration of gases in a wearable that uses conductive, porous materials integrated into soft textiles. The SOFT devices have potential for applications ranging from real-time gas detection in wearable systems, to electronically accessible adsorbent layers...

Weapon Systems



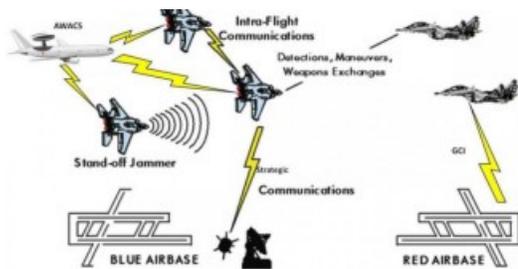
Army's Powerful New 7.62mm Service Rifle Is Officially Dead

The Army has officially canceled its search for an off-the-shelf 7.62mm Interim Combat Service Rifle (ICSR) to replace the standard-issue M4 carbine—a major setback in the search for a new infantry rifle to augment soldier lethality. The ICSR saga has been a turbulent one. In May, Army Chief of Staff Gen. Mark Milley told lawmakers that current 5.56 mm rounds for M4 and M16 assault rifles cannot penetrate modern enemy body armor...

General Atomics to Boost MQ-9 Reaper Firepower with Small-Diameter Bomb

Unmanned aerial vehicle (UAV) experts at General Atomics are integrating the Raytheon laser-guided small diameter bomb (SDB) on the company's MQ-9 Reaper mid-size attack UAV under terms of a \$17.5 million contract. The SDB will add to the Reaper's arsenal, which already includes the GBU-12 Paveway II laser-guided bomb, AGM-114 Hellfire II air-to-ground missile, AIM-9 Sidewinder air-to-air missile, and GBU-38 Joint Direct...

Announcements & Events



Brawler Training

Brawler is a U.S. Govt. owned, comprehensive simulation tool which provides a detailed representation of air-to-air combat engagements involving multiple flights of aircraft in both the visual and beyond-visual-range (BVR) arenas. The course is designed for individuals running Brawler, generating input data, and/or analyzing results.
DATE: January 16-19, 2018



HIGH TEMPLE Workshop 2018

The High Temperature Polymeric Laminate (HIGH TEMPLE aka High Temple) Workshop was initiated in 1982 by a Tri-Service/NASA steering group. The workshop provides opportunities for the high temperature composites community to learn, evaluate and review current advances impacting the community.
DATE: January 29-February 1, 2018



Military Additive Manufacturing Summit

This summit serves as an educational and training "Town Hall" forum for thought leaders and policy-makers across military services, Defense agencies, and civilian organizations to conduct actionable discussions and debate on technology and innovation to develop additive manufacturing and level of capability that delivers greater flexibility to the Warfighter in.
DATE: February 1-2, 2018

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