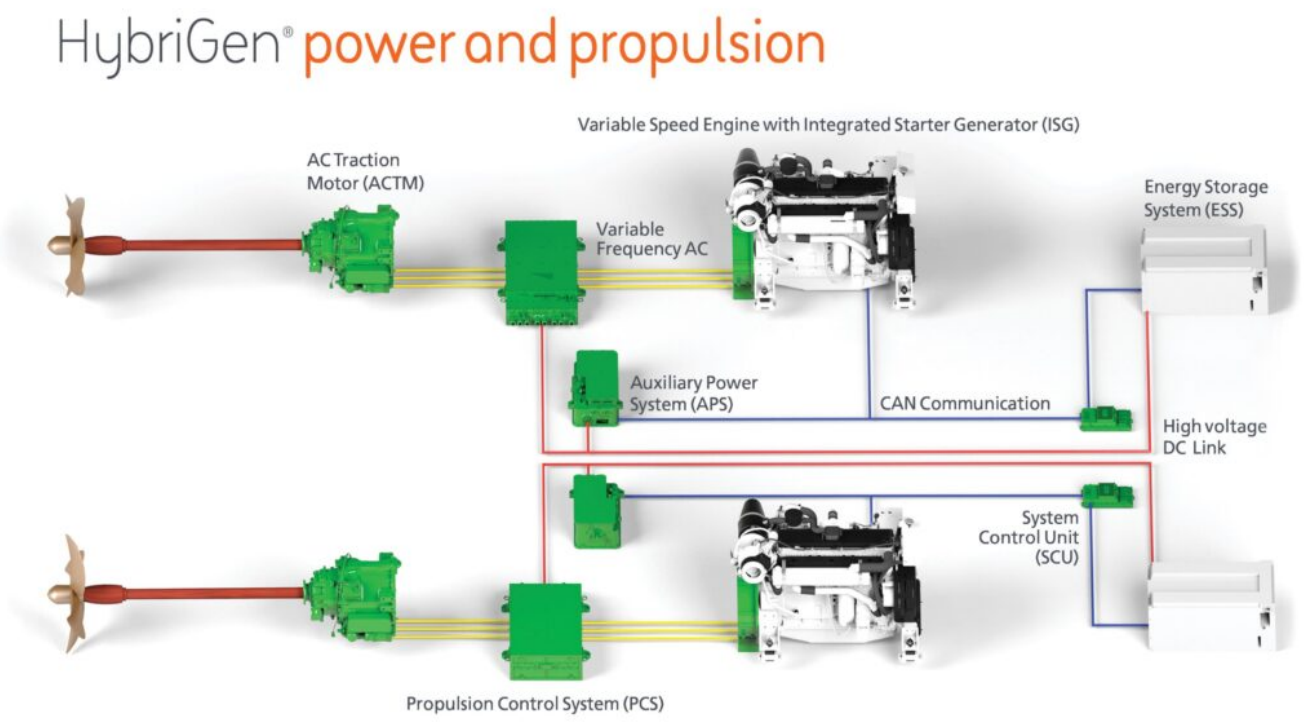
BAE Systems Launches Next-Gen Power and Propulsion System to Help Operators Reach Zero Emissions



BAE SYSTEMS

ENDICOTT, N.Y. – Nov. 23, 2021 – BAE Systems, a leader in electric propulsion, has launched its next-generation power and propulsion system for the marine market. The HybriGen Power and Propulsion system is a flexible solution to help operators reach zero emissions – improving electrical efficiency and vessel range, increasing propulsion power, and simplifying installation.

The HybriGen Power and Propulsion system uses smaller and lighter components for vessels, building on the company's 25 years of experience in electric propulsion systems. Its modular accessory power system and modular power control system allow for a scalable, tailor-made solution to fit the

specific power and propulsion requirements of a range of vessels, from sailboats and tugs to passenger ferries.

“Our investment in this next-generation technology will provide marine operators with cutting-edge capabilities to create clean transportation,” said Steve Trichka, vice president and general manager of Power & Propulsion Solutions at BAE Systems. “Using a modular design, we can customize our solution to meet the exact needs of each customer, simplifying the installation and improving system reliability. The increased propulsion power and electrical efficiency mean our customers can now accelerate their journey to zero emissions.”

BAE Systems’ electric propulsion technology supports low and zero emission applications with proven controls and components that are available in multiple system configurations.

BAE Systems has more than 14,000 power and propulsion systems in markets around the globe. Each year, those systems contribute to a cleaner world by saving more than 30 million gallons of fuel and eliminating 335,000 tons of carbon dioxide each year – the equivalent of taking 59,000 cars off the road or planting 4.5 million trees.

Work on the HybriGen Power and Propulsion System will be conducted at the company’s facility in Endicott, New York.

U.S. Navy, Jordan Partner on New Unmanned Systems

Integration

Vice Adm. Brad Cooper, commander of U.S. Naval Forces Central Command, U.S. 5th Fleet and Combined Maritime Forces, left, and Col. Hisham Khaleel Aljarrah, commander of the Royal Jordanian Naval Force, examine Task Force 59's new Saildrone Explorer unmanned surface vessel at Naval Support Activity Bahrain, Nov. 18. *U.S. NAVY / Mass Communication Specialist 2nd Class Mark Thomas Mahmod*

MANAMA, Bahrain – U.S. Naval Forces Central Command (NAVCENT) briefed the head of Jordan's navy on U.S. 5th Fleet efforts to integrate new unmanned systems during a visit to U.S. Naval Support Activity Bahrain, Nov. 18, NAVCENT said in a release.

Personnel from NAVCENT's Task Force 59 briefed Col. Hisham Khaleel Aljarrah, commander of the Royal Jordanian Naval Force, alongside Vice Adm. Brad Cooper, commander of NAVCENT, U.S. 5th Fleet and Combined Maritime Forces on the task force's new Saildrone Explorer unmanned surface vessel (USV).

The visit signaled U.S. 5th Fleet's commitment to partnering with Jordan after establishing the new unmanned task force in September to focus U.S. 5th Fleet efforts on unmanned systems and artificial intelligence integration.

The Royal Jordanian naval base in Aqaba, Jordan will become a joint hub for Saildrone USV operations in the Red Sea next month. The United States and Jordan share a strong bilateral partnership in maintaining regional maritime security and stability.

"This is a major step in our effort to integrate new unmanned systems with our regional partners," said Cooper. "Our strong partnership with Jordan will help accelerate new system development and integration to enhance maritime domain awareness and strengthen deterrence."

The Saildrone Explorer is a 23-foot-long, 16-foot-tall USV reliant on wind power for propulsion. The vessel houses a package of sensors powered through solar energy for monitoring the maritime environment.

"We are working harder and smarter to achieve maritime security, in all domains – surface, subsurface, and over the sea," said Hisham. "The Red Sea will witness a significant increase in monitoring and power projection to maintain stability and security within international waters"

The Middle East region's unique geography, climate, and strategic importance offer an ideal environment for unmanned innovation through multilateral collaboration. The area includes the world's largest standing maritime partnership, Arabian Gulf, Red Sea, Gulf of Oman and parts of the Indian Ocean.

MDA Selects Raytheon as One Co. to Develop First Counter-Hypersonic Interceptor

Raytheon Missiles & Defense's artistic rendering of a GPI conceptual design. *RAYTHEON MISSILES & DEFENSE*

TUCSON, Ariz. – Raytheon Missiles & Defense, a Raytheon Technologies business, has been selected by the Missile Defense Agency (MDA) as one of the companies to develop and test the first interceptor specifically designed to defeat hypersonic threats, the company said Nov. 19.

The weapon, called Glide Phase Interceptor (GPI), is intended to defeat a new generation of hypersonic missiles, weapons that travel more than five times the speed of sound and maneuver rapidly in flight.

"Raytheon Technologies systems are the cornerstone of today's

ballistic missile defenses. We're building on that knowledge to advance the missile defense system for future threats," said Tay Fitzgerald, vice president of Strategic Missile Defense. "GPI's speed, ability to withstand extreme heat, and maneuverability will make it the first missile designed to engage this advanced threat."

GPI will intercept hypersonic weapons in the glide phase of flight, which occurs once a missile has re-entered Earth's atmosphere and is manuevering toward its target. The initial development phase will focus on reducing technical risk, rapidly developing technology, and demonstrating the ability to intercept a hypersonic threat.

Developed on behalf of the MDA, GPI will be integrated into the U.S. Navy's Aegis Weapon System, a ship- and shore-based defense system.

Raytheon Technologies' missile defense portfolio combines sensors, interceptors and command and control networks to track and defeat a wide range of threats. Today, the company is responsible for portions of nearly every air and missile defense system deployed by the U.S. and its allies.

HII Awarded Additional $113.6 Million for Advance Procurement for LHA 9

Sailors aboard amphibious assault ship USS Tripoli (LHA 7) man the rails on the ship's flight deck as the ship prepares to pull into San Francisco in support of San Francisco Fleet Week, Sept. 11. Huntington Ingalls Industries has received a contract modification to enable long-lead material and advanced procurement activities for amphibious assualt ship LHA 9. *U.S. NAVY / Mass Communication Specialist 3rd Class Erica Higa*

PASCAGOULA, Miss. – Huntington Ingalls Industries' Ingalls Shipbuilding division has received a contract modification from the U.S. Navy for $113.6 million to enable long-lead-time material and advance procurement activities for amphibious assault ship LHA 9, the company said Nov. 19. This modification brings the total advance funding for LHA 9 to $651 million.

"We appreciate the partnership we have with the Navy and their continued commitment to this important ship," Ingalls Shipbuilding President Kari Wilkinson said. "Not only will it provide capability to our Navy fleet, but it also sustains hundreds of jobs across the country within our vast network of

suppliers in support of construction.”

LHAs are the centerpiece of the Navy amphibious ready groups and Marine Corps air ground task forces. In addition to being lethal, mobile and agile maintenance and logistics facilities, LHAs are top-of-the-line medical facilities with full operating suites and triage capabilities.

Ingalls is the sole builder of large-deck amphibious ships for the Navy. The shipyard delivered its first amphibious assault ship, the Iwo Jima-class USS Tripoli (LPH 10), in 1966. Ingalls has since built five Tarawa-class (LHA 1) ships, eight Wasp-class (LHD 1) ships and the first in the new America class of amphibious assault ships (LHA 6) in 2014. The second ship in the America class, USS Tripoli (LHA 7), was delivered to the Navy in early 2020. Bougainville (LHA 8) is under construction.

Aegis Ashore in Poland on Target for 2022

The new Naval Support Facility in Redzikowo, Poland, will be home to the Aegis Ashore Ballistic Missile Defense System(AABMDS) mission in the coming years and is expected to be completed sometime in late 2020. *U.S. NAVY / Lt. Amy Forsythe*

ARLINGTON, Va. – The Aegis Ashore capability planned for Poland is moving ahead to be operational by the end of next year, the program executive officer for Aegis Ballistic Missile Defense said Nov. 19.

The Aegis Combat System was originally designed as a shipboard system to track and destroy incoming enemy targets, but the system has also been deployed for use on land as "Aegis Ashore."

Already an Aegis Ashore capability is up and running in Deveselu, Romania, about 90 miles from Bucharest. The site, under the control of NATO, has been in operation for more than five years now.

A site similar to the one in Romania is also planned for Redzikowo, Poland, near the Baltic Sea. But that site has been delayed due to construction issues, although efforts are now underway to get the site operational by the end of next

year.

“My part, which is to install the Aegis Weapon System, has been delayed as we work the military construction with our contractors,” said Rear Adm. Tom Druggan during a discussion on Thursday at the Center for Strategic and International Studies in Washington, D.C. “We are behind, given the original schedule, no question about that. The good news is we’re getting the quality we want for a facility that’s going to be there 50 to 75 years, and we now have the right management in place in order to move ahead and complete this.”

Over the summer, Druggan said, the Aegis system in Poland was pulled out of storage there and assembled to test its operations.

“We … put the whole weapon system together with the exception of the antennas,” he said. “We energized it. And the equipment had been in the containers for a while. We found some issues – good news is we fixed them. And then we did an upgrade, which is saving time from a future availability. So that system is actually our most upgraded system today, ready to be installed.”

In an unusual move, Druggan said, the Aegis Ashore capability in Poland is now being set up as the infrastructure on the ground to support it becomes available. He said antennas for the AN/SPY radar system have already been set up.

“We’re installing the backbone of the radar behind it,” he said. “We’ve installed some systems. And we’re going to keep installing our pieces in parallel to the commissioning of all the industrial equipment, power, cooling, ventilation, that’s going on, on the construction side.”

Normally, he said, installing an Aegis system wouldn’t happen until all the supporting construction was complete.

“I made the decision long ago that we were not going to wait,”

he said. “We were going to do what we could, when we could, based on the conditions within the deckhouse. That has proved to be a successful strategy. And now we’ve got good momentum.”

Druggan said he expects the Aegis Ashore site in Poland to be operational by the end of 2022, and at that point the transition of the system can happen first to the Navy, then to U.S. European Command, and finally to NATO.

Icebreaker Returns Home following Northwest Passage Transit, Arctic Research Missions, Circumnavigation of North America

Coast Guard Cutter Healy (WAGB 20) transits Elliott Bay off Seattle Nov. 20 as it returns to its homeport after a 133-day deployment in which the crew circumnavigated North America via the Northwest Passage. The deployment involved both military and scientific operations. *JAMES BRADY*

SEATTLE – The crew of U.S. Coast Guard Cutter Healy (WAGB 20) returned to their Seattle homeport Saturday following a 22,000-mile, 133-day deployment circumnavigating North America, the Coast Guard Pacific Area said Nov. 20.

The crew aboard Healy, a 420-foot medium icebreaker, provided U.S. surface presence in the Arctic, supported high-latitude oceanographic research missions, participated in an international search-and-rescue exercise and engaged in passing exercises with surface vessels from the U.S. Navy, Canadian navy and Mexican navy.

Healy's crew hosted members of the international science community and institutions from the U.S., Canada, Norway and Denmark who conducted oceanographic research throughout the

Arctic, including the Northwest Passage and within Baffin Bay, to monitor environmental change.

Healy crewmembers also facilitated 430 over-the-side casts of various scientific instruments including a conductivity, temperature and depth array that requires the cutter to station keep as wire lowers and recovers the instrument from below the surface. Additionally, Healy mapped over 20,000-square kilometers of the seafloor, including 12,000-square kilometers of previously unmapped regions, throughout the patrol.

Healy transited north of Canada via the Northwest Passage, where the crew rendezvoused with members of the Canadian Coast Guard and Canadian Rangers for a search-and-rescue exercise. The crew transited south of Mexico via the Panama Canal on their way home. Healy's deployment supported the Coast Guard's Arctic strategy while providing critical training opportunities for future icebreaker sailors.

"Healy's crew demonstrated their tremendous dedication to duty while carrying out the Coast Guard's Arctic mission, operating in some of the harshest regions in the world," said Coast Guard Cutter Healy's Commanding Officer Capt. Kenneth Boda. "They assisted teams of scientists in gathering invaluable data and information throughout the deployment. This research will be shared with laboratories, universities and institutions around the world to support research focused on the changing Arctic environment."

While transiting down the east coast of the United States and back up the west coast of Mexico, Healy engaged in multiple outreach events including passing exercises, professional exchanges and embarking distinguished visitors to bolster relations with other nations.

Healy deploys annually to the Arctic in support of

oceanographic research and Operation Arctic Shield, the Service's annual operation to execute U.S. Coast Guard missions, enhance maritime domain awareness, strengthen partnerships, and build preparedness, prevention, and response capabilities across the Arctic domain.

Commissioned in 2000, Healy is one of two active polar icebreakers in the Coast Guard's fleet. Healy is capable of breaking four feet of ice continuously and up to eight feet of ice while backing and ramming.

The U.S. Coast Guard is recapitalizing its polar icebreaker fleet to ensure continued access to the Polar Regions and protect the country's economic, commercial, environmental, and national security interests. The Coast Guard and U.S. Navy, through an integrated program office, on April 23, 2019, awarded VT Halter Marine Inc., of Pascagoula, Mississippi, a fixed-price incentive contract for the detail, design and construction of the lead Polar security cutter with contract delivery planned for 2025.

Navy to Christen Future Littoral Combat Ship Marinette

The Navy will christen the future USS Marinette (LCS 25) on Nov. 20. Shown here is the future USS Nantucket, christened Aug. 7. *LOCKHEED MARTIN*

ARLINGTON, Va.—The Navy will christen the future USS Marinette (LCS 25) as the newest Freedom-variant littoral combat ship (LCS) during a 10:00 a.m. CST ceremony Saturday, Nov. 20, in Marinette, Wisconsin, the Defense Department said Nov. 19.

The principal speaker is Meredith Berger, performing the duties of the under secretary of the Navy. Additional speakers include Vice Adm. William Galinis, commander, Naval Sea Systems Command; Rear Adm. Casey Moton, program executive officer for Unmanned and Small Combatants; Steve Genisot, mayor of Marinette, Wisconsin; and shipbuilders Steve Allen, Lockheed Martin vice president of Small Combatants and Ship Systems, and Dario Deste, president and CEO of Fincantieri Marine Group. The ship's sponsor, former Michigan governor Jennifer M. Granholm, will break a bottle of sparkling wine across the bow in a time-honored Navy tradition.

“The future USS Marinette will be the second U.S. Navy ship honoring the important naval heritage and shipbuilding history the city of Marinette is known for,” said Secretary of the Navy Carlos Del Toro. “I have no doubt the Sailors of USS Marinette [LCS 25] will carry on the proud legacy from generations past and will stand ready to respond to any mission, wherever, and whenever, there is a need.”

LCS is a fast, agile, mission-focused platform designed to operate in near-shore environments, winning against 21st-century coastal threats. The platform is capable of supporting forward presence, maritime security, sea control and deterrence.

The LCS class consists of two variants, the Freedom and the Independence, designed and built by two industry teams. Lockheed Martin leads the Freedom variant team, or odd-numbered hulls, in Marinette, Wisconsin. Austal USA leads the Independence variant team in Mobile, Alabama for LCS 6 and the subsequent even-numbered hulls.

LCS 25 is the 13th Freedom-variant LCS and 25th in the LCS class. It is the second ship named in honor of the city of Marinette, Wisconsin. The first Marinette (YTB-791), a Natick-class large fleet tugboat, was launched in 1967 and performed miscellaneous tugging services in the 5th Naval District, headquartered at Norfolk, Virginia.

Navy Accepts Delivery of Future LCS USS Minneapolis-

Saint Paul

The U.S. Navy accepted delivery of the future USS Minneapolis-Saint Paul (LCS 21) Nov. 18. *LOCKHEED MARTIN*

MARINETTE, WIS. – The Navy accepted delivery of the future USS Minneapolis-Saint Paul (LCS 21) at the Fincantieri Marinette Marine (FMM) shipyard Nov. 18, Program Executive Office – Unmanned and Small Combatants (PEO USC) Public Affairs said in a release.

The future USS Minneapolis-Saint Paul is the 11th Freedom-variant LCS designed by the Lockheed Martin-led industry team at Fincantieri Marinette Marine, Marinette, Wisconsin. Delivery marks the official transfer of the ship from the shipbuilder, part of a Lockheed-Martin-led team to the Navy.

“Today marks a significant shipbuilding milestone in the life of the future USS Minneapolis-Saint Paul, an exceptional ship which will conduct operations around the globe,” said LCS program manager Capt. Mike Taylor. “I look forward to seeing

Minneapolis-Saint Paul join her sister ships with 100 percent of propulsion power available for unrestricted use.”

LCS 21 was accepted after rigorous testing of a combining gear modification that will allow for unrestricted operations, addressing a class-wide flaw that was discovered as the Fleet deployed these ships in greater numbers. LCS 21 is the first Freedom-variant ship to receive the fix.

The future USS Minneapolis-Saint Paul is the second naval ship to honor Minnesota’s Twin Cities although each city has been honored twice before. The first US Navy warship named Minneapolis-Saint Paul was a Los Angeles-class submarine launched in 1983 who took part in Operation Desert Shield/Desert Storm. USS Minneapolis-Saint Paul (SSN 708) was the first submarine to carry Tomahawk missiles specifically designed for use in strikes against Iraq during the Gulf War. Having served for over two decades with distinction, the submarine Minneapolis-Saint Paul was decommissioned in 2007.

Several more Freedom variant ships are under construction at Fincantieri Marinette Marine Corp. in Marinette, Wisconsin. Pending successful at-sea testing of its combining gear modification, Cooperstown (LCS 23) is planned to deliver in January 2022. Additional ships in various stages of construction include Marinette (LCS 25), Nantucket (LCS 27), Beloit (LCS 29) and Cleveland (LCS 31).

The Littoral Combat Ship (LCS) is a fast, agile, mission-focused platform designed to operate in near-shore environments, winning against 21st-century coastal threats. The LCS is capable of supporting forward presence, maritime security, sea control, and deterrence.

Rear Adm. Pappano: Supply Chain Fragility is No. 1 Risk to Columbia SSBN Program

An artist's rendering of the future U.S. Navy Columbia-class ballistic missile submarines. *U.S. NAVY*

ARLINGTON, Va. – The admiral in charge of building the Navy's next-generation ballistic-missile submarine (SSBN) said the fragility of the submarine industrial base supply chain is the main risk to the Columbia SSBN going on patrol on time in October 2030.

"The supply chain is the No. 1 risk to Columbia and 1 + 2," said Rear Adm. Scott Pappano, program executive officer for Strategic Submarines, speaking Nov. 18 at the Naval Submarine League's annual symposium in Arlington.

The “1+2” refers to the current submarine building load of one Columbia-class SSBN and two Virginia-class attack submarines (SSNs) per year.

Pappano also said because the Columbia-class SSBN is the Navy’s No.1 procurement priority, any schedule adjustment to the submarine programs would be borne by the Virginia-class SSNs before it would affect Columbia.

The admiral noted that in the post-Cold War period the submarine industrial base had 17,000 suppliers, a number that has declined to 5,000 today. He said the fragility is greatest with components such as castings, fittings, valves and electrical equipment.

Pappano said the Navy needs some sort of tripwire to warn the service when a supplier is faltering.

PEO Submarines soon is standing up a new directorate, PMS-396, to manage sustainment of in-service SSBNs.

He said there is no margin in the build schedule, so the Navy is not going to sponsor competitions for many components and systems already proven but will leave some room for competition.

The admiral also said that the Ohio-class SSBNs – designed for 30-year careers and extended to 42 years – may be extended even longer on an individual basis.

“Individual extensions are being looked at for targeted work,” he said.

The admiral also said that the patrol and refit cycles of the Ohio class may be adjusted “to better maximize” their service until the boats are retired in the late 2030s.

Pappano also stressed that the shore infrastructure that supports the SSBN force – such as the Trident Refit Facilities – needs attention if it is to last through the

2080s to service the Columbia SSBN force for its entire life.

Rear Adm. Perry: First New-Production Mark 48 Torpedoes Set for 2022 Delivery

Sailors assigned to the Los Angeles-class fast-attack submarine USS Columbia (SSN 771) load a Mark 48 advanced capability torpedo for Exercise Agile Dagger 2021. *U.S. NAVY / Mass Communication Specialist 1st Class Michael B. Zingaro*

ARLINGTON, Va. – The first of a new-production batch of heavy-weight torpedoes (HWTs) is slated for delivery to the U.S. Navy fleet beginning in fiscal 2022, the Navy's submarine resource sponsor said.

Rear Adm. Doug Perry, director of Undersea Warfare Programs speaking Nov. 18 at the Naval Submarine League's annual symposium in Arlington, said the Mark 48 HWT was last delivered in 1996, but that it has been incrementally upgraded ever since to the Advanced Capability (ADCAP) standard. However, new production was needed to build up the Navy's inventory to meet potential warfighting needs.

"The heavy-weight torpedo will remain the weapon of choice for the submarine for the foreseeable future, primarily due to its intended stealth, its destructive effectiveness in the battlespace, and [is] pretty difficult to defend against."

Perry also noted that the HWT sustains the stealth of the launch platform, the submarine.

The Navy restarted the ADCAP production in 2016, with the program bearing fruit this year.

Perry said the Navy is focusing on capacity in parallel with improvements for the torpedoes, including in sensor capability and in defeating countermeasures.

The modernization upgrades over the last two decades primarily have been focused on software algorithms and processing, he said.

"We're past time about introducing some game-changing capability into this mainstay weapon," Perry said. "We're introducing significant range increase through the re-introduction of a proven engine that can give us longer legs, much longer than the average ADCAP.

With the combination of some longer legs, some better sonar and processing and a digital backbone vice analog, it will enable us to have a one-shot, one-kill ADCAP into the next decade against those key platforms that the submarine force will be responsible to 'service'."