A Day to Remember

This is the anniversary of the 9/11 terrorist attacks on America, and on the world.

Once again, it is a day to reflect and remember. In fact, we who experienced the events of that day in any way must remember and share, lest we not forget. If you don't know about what happened that day, then you must become educated, and made aware of the events of that day in New York, Washington and Somerset County, Pennsylvania. It was an attack driven by hate, and an attack on all of us.

There is a saying that you die three times: when you take your last breath; when they cover your grave after your funeral; and when your name is uttered for the last time.

This is what I remember, and what I choose to reflect upon every year on this day. You will indulge me, I hope, because it is necessary for me to share this with others and share it every year on this day for as long as I can do so. It is the least I can do for a shipmate.

So, join me in saying his name: Michael Noeth.

*** Linseed oil:

Some things have an evocative smell.

When I was in command of the Naval Media Center in Washington, D.C., the executive officer of a ship based at Pearl Harbor – USS *Russell* (DDG 59) – called my staff at *All Hands* magazine in our Publishing Department. The XO had a Sailor aboard the ship who wanted to be a draftsman.

The "undesignated seamen" or SNs on a ship usually work in the deck force, chipping paint and handling lines. As they see what professional opportunities are available on board their ship, they can "strike" for a rating, like Radioman or

Quartermaster. A "Striker Board" will convene and review the needs of the ship, and the desires of the individual. If the Sailor is squared away, has done a good job with the deck force and the ship needs a Quartermaster (QM), for example, he or she can strike for that rating, and becomes a QMSN.

Seaman Michael Noeth wanted to be a Draftsman. The DM rating was one of the smallest ratings in the Navy. There were very few of them compared to Gunner's Mates or Machinist's Mates, and certainly none aboard a surface combatant. In fact, today the rating has been disestablished and the functions combined into the Mass Communications Specialist (MC) rating.

In this case, the executive officer wanted to do something good for his Sailor. And this was extraordinary, because USS *Russell* was about to depart on deployment. In spite of the fact that the ship was about to be on cruise for six months, the XO called us and asked if his Sailor could come and work with us to learn the DM rating so he would be prepared to take the DM test for Third Class Petty Officer. If he passed, he could become a DM3. If not, he could return to the ship and eventually strike for another rating. For our part of the deal, we had to cover his travel expenses. We said yes.

There are never enough Sailors in the Deck Force, especially on deployment, but the XO wanted to help a Sailor. So, SN Michael Noeth came to work for us in the Publishing Department at the Naval Media Center in Washington, D.C.

He was placed under the expert tutelage of our Draftsman First Class (DM1) Rhea Mackenzie. Seaman Noeth quickly made himself at home in a back corner of the *All Hands* magazine production spaces. And it was here he set up his easels, canvasses a and paints. When I would come by — which was often, because I was always wandering around Building 168 to see all of the interesting stories and projects our people were working on — I could smell the linseed oil he used for his brushes long before I reached his work area. He would have various canvasses and illustrations in various stages of completion posted around his desk, as well as examples of artwork he admired or wanted to emulate.

As one of the 450 men and women of the Naval Media Center, he learned his trade from an experienced draftsman, created artistic content for *All Hands* magazine, and became a wellliked and contributing member of the command. At our Halloween party, he came in second place in our costume contest. He was a dead ringer "Alex" from Clockwork Orange, and was topped only by an even more convincing Cruella Deville from 101 Dalmatians.

Whenever I got near his work area, I would be greeted by the smell of his linseed oil, and I knew I would be in for some kind of surprise. Seaman Noeth painted the cover for several issues of All Hands magazine (such as the one with a cut-out porthole that opened to an ocean panorama. To see him tackle these assignments was a joy, probably because he was enjoying his work, and appreciative of the opportunity. On my visits, I would see the many versions and sketches he was working on, and I could see it all come together with the finished product.

He took the advancement exam and passed it. As his six-month temporary assignment came to an end, his command allowed him to transfer to my command on a permanent basis as they did not have any billets for a draftsman, and we did. Soon, he moved on to other Navy assignments as a Draftsman, all because his ship wanted to give him a chance to realize his dream, and my command wanted to help him get there. We felt good about helping him attain his goal. But most of all, because he was a Sailor who deserved it.

He did, indeed, become a talented Navy illustrator and draftsman. He served aboard amphibious assault ship USS *Wasp* (LHD 1), and was later assigned to the Navy Command Center where he skillfully created briefings and presentations for Navy leadership. He was doing just that on September 11, 2001, when terrorists forced an airliner to crash into that building.

We must not forget. So, I choose to remember a bright, ambitious, creative young striker today, and whenever I smell linseed oil.

We will continue to speak his name.

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Please also see:

https://allhands.navy.mil/Stories/Display-Story/Article/183956
1/we-will-never-forget/

https://www.washingtonpost.com/wp-srv/metro/specials/attacked/ victims/v_358.html

https://pentagonmemorial.org/explore/biographies/dm2-michael-n
oeth-usn



Kongsberg Maritime Mission Bay Handling System: Peerless modularity meets fastchanging mission requirements



Release from Kongsberg Maritime

Kongsberg Maritime, a global leader in marine technology and solutions, announces a ground-breaking Mission Bay Handling System for naval vessels

DSEI, London – 11th September 2023- With over 80 years of experience in providing cutting-edge solutions to the naval market, Kongsberg Maritime is setting a new standard in naval mission-sensitive versatility with its new Mission Bay Handling System.

The next-generation of surface combatants are poised to carry a diverse array of manned and unmanned off-board vehicles and modular mission packages. To meet these evolving demands, the Mission Bay Handling System has been designed to offer an adaptable and flexible integration solution suitable for a wide range of naval operations, both current and future.

The Mission Bay Handling System is a game-changer for naval forces worldwide, as it enables the efficient deployment and recovery of both manned and unmanned crafts, with a vast range of hull types and propulsion configurations, from both sides of the ship. In today's rapidly changing battlespace, naval forces demand flexibility and multi-purpose ships. Thus, Kongsberg Maritime's Mission Bay Handling System is one key to transforming naval capability.

Robert Breivik, Kongsberg's Senior Sales Manager – Naval, emphasised the significance of modularity in naval operations, stating, "I speak to a lot of navies, and the one thing they all want is modularity. Navies want platforms that can easily be transformed to meet mission requirements, so the days of ships that are dedicated to a small range of tasks are over."

The global security landscape is evolving more rapidly than ever before, with urgent requirements in areas like underwater surveillance and monitoring of seabed utility assets like pipelines and cables. Modern ships must be multi-role, which means carrying a growing suite of newer, high-tech in-sea assets. The Mission Bay Handling System is designed to swiftly, safely, and effectively transport these assets, and where relevant their crews, to and from the hangar aboard the ship.

The system is suitable for a wide range of naval ships and is widely scalable to fit the size of the mission bay. It consists of three key elements:

Overhead Frame System: Using a standardised interface with the ship, this comprises rails and an 'interface unit' that connects to a wide range of interchangeable tools, enabling

quick tool changes without altering the core of the handling system. It offers both single and dual rail systems, with capacities up to 12 tonnes.

The Frame System is fixed to the deck above the mission bay, allowing in-sea assets to be suspended and easily moved from their storage spaces.

Multi-Purpose Hangar Crane: Handles 10' and 20' ISO containers up to 15 tonnes, rotating through 360 degrees and extending to the water level. This crane excels in the rapid deployment and retrieval of daughter craft up to 10 tonnes.

"Through our extensive experience from a lot of similar systems we have developed for subsea, oceanographic and research ships, this crane is not only very capable, but it gives navies options. It can handle cargo in standard shipping containers, and switch to deploying subsea and surface craft, quickly and safely," adds Breivik.

Additionally, various **Auxiliary Equipment** is available to complement the two main handling systems: a Deck Skid System, containerised launch and recovery systems, cargo handling crane for containers, and an overhead auxiliary crane for lighter loads.

Key Benefits of the Mission Bay Handling System:

Clean Deck: No permanent tripping hazards or obstacles installed on the deck.

Modularity: Built from an interchangeable suite of flexible handling systems.

Adaptive: Designed to fit hangars with different dimensions and shapes.

Time and cost saving: Eases mobilization and demobilisation, eliminating costly rebuilds between each mission setup.

Kongsberg Maritime's Mission Bay Handling System represents a major step forward in mission capabilities. It offers unmatched adaptability, efficiency, and safety, ensuring that naval forces are prepared to meet the challenges of the modern maritime battlespace.

GA-ASI Poised to Begin LongShot Flight Testing Phase



Release from General Atomics

SAN DIEGO – 11 September 2023 – General Atomics Aeronautical Systems, Inc. (GA-ASI) is poised to begin the flight-testing phase on the Defense Advanced Research Projects Agency's (DARPA) LongShot program. Begun in 2020, General Atomics was competitively awarded a contract to develop DARPA's concept for disruptive air combat operations through demonstration of an air-to-air weapons capable air vehicle. The concept seeks to significantly increase engagement range and mission effectiveness of current 4th gen fighters and air-to-air missiles.

Over the last three years, GA-ASI has iterated on numerous vehicle designs to optimize performance and will complete the design enroute to flight testing in 2024. The testing will validate basic vehicle handling characteristics and lay the foundation for follow-on development and testing.

"We are extremely excited to get in the air!" said Mike Atwood, Senior Director of Advanced Aircraft Programs at GA-ASI. "Flight testing will validate digital designs that have been refined throughout the course of the project. General Atomics is dedicated to leveraging this process to rapidly deliver innovative unmanned capabilities for national defense."

Philly Shipyard Delivers the First National Security Multi-Mission Vessel (NSMV), Empire State



Release from TOTE Group and Philly Shipyard

PHILADELPHIA – September 8, 2023 –Philly Shipyard, Inc. ("Philly Shipyard"), the sole operating subsidiary of Philly Shipyard ASA (Oslo: PHLY), today delivered the *Empire State*, the first of five new purpose-built, modern training vessels for America's state maritime academies. The U.S. Department of Transportation's Maritime Administration (MARAD) new vessel program – known as National Security Multi-Mission Vessels (NSMVs) – was designed to provide world-class training for America's future mariners and to support humanitarian assistance and disaster relief missions in times of need. This first vessel, *Empire State*, was delivered to MARAD and will serve SUNY Maritime College.

"We are beyond proud to deliver the Empire State today, our

first government newbuild in the history of Philly Shipyard." said Steinar Nerbovik, President & CEO of Philly Shipyard. "We are honored to be trusted with this important project, and on behalf of all of our skilled workers, we are confident that the *Empire State* will provide a safe, reliable and state-of-the-art training platform for generations of future mariners."

Philly Shipyard was awarded the contract to build the NSMVs by TOTE Services, LLC ("TOTE Services"), a U.S.-based company that was hired by MARAD to oversee the construction of the training vessels as the Vessel Construction Manager (VCM). The NSMV Program is the first government sponsored ship building program to utilize the VCM model. This model places the responsibility for the selection and oversight of the shipyard on a government contractor that utilizes commercial best practices to manage the project.

The next training vessel, NSMV II, destined for the Massachusetts Maritime Academy, is scheduled to be delivered in 2024. Meanwhile, the keel laying for NSMV III (Maine Maritime Academy) and steel cutting for NSMV IV (Texas A&M Maritime Academy) were recently completed. Construction of NSMV V (California Maritime Academy) will commence later this year with all vessels to be delivered by 2026.

"Today's delivery of the *Empire State* is a historic moment for the American maritime industry made possible by the U.S. Government's investments in our nation's industrial base," said TOTE Services President Jeff Dixon. "These investments are on full display as we look to build the next generation of domestic mariner training ships more cost effectively – and on schedule – using commercial innovation and best practices. We must also give credit to the dedicated and skilled workers at Philly Shipyard, whose tireless efforts in the face of unprecedented challenges helped make this milestone possible." The NSMV program is an important investment in America's shipbuilding industry, which supports nearly 400,000 U.S. jobs. Each NSMV will feature numerous instructional spaces, a full training bridge, and accommodations for up to 600 cadets to train in a first-rate maritime academic environment at sea. State maritime academies graduate officers who manage vessels that help keep cargoes and our economy moving. Many of these merchant mariners also support U.S. national security by crewing military sealift vessels.

Today's delivery of the *Empire State* marks the delivery of the first government ship built using the VCM contract model. This innovative approach enables shipyards to apply commercial best practices for design and construction to government vessels. There is growing interest in the VCM contract model and its potential applicability to government shipbuilding programs to reduce costs, accelerate delivery times, and build more vessels.

About Philly Shipyard

BAE Systems successfully flight tests next-generation vehicle management computer for the F-35 Lightning II



Release from BAE Systems

Flight control technology upgrade maximizes processing power for added mission capabilities and safety enhancements

ENDICOTT, N.Y. – Sept. 6, 2023 – BAE Systems' next-generation vehicle management computer was successfully flight tested on the F-35 Lighting II aircraft. The test demonstrated a technology upgrade for all three F-35 variants that will increase computer performance and addresses obsolescence issues. Testing occurred at Naval Air Station Patuxent and Edwards Air Force Base.

BAE Systems' Vehicle Management Computer (VMC) enables advanced control modes and improves mission efficiency and safety. Its distributed architecture allows the aircraft to operate reliably with enhanced mission effectiveness in demanding environments. The upgraded VMC will not only help to mitigate obsolescence but will also improve safety, maintainability, and availability of the aircraft for the U.S. military and its allies.

"The VMC provides the high integrity processing required to implement the advanced control algorithms that enable this platform's critical missions," said Corin Beck, director of Military Aircraft Systems for Controls and Avionics Solutions at BAE Systems. "This upgrade leveraged BAE Systems' technology roadmap to ensure the F-35 will advance its mission management and flight control capabilities today and into the future."

This technology upgrade incorporates a quad-core advanced processor for both a high-performance and efficient solution. The new level of computing power allows for additional aircraft capabilities while reducing pilot workload. It also adds advanced mission capabilities to the VMC such as the Joint Precision Approach and Landing System (JPALS) and Auto Ground Collision Avoidance System (AGCAS).

BAE Systems has more than 40 years of experience developing and integrating flight control technology for military and commercial platforms. Work on the VMC occurs at the company's state-of-the-art engineering and manufacturing facility in Endicott, New York.

BAE Systems is a major global partner to Lockheed Martin on the F-35 program. The company provides the VMC, electronic warfare system, active inceptor control system, and aft fuselage for each F-35 at manufacturing facilities in the U.S., U.K., and Australia. The company also delivers sustainability, technical support, and training services to keep the F-35s mission-ready.

US Air Force, RTX complete first flight test of AIM-120C-8



Release from Raytheon

September 01, 2023

TUCSON, Ariz., Sept. 1, 2023 /PRNewswire/ — The U.S. Air Force and Raytheon, an RTX (NYSE: RTX) business, successfully completed the first flight test of the AIM-120C-8 — the latest international variant of <u>AMRAAM®</u> developed under the Form, Fit, Function (F3R) refresh. The AIM-120C-8 was fired from an F-15C Eagle and downed the aerial target, meeting all primary objectives for the flight test.

"AMRAAM is a combat-proven missile trusted by more than 40 international partners for both air-to-air and surface-to-air missions," said Paul Ferraro, president of Air Power at Raytheon, an RTX business. "With the advancements from F3R, which updates both the missile's hardware and allows for future Agile software upgrades, we are maximizing the capabilities of this munition for allies around the world."

Under the F3R program, engineers used model-based systems engineering initiatives and other digital technologies to

upgrade multiple circuit cards and advanced processors in the guidance section of the missile and to re-host legacy software in the AIM-120D-3 and AIM-120C-8 AMRAAMs.

This AIM-120C-8 flight test follows the completion of flight testing of the AIM-120D-3. Flight testing on the AIM-120D-3 was completed in just 11 months after the initial flight test and concluded with showcasing the success of the missile in a highly contested environment.

Recently, the U.S. Air Force awarded Raytheon a \$1.15<u>billion AMRAAM contract</u> to produce AIM-120D-3 and C-8 missiles for 19 countries.

Machinist Pipeline Program Creates Good-Paying Career Pathways

Release from SENEDIA

Five Graduate from Pilot Partnership Between SENEDIA and Nashua Community College

MIDDLETOWN, RI — The New England Submarine Shipbuilding Partnership, powered by SENEDIA, announced today the completion of a pilot Machinist Pipeline Program run in partnership with Nashua Community College. Five New Hampshire residents graduated from the program and were offered jobs with area companies.

Granite State Manufacturing in Nashua and Manchester, Mercury

Systems in Hudson, Spraying Systems in Merrimack, and Sweeney Metals in Nashua each made offers to the newly trained graduates.

"Congratulations to the five New Hampshire graduates of the pilot Machinist Pipeline Program. This program will strengthen our state's role in the defense shipbuilding sector, and I'm excited to see the future opportunities it will create for our communities," said Senator Jeanne Shaheen (D-NH), a senior member of the U.S. Senate Armed Services Committee. "I want to thank SENEDIA and the hardworking team at Nashua Community College for developing this talent pipeline and creating world-class opportunities for New Hampshire families. I look forward to seeing the expansion of these critical training programs and will continue to fight for the defense workforce funding needed to grow talent right here in New Hampshire."

"The Defense Cluster represents \$12.5 billion in annual economic output in New Hampshire, and more than \$119 billion across the New England region. To sustain the strength of the industry and further grow businesses locally and regionally, we need a robust talent pipeline to meet the needs of tomorrow," said Molly Donohue Magee, SENEDIA executive director. "Programs like this are a win-win, for the participants pursuing new career pathways and for the businesses in need of a skilled workforce."

The Machinist Pipeline Program is a 10-week, hands-on training program to prepare participants for entry-level CNC and machinist positions. They received stipends and other financial support during the training thanks to MY TURN, an organization funded through New Hampshire Workforce Innovation and Opportunity Act (WIOA) funding that serves economically, socially, and educationally disadvantaged communities and connects them with workforce recruitment, education, preparation, and placement services.

A typical training day would begin with lectures and

coursework at Nashua Community College, followed by shop floor training using CNC machines and related software.

"The men and women who serve within the defense industrial base are the future of our nation and will define where we go in the next decade, generation, and century," said Rear Admiral Scott Pappano, program executive officer, Strategic Submarines on the importance of building America's submarine fleet in an environment of increasing global threat. "The most important thing we need right now is to re-establish and continue to grow manufacturing; I'm glad we are making that a priority through talent pipeline programs."

The five graduates from this initial pilot cohort developed meaningful skills and technical competencies to begin rewarding and good-paying careers, as well as soft skills and professional connections to serve them throughout their careers.

Jose Arana was one of the five program graduates. He has accepted a position as machinist trainee at Spraying Systems Co. in Merrimack, NH.

"I was looking for a stable and good-paying career with a company doing meaningful work, and I've found that thanks to the Machinist Pipeline Program," said Arana. "I'm grateful for the opportunity and I encourage anyone joining the workforce or considering a change to learn more about training and support available to start your career in defense."

Ronny Soria, another graduate of the program indicated, "I was bouncing from job to job. No path or career in sight. I heard about a ten-week program in manufacturing and signed up. This is the best decision I have made. I learned a valued skill in machining. I also learned soft skills such as time management, how to interview and what makes a good employee. I feel I am very well prepared to start my manufacturing career."

Soria has accepted an offer with Sweeney Metals in

Nashua, NH.

The next cohort of the Machinist Pipeline Program is slated to begin in October.

"We care deeply about the success of our students at NCC, so we jump at every available opportunity to partner with industry leaders and companies looking to hire. After 10 weeks of rigorous training and education, aligned to the needs of employers, we now have five lifelong learners who are starting exciting new careers," said Mark Dodge, the Precision Manufacturing professor at Nashua Community College. "With the support of our dedicated faculty, this pilot shows what is possible when we collaborate and innovate across academia and industry, and we're eager to welcome the next cohort of students to our campus."

"This program is excellent for not only the students but industry partners as well. We are taking people off the street and giving them a start to a career in manufacturing. They are walking away with the basic knowledge they need and numerous job opportunities. It is amazing to watch a student when the light goes on and he grasps the concept of the work. The staff and especially the Manufacturing staff got behind this program 110 percent and it shows in the five graduates," said Jon Mason, the director of workforce development at Nashua Community College.

To learn more about SENEDIA and its submarine shipbuilding workforce development programming, visit <u>Submarine.SENEDIA.org</u>

GA-ASI Mojave STOL UAS Completes First Dirt Operation



Release from General Atomics

Mojave Demonstrates Takeoff and Landing Versatility on Unimproved Surface

SAN DIEGO — 03 August 2023 — On August 1, 2023, General Atomics Aeronautical Systems, Inc. (GA-ASI) completed multiple successful takeoffs and landings with its Mojave Unmanned Aircraft System (UAS) on a dirt strip near El Mirage, Calif.

The ability to take off and land on unimproved surfaces demonstrates Mojave's departure from traditional fixed-wing aircraft's dependance on prepared runways. This new capability provides greater versatility and allows the aircraft to operate in areas previously deemed unsuitable for UAS operations.

"Being able to execute missions in austere locations with runway independence opens the operational envelope for commanders across all services and geographic locations," said GA-ASI President David R. Alexander. "Mojave can do this while retaining significant advantages in endurance and persistence over Vertical Takeoff and Landing (VTOL) and manned aircraft."

The flight tests were the first-ever Short Takeoff and Landing (STOL) on a dirt surface for Mojave. Takeoffs were performed in as little as 586 feet; and short landings were completed in as little as 335 feet. The tests were primarily focused on gathering terrain feedback using Mojave, not achieving the shortest distances possible.

Tracing its lineage from the MQ-1C Gray Eagle and MQ-9 Reaper, Mojave is a technical demonstrator with STOL capability, making it a versatile expeditionary UAS. Adhering to Modular Open System Approach (MOSA) principles, Mojave leverages the modernized avionics, data links, sensor integration, and laptop ground control station of GA-ASI's <u>Gray Eagle 25M</u> program. These features – along with Mojave's enlarged wings with high-lift devices, combat-proven 450-HP turbine engine, and ruggedized landing gear – make it ideal for semi-improved surfaces with a small ground support footprint.

Mojave provides options for forward-basing operations without the need for typical airport runways or infrastructure, so it can be rapidly deployed from and recovered to non-traditional discrete locations. To extend operational reach, Mojave can fit into a C-130 and be rapidly assembled and employed. These innovations make Mojave the perfect UAS to perform Reconnaissance, Surveillance, and Target Acquisition (RSTA), attack, and contested logistics support missions. Designed to be rapidly deployable and expeditionary, Mojave's tailored features include a ruggedized airframe that enables operations in austere conditions and weatherization that enables flight in wider environmental windows. Robust wing storage means it can carry up to 16 Hellfire or equivalent missiles, assorted munitions, Launched Effects (LEs), or logistical resupply pods. Mojave can provide greater operational flexibility while still being equipped with a multi-sensor suite that includes Electro-Optical/Infrared (EO/IR), Synthetic Aperture Radar/Ground Moving Target Indicator (SAR/GMTI), Electronic Intelligence (ELINT), and Signals Intelligence (SIGINT) to support land or maritime missions throughout Joint All-Domain Operations (JADO).

To see a video of the Mojave dirt operation, click here.

HII and Babcock International Group Create Strategic Partnership to Explore Global Opportunities



Release from HII

NEWPORT NEWS, Va., July 17, 2023 (GLOBE NEWSWIRE) – HII (NYSE: HII) and Babcock International Group have entered into a strategic agreement to collaborate on naval and civil nuclear decommissioning and construction opportunities in the U.K. and U.S.

HII and Babcock will apply their complementary capabilities to existing nuclear decommissioning contracts for U.S. ships and U.K. submarines, to share best practices and provide the opportunity to upskill and enhance both organizations' capability for the benefit of the U.S. and U.K. programs.

The Memorandum of Understanding also identifies opportunities for cooperation in civil nuclear, including power plant and component design, fabrication and construction in North America and the U.K. For Babcock, this will include leveraging the capability of its wholly-owned subsidiary, Cavendish Nuclear, a leader in the U.K. nuclear civil industry across the nuclear lifecycle. "As we expand our presence globally this is an important agreement to leverage more than 60 years of HII expertise in complex nuclear processes on behalf of civil and defense customers," said Chris Kastner, president and CEO of HII. "We are excited to explore with Babcock potentially promising opportunities for both companies."

"This collaboration supports our expanding global reach and capability," said David Lockwood, CEO of Babcock. "We look forward to working with HII to realize the benefits that our collaboration can bring to the nuclear programs in the U.K., U.S. and beyond."

HII and Babcock will also explore how their combined capability as global leaders in defense can be applied in support of the Australia – United Kingdom – United States (AUKUS) programs.

Clean Technology Lasers: The Maritime Industry's New Tool to Remove Corrosion and Scale



Shipbuilding professionals understand the value of pretreating metal surfaces of parts to remove corrosion. Release from Laser Photonics

Laser systems quickly remove corrosion and scale from metal surfaces with less preparation and mess than traditional techniques

In the maritime industry, corrosion, and scale (where rust penetrates a metal surface) can quickly become an issue in an outdoor, salt sea spray laden environment. When sea spray evaporates, it leaves salt behind, leading to saltwater staining and accelerated corrosion.

So, most shipbuilders as well as those responsible for maintenance and repair understand the value of treating metal surfaces to remove corrosion, scale, and saltwater staining, which is vital to maintain essential interior and exterior components such as engines, generators, fuel pumps, winches, anchoring chains, latches, door hinges and locks. This is necessary to preserve not only function but also prevent further corrosion and deterioration including possible premature failure.

Unfortunately, traditional techniques used for this purpose such as sandblasting and chemical stripping are messy and require expensive consumables as well as substantial time for preparation and cleanup. Additionally, sandblasting and chemical stripping may not be feasible to clean, maintain, or recondition many of the ship's interior and exterior spaces. These methods are also drawing scrutiny from regulators like the EPA and OSHA since they can pose risks to applicators and the environment.

Although manual methods of cleaning and removal are available, such as chipping and using wire brushes and grinders, these are very labor intensive and time consuming.

Today, a more effective alternative is utilizing industrialgrade, precision laser-based systems that can remove corrosion and scale with a high-energy laser beam that leaves the substrate unaffected. The technology can also be used for selective cleaning and even de-painting on access points and service latches when required. Preparation and cleanup time are minimal, and the low-maintenance equipment can last decades.

According to Vincent Galiardi, owner of Galiardi Laser Clean, a surface cleaning operator based in St. Charles County, Missouri, many people are surprised to learn that clean technology lasers are the most cost-effective, efficient, and safest method of metal surface preparation.

"Many people are unfamiliar with the use of lasers to pretreat metal surfaces," says Galiardi. "When I do a demonstration, at first the people in attendance are skeptical. But after I use the laser to treat a small area, everyone starts talking and getting excited. By the end, when I let them try the equipment, everyone is having a good time and saying how great the laser works."

Given its effectiveness treating metal surfaces, industrial laser systems are increasingly being used at shipyards, shipbuilding berths, and even aboard ships. Technicians can use mobile handheld units, or if needed the systems can be integrated into automated inline processing lines. With significant advantages in safety and efficiency, laser cleaning is poised to disrupt the surface treatment market across more sectors.

Resolving Conventional Cleaning Limitations

To treat metal surfaces, sandblasting or chemical stripping are traditionally used as industrial cleaning processes.

Sand Blasting

Abrasive sandblasting involves forcefully projecting a stream of abrasive particles onto a surface, usually with compressed air or steam. The silica sand used in abrasive blasting typically fractures into fine particles and becomes airborne, which can cause serious or fatal respiratory disease.

When workers inhale crystalline silica, the lung tissue reacts by developing fibrotic nodules and scarring around the trapped silica particles, causing a fibrotic lung condition called silicosis. Estimates indicate that more than 1 million U.S. workers are at risk of developing silicosis and that more than 100,000 of these workers are employed as sandblasters.

In addition, particles are generated during abrasive blasting that further contribute to respiratory problems and other harmful health effects.

"When sand or any other media is used to knock off particles from a substrate, there is always a byproduct that has the potential to become airborne and inhaled," says Galiardi.

"Industry has needed a cleaner, safer surface pre-treatment solution for a very long time," adds Galiardi. "Sandblasting is inherently unsafe for operators. The silica glass used in sandblasting is toxic. An operator must wear a full HEPA suit when sandblasting to avoid breathing in particulates."

Sandblasting also is time-consuming to clean up since the sand essentially scatters everywhere, even though it is usually considered a "fast" cleaning method.

Chemical Stripping

With chemical stripping, harsh, even toxic chemicals are used to strip metal-based objects of rust, paint, and contaminants to bare metal. However, for operators, exposure to corrosive acids and noxious chemical fumes is inherently dangerous. The process can also be time-consuming to prepare the proper chemical bath, achieve the required level of cleaning, and dispose of the waste. In addition, disposing of toxic chemicals is costly and closely regulated by agencies like OSHA and the EPA.

Safe, Effective Laser Cleaning

Laser-based systems have significant advantages over these traditional methods, including ease of use in which an operator simply points and clicks a high-energy laser beam at the surface. The substrate is not affected by the laser, and the systems do not create any mess or byproducts. The approach is eco-friendly, energy-efficient, and completes the job in half the time of traditional methods when preparation and cleanup are considered.

"In our experience, laser cleaning is as fast at removing rust or old coatings as other methods, but without the same amount of cleanup," said Galiardi. "When we treat a surface with lasers, any fumes or dislodged particulate is extracted into a HEPA filter and the job is done. There is no media [sand, chemicals] to replenish or clean up."

Galiardi Laser Clean uses laser systems made by Orlando, Florida-based Laser Photonics, a leading provider of patented industrial grade CleanTech[®] laser systems for cleaning and surface conditioning. The American-made systems function either as mobile standalone units or can be integrated into production lines.

The laser systems are available in portable and stationary models ranging from 50 to 3,000-watts (a 4,000-watt version is in development) with chamber sizes from 3' x 3' in size to 6' x 12'. The systems can also be installed in manufacturing lines in cabinets or operated by a robotic arm.

In the shipbuilding industry, operators are utilizing the industrial grade laser systems to maintain a wide range of vital interior and exterior equipment. Operators are using CleanTech systems to smooth surfaces and remove rust and scale from engines, generators, fuel pumps, water separators, winches, anchoring chains, gear shifting and throttle components without disassembly. This improves safety, function, lifespan, and reduces the risk of premature failure, which could be very dangerous during an emergency such as a storm on the high seas.

The laser systems similarly maintain door hinges and locks as well as remove saltwater stains from metal surfaces. In addition, the technology is used for selective de-painting and cleaning of access points, service latches, and other maritime applications.

With clean laser technology, there is now an environmentally friendly alternative to abrasive blasting and chemical stripping for surface pretreatment. The approach is safer for operators and highly adaptable to a wide range of maritime applications. "As people become more aware of laser-based systems and compare them to traditional methods, they need to factor in prep and cleanup time, which can significantly impact project cost. When the improved operator safety, equipment longevity, and lower maintenance of laser systems are also considered, the clean laser technology has a much higher ROI," says Galiardi.

The longevity of low-maintenance laser systems further adds to their value, increasing ROI, and making replacement unnecessary for decades.

"CleanTech laser systems can last for 50,000 to 100,000 hours. That's many decades working eight-hour days. After purchase, there's virtually no maintenance necessary," concludes Galiardi.