



2022
DoD Maintenance Symposium

BOOTH #847



Collaboration that Works

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A relentless focus on defense maintenance, sustainment, and logistics



The Commercial Technologies for Maintenance Activities (CTMA) has a relentless focus on defense maintenance, sustainment, and logistics. Created in 1998, CTMA is a Cooperative Agreement in partnership with the Office of the Deputy Assistant Secretary of Defense, Materiel Readiness (ODASD-MR) and NCMS. Its objective is to ensure American warfighters and their equipment are ready to face any situation, with the most up-to-date and best-maintained platforms, data, and tools available. CTMA provides technology demonstrations, evaluations, and validations in support of reliability and sustainment and must always benefit the US military, industrial base, and the public good.

CTMA offers an agile and streamlined contracting vehicle in partnership with industry and academia to advance the development, integration, and use of commercial sustainment technologies and processes which can improve warfighter readiness. The CTMA Program has helped make significant advances in the following Maintenance Focus Areas:

- » Advanced / Additive Manufacturing
- » Business IT and Analytics
- » CBM+ / Predictive Maintenance
- » Coatings and Corrosion Prevention
- » Energy, Environmental, Health and Safety
- » Enhanced Inspection
- » Facilities and Industrial Process Modernization
- » Reliability Improvement (Hardware)
- » Workforce Development / Visualization

CTMA Program Benefits



Agile Collaboration

A proven way of quickly organizing initiatives that meet the need of the government sponsor.



Risk Reduction

The CTMA project model validates requirements prior to acquisition—delivering project results directly to the government sponsor and end user.



Speed To Contract

60-90 days from Military Interdepartmental Procurement Request (MIPR) to contract modification.

AMETEK®



AMETEK / Spectro Scientific Expeditionary Lubricant and Fuel Analysis

Part of AMETEK, Inc., Spectro Scientific has developed a broad array of fluid analysis instruments for evaluating machine and lubrication conditions in the field, in the lab, and in highly mobile or handheld applications. The instruments provide critical data about machinery condition and can provide an early warning of equipment failure. Its extensive product offerings include spectrometers for wear metal analysis; lubricant degradation and contamination analyzers; and particle analysis instruments.

Problem Statement:

In an evolving geopolitical climate, the US military needs to be able to perform predictive analysis on their critical assets in-theater without sending samples to a lab and waiting for results.

Solution Statement:

Our expeditionary fluid analysis platforms combine decades of research and development with the most rigorous military specifications to provide exacting laboratory results in situ where and when critical decisions need to be made.

Benefits Statement:

AMETEK fluid analysis systems allow the warfighter to have a comprehensive view of their fuel and lubrication to avert failure in critical combat situations, save money, and more effectively complete the mission.

About AMETEK:

AMETEK, Inc. is a leading global manufacturer of electronic instruments and electromechanical devices with 2021 sales of \$5.5 billion. Spectro Scientific is one of the largest global suppliers of oil and fuel analysis instruments to industry clients and the military worldwide, specializing in analytical instrumentation and software for machine condition monitoring. Grabner Instruments develops and manufactures automatic petroleum testing equipment.

More information at:
www.spectrosci.com

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National Center for Manufacturing Sciences



Automated Precision Inc. (API)

Submarine Shaft Inner-Diameter Inspection via Non-Contact Laser

After more than a decade of development, API has recently released its new, non-contact inspection system, called the Dynamic 9D LADAR. The LADAR is an interferometry laser-based system that can be used manually or fully automated for part inspection with Laser Tracker-like accuracy.

Problem Statement:

Manufacturers of long shafts, bores, gun barrels, and other cylindrical parts have a need to measure the inner diameter, or ID, through the length of the cylindrical part. Most current solutions are either manual, slow/inefficient, or provide incomplete data for analysis.

Solution Statement:

API will show that the 9D LADAR has the capability to collect accurate and viable data inside and

through the length of a submarine shaft. A “volume scan” feature allows the operator to setup the LADAR’s scan path around and through the inner diameter of the shaft. The setup and actual scan time takes minutes, dependent on length of the shaft. Once completed, the user has a full point cloud of the ID visible in the software.

Benefits Statement:

LADAR can measure high quality data off virtually any part surface, regardless of surface finish/reflectivity and geometry. Boasting a data capture rate of 20,000 points per second and an 87.5-degree angle of incidence, LADAR can measure parts faster than any other system on the market. The unusually high incidence angle of LADAR gives it a strategic advantage over other non-contact systems.

About API:

For 35 years, API has developed a portfolio of dimensional metrology sensors. API’s innovative sensors are now fulfilling Manufacturing 4.0 and Quality 4.0 initiatives. These initiatives are completed through API’s Integrated Metrology (iM) portfolio of solutions to go above and beyond conventional portable metrology. iM is the integration of API’s latest products and technologies for factory/process automation.

More information at:
<https://apimetrology.com>



AN INNOVATION IN SURFACE PREPARATION

PORTABLE • PRECISE • POWERFUL



Atmospheric Plasma Solutions

Removes Coatings – Cleans Surfaces – Promotes Adhesion

PlasmaBlast® is field-deployable and easily portable, with a handheld, ergonomic precision plasma pen and a power supply that weighs less than 35 pounds. With compressed air and electricity, PlasmaBlast® harnesses a “cold” plasma beam to vaporize paints, sealants, and epoxies. The process converts a significant portion of the removed organic coating into water vapor and carbon dioxide, leaving a small volume of solids that can be safely collected with a HEPA vacuum. Testing conducted by NAVSEA 05 documented that this method does not cause changes to the substrate metallurgy.

Problem Statement:

In shipbuilding and naval maintenance, coating removal is an essential but time-consuming process required for constructing and maintaining vessels and other structures. Legacy solutions each come with their own drawbacks, such as hazards to operator health, slow removal rate, and damage to substrates.

Solution Statement:

The PlasmaBlast 7000 Surface Preparation system is an effective solution for:

- » Non Destructive Inspection NDI/ NDT
- » Spot coating removal for repair, rework and weld prep
- » De-painting in locations where grit and water blasting are restricted
- » Effective removal of coatings from corners, cracks, crevices and other tight spaces

Benefits Statement:

- » Removes coatings, cleans surfaces, promotes adhesion
- » Requires only compressed air and electricity to operate
- » Offers a media- and chemical-free solution

- » Is safer, environmentally friendly, and requires minimal containment and clean up
- » Delivers significant time savings to meet work schedules
- » Enables fast training, ease of operation, and low maintenance requirements

About APS:

Atmospheric Plasma Solutions (APS) provides innovative atmospheric plasma solutions for a broad range of emerging applications in defense and commercial markets. The company's systems are used by the US Navy, US Army, pharmaceutical manufacturers, Fortune 100 firms, and more. Additionally, APS conducts advanced atmospheric plasma research in partnership with private companies, federal agencies, and leading research universities.

More information at:
www.apsplasma.com

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Boston Engineering

BEEP and the Family of Sustainment Augmented Robotics

Two unique platforms with the ability to combine and enhance the use cases addressed by either. BEEP is a highly configurable multi-module platform that allows an organization to combine solutions and technologies to optimize the return on investment in workforce and operational optimization and efficiency. The Family of Sustainment Robotics is a modular robotic platform which allows the addition or reduction of add-ons to support a number of unique use cases in the shipyard and other environments, all while utilizing the same robotic body. Both powerful and highly valuable on their own, they provide an avenue to solving many emerging challenges today.

Problem Statement

A continually revolving workforce is:

- » Reducing overall efficiency
- » Increasing scrap and rework
- » Delaying schedules at an increased cost

In addition, maintenance and repair face ever increasing costs; emerging products are putting secure environments at risk; and work in dangerous environments poses many serious health and safety risks.

Solution Statement

Using a modular approach in solution spaces such as remote assistance, AR navigation, advanced remote monitoring and immersive telerobotics provides the customer the ability to compile an overall solution to address their most dire business challenges. The BEEP platform provides the ability to configure solutions that have an ability to wrap and extend the existing ecosystem reducing the time to scaled production use.

Benefits Statement

- » Reduces time off task
- » Reduces scrap and rework cycles
- » Reduces cost of maintenance and repair

- » Offers multiple options for deployment: cloud, local cloud, hybrid
- » Permits more reliance on unmanned environments

Company Overview

Boston Engineering is a leader in sustainable digital transformations, implementing innovative technologies and developing road maps to solve tomorrow's business challenges. Leveraging the latest in emerging technologies, such as sustainment robotics (SR), augmented reality (AR), virtual reality (VR), Internet of Things (IoT), and more, we can expand your capabilities to innovate.

More information at:
www.boston-engineering.com



DAES Group

Automation technologies • Smart factory • Equipment & process modernization
Corrosion detection under coatings • HVOF • Surface removal and preparation



DAES Group

Defense MRO Technologies—Automation and Corrosion Control

DAES delivers equipment and process solutions that address the DOD's needs for:

- » Automation technologies
- » Smart factory
- » Equipment & process modernization
- » Corrosion detection under coatings
- » Thermal spray
- » Surface removal and preparation

Problem Statement:

Corrosion is an insidious problem across the DOD, impacting the mission readiness of aircraft. We need to be creative in understanding the challenge of improving asset readiness, improving reliability and efficiencies, reducing MRO costs, and upgrading the work environment for our frontline maintainers.

Solution Statement:

DAES Group offers M&S solutions:

- » Automated bearing cleaning lines
- » Automated fluorescent penetrant inspection—with AI
- » EPOLY for repair of parts
- » Automated chemical cleaning lines
- » Automated grain etch lines
- » Automated acid wash lines
- » Automated anodizing lines
- » DOD factory of the future
- » Thermal spray

Benefits Statement:

DAES Group solutions enable:

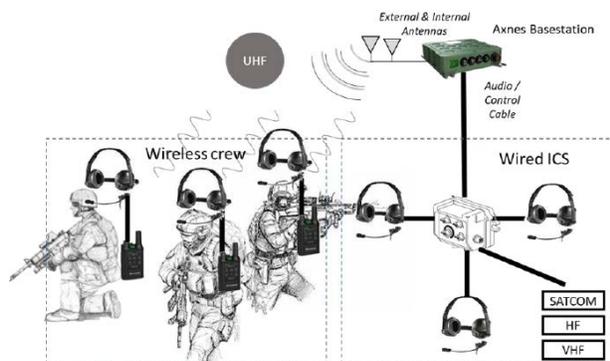
- » Significant rework reduction
- » Reduced cost and improved operational readiness
- » Improved asset management
- » High mix, medium- to high-volume part processing
- » Process automation

- » Minimal impact on the environment
- » Improved artisan safety

About DAES Group:

The DAES Group is a global technology integrator supporting OEMs, commercial airlines, military, and MRO operations. With 16 offices around the world, we provide turnkey and customized solutions. DAES supplies a range of technology solutions developed through our partnerships with innovative manufacturers around the world. Surface treatment is a prime area of focus, with corrosion management representing a critical segment for our global customers.

More information at:
www.daesgroup.com



Ricardo Defense

Antilock Braking Systems/Wireless Communications

Ricardo Defense is highlighting two technology solutions:

- » Advanced Braking and Stability Control Systems to Improve Performance, Reliability and Reduce Maintenance (“ABS/ESC”)
- » Wireless Communications for Improved Operations and Maintenance (“Wireless Comms”)

Problem Statement:

ABS/ESC: As the mission set for the HMMWV has evolved, the weight of the HMMWV has increased, thus causing safety concerns for the soldiers operating the equipment and readiness issues for the units.

Wireless Comms: Wireless technology comes with challenges, especially when implementing it across a family of military vehicles.

Solution Statement:

ABS/ESC: In a collaboration between

RDI and the Red River Army Depot, the project team retrofit several HMMWV variants using a standardized kit to improve braking and stability control. The Army will utilize the lessons learned from this initiative and apply them at other government facilities and maintenance depots.

Wireless Comms: A wireless solution for the DOD was delivered through a phased approach, with system acquisition and system configuration in a lab environment, followed by field training exercises and evaluations, culminating in strategic acquisition, fielding, and sustainment planning.

Benefits Statement:

ABS/ESC: The retrofit kit increases reliability, ensures higher system availability, and significantly decreases fleet lifecycle costs. In addition, improvements in performance and extended life of components are gained.

Wireless Comms: By leveraging model-based systems and engineering, integration, costs and delivery times are improved. The use of a common solution also lowers commodity costs, and improves cybersecurity.

About Ricardo Defense:

Ricardo Defense’s Systems and software solutions are improving sustainment operations and enabling end-to-end secure migration of mission-critical data. It provides advanced technical services, software solutions, and hands-on field service support.

More information at:
<https://defense.ricardo.com/>

SIEMENS

Ingenuity for life



Siemens Industry Software Digital Ecosystem for Advanced Manufacturing and Modernization

Siemens Xcelerator technology enables digital transformation by building comprehensive digital twins of products, facilities and operations and connecting them to the physical industrial and operations live data. This technology comprises an integrated portfolio of software, services, and application development platform that unlocks a powerful industrial network effect. Siemens software includes comprehensive modeling across the boundaries between traditional stand-alone engineering domains such as electrical, mechanical and software in order to create accurate and comprehensive digital twin models. Featured use case: SECNAV's Shipyard Infrastructure Optimization Plan.

Problem Statement:

Naval Shipyards were last significantly updated in WWII. SECNAV identified 328,000 man-days that are wasted every year due to

workers/material moving around the shipyards due to poor configuration and lack of usage of more modern work processes.

Solution Statement:

Proposed solution is to create a digital model of ship overhaul availabilities at each of the Naval Shipyards. The goal is to link infrastructure improvements to reduction of time for overhaul availabilities by modeling the repair process with resource constraints. Additionally: Propose process improvement solutions to shorten the submarine or aircraft carrier availabilities, improving readiness.

Benefits Statement:

The Shipyard Infrastructure Optimization Plan offers:

- » Optimized digital twin that assures scarce funds are allocated with known results
- » Improved availability of US Navy

ships by shortening the shipyard maintenance processes

- » Insight to Navy SY workforce sizing and work center placement
- » Availability studies for variety of ships and workload combinations

About Siemens:

Siemens Industry Software is a global leader in digital transformation to meet the needs of Industry 4.0.

More information at:
www.sw.siemens.com/en-US



Accelerating our nation's innovative manufacturing sector through collaboration

The National Center for Manufacturing Sciences (NCMS) is a cross-industry technology development consortium, dedicated to improving the competitiveness and strength of the US industrial base. As a member-based organization, it leverages its network of industry, government, and academia to develop, demonstrate, and transition innovative technologies efficiently, with less risk and lower cost.

NCMS enables world-class member companies to work effectively with other members on new opportunities—bringing together highly capable companies with providers and end users who need their innovations and technology solutions. NCMS members benefit from an accelerated progression of idea creation through execution.

Through NCMS, companies with innovative technologies can collaborate with end users and develop solutions to meet their requirements. Coupled with our collaborative power to partner small R&D companies with top-tier OEMs, the results are innovations and opportunities to develop and refine and provide user-centric solutions.

NCMS was formed in 1986 to strengthen North American manufacturers and respond to global competition. The balance between long-standing experience and fresh innovation requires a unique intersection of highly capable companies, access to efficient, effective contracting vehicles and relationships built on trust.

Consortium Management



Solving Government Challenges



Trusted Network



