

Panel Project Submissions – Round Table

Sustainment Panel

Kirsten S Walkup, Panel Chair

General Dynamics – Bath Iron Works



Fast Docking Systems Study

DM Consulting

- **Goals & Objectives:**

- The project goal is to analyze the effectiveness of a modern drydocking technology; Syncrolift's Fast Docking systems. These systems are hydraulically operated ship supports that replace side blocks. This project will provide a comprehensive analysis of these systems along with pragmatic recommendations that hold potential for implementation in shipyards throughout the United States, catering to both commercial and government vessels.

- **Project Benefits:**

- The Fast Docking systems can reduce preparation time, labor costs, and materials required for drydocking. This research is poised to help bring this technology to the US. Modernization/optimization of current or new construction dry dock facilities is vital for our ship repair infrastructure.

Body Cooling Technology Study

HII – Ingalls Shipbuilding

- **Goals & Objectives:**

- Explore commercially available and high TRL developmental body cooling technologies. Select various options based on differing cooling technologies and methods: Evaporative cooling, convective cooling, conductive cooling, phase change materials (PCMs), microencapsulated PCM fabrics, refrigerant tube cooling, wicking fabrics, etc. Pilot test several options and assess key parameters for heat relief, comfort, ergonomics, and health safety. Report on each parameter and overall effectiveness. Document pricing and accessibility. Draft potential implementation plans and costs. Assess financial feasibility to make body cooling widely available to shipbuilders. Estimate risk reduction.

- **Project Benefits:**

- The primary intention is to benefit worker health through risk reduction and safety improvement. Financial benefits include cost avoidance for hospital visits and improved labor performance (by reducing conditions that impact labor performance). Although there are some commercially available products, the shipyard culture does not necessarily encourage workers to buy cooling garments for themselves. A trade study report would document financial and physical benefits. If Safety and Operations leadership are presented with an affordable implementation plan, they would be inclined to encourage individual use, and possibly subsidize cost. NSRP sponsorship of this effort, with multiple shipyard participation, will demonstrate industry-wide support to address worker heat stress.

Testing and Analysis of Anti-Biofouling Coatings

Hepburn and Sons, LLC

- **Goals & Objectives:**

- The project goal and objective are to test and analyze three AF coatings over a period of time of being immersed and exposed to seawater in a warm, highly organic, seawater environment using NRL's facilities and barge in Miami, FL and Key West.

- **Project Benefits:**

- Shipyards will benefit from this project as they will now have a greater understanding of the performance of three novel and new AF coatings. Having NRL conduct the testing and demonstration at Miami and Key West NRL corrosion lab facilities will ensure the Navy customer is engaged and objective analysis will be performed per MIL-PRF-24647E qualification test guidance.

Verification of Fire Protection of Shipboard Electric Cables Using Intumescent Coating

Hepburn and Sons, LLC

- **Goals & Objectives:**

- The project goal and objective are to test and verify the domestic source, STI's intumescent MCC, through testing at NSWC CD and SWRI. The testing will ensure the MCC performs as expected to mitigate electrical cables becoming fuel during fire events. The MCC will greatly enhance in-service ships with PVC cables and new construction ships using approved MIL-DTL-24643 low smoke, zero halogen cables. The MCC, by direct flame contact, starts to produce a light char, which is a poor conductor of heat, thus retarding heat transfer. Hydrates within the coating release during a fire, i.e., water vapor is released, which has a cooling effect. The intumescent coating delays the ignition and prevents fire spreading.

- **Project Benefits:**

- Shipyards will benefit from this project as they will now have a domestic supplier of a cable intumescent coating with verified performance to protect shipboard electric cables from becoming fuel during fire events. A major benefit to shipyards is that the STI MCC can be applied by shipyard workers, the ship's force, or local paint contractors. Application of STI's MCC during new construction can use already planned coating budgets (weight & cost) while reaping life cycle protection benefits at nearly no additional cost or labor.

Enhanced 3D Mapping Capability of High-Fidelity Colorized Point Cloud

Cleo Robotics

- **Goals & Objectives:**

- The main project goal is to enhance the existing 3D mapping capability to allow the Dronut to more effectively capture and map navy shipboard conditions.
- A denser, higher fidelity map will provide Naval personnel with improved knowledge for what is onboard vessels, significantly reduce time and personnel involved in the mapping process and provide a more accurate digital representation of difficult to access areas.
- This enhancement of the existing 3D mapping capability on the Dronut platform will allow for comprehensive awareness of vessel contents, capacity, and condition in short-term and long-term condition monitoring.

- **Project Benefits:**

- Primary benefits of a successful project will be the ability to collect and capture 3D point-cloud data in areas that are unsafe or difficult to access, or outright inaccessible. The last several years have seen several different LiDAR programs take form throughout the industry, but certain areas remain unmappable due to access constraints. Improved mapping capability in the already proven technology envelope will enable more complete mapping, thus eliminating rework and error during installation and execution activities across the waterfront.

High-Bandwidth Mesh Radio Drone Solution for Data Capture

Cleo Robotics

- **Goals & Objectives:**

- A mesh radio drone solution will allow for comprehensive awareness of all vessel conditions when inspecting ducts, pipes and manways, finding obstructions, observing wear and corrosion, or traversing narrow passes. The proposed mesh network drone solution will enable flight and visibility in new areas with increased communications that are no longer limited to traditional radio range or manned access. - Our objective is to develop

- **Project Benefits:**

- Expedited operational readiness with the enhanced ability to perform rapid diagnostic, as the range capability of an unmanned drone could potentially evaluate the same distance or area 10-20 times faster than a human.
- More rapid return to a state of operational service to best meet, or exceed, budget, timeline, and mission critical requirements.
- Reduced personnel needs and billable time to diagnose critical ship repairs. - Reduced workload, allowing for more efficient use of resources.
- Minimize operational downtime of a vessel and resulting potential lost costs as a result of any inability to operate.
- Increased safety and less likelihood of injury for inspection personnel.

