

NAVY Transition Assistance Program

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NEED & CUSTOMER REQUIREMENT

Need: Operational requirements for Navy ships require reducing the weight of ship structures. Distortion due to thermal cutting and welding becomes a significant manufacturing problem as the thickness of plates and panels is reduced. Distortion repair costs include rework of unit fit-up, flame straightening, and rewelding.

Value to the Warfighter: Reduction of weld distortion during the manufacturing of ships will positively impact ship construction costs and schedules.

Operational Gap: Existing welding processes, including submerged arc welding (SAW), flux cored arc welding (FCAW), and gas metal arc welding (GMAW), used in shipyards apply large heat input to workpieces and cause substantial post-weld distortion. Many investments in the area of welding technologies have been made looking to develop ways of reducing welding distortion, including: weld sequencing, thermal tensioning, mechanical tensioning and others. These efforts have yielded some reductions in weld distortion; however, to date, the application of these methodologies has not been able to reduce distortion to acceptable Navy levels.

Customer Specifications: This welding methodology will meet requirements specified in quality standards (T9074-AQ-GIB-010/248, ABS NVR, and 9074-AX-GIB-010/100) and NAVSEA WELDING AND BRAZING PROCEDURE AND PERFORMANCE QUALIFICATION.

Technology Description: Welding apparatus and procedures which will minimize welding distortion. The apparatus will establish a second arc to generate a second path for the current that melts the wire and otherwise has to flow into the base metal. The second arc is established by placing a second electrode (consumable or non-consumable) in the vicinity of the main arc.

TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Welding Procedures Established	4	Low	Reduce distortion from current procedures	Nov 2010
Demonstrated/Tested at NGSB-GC	8	Moderate	Shipyards Acceptance	Oct 2011
Weld Procedure Qualification	8	Low	Meeting Requirements of ABS NVR and T9074-AQ-GIB-010/248	Dec 2011
Initial Technology Insertion	9	Moderate	Shipyards Acceptance	Dec 2012
Request to Use the Technology to NAVSEA TWH	9	Moderate	NAVSEA TWH Approval Granted	Dec 2012

Open contract: N00024-09-C-4140 ending Nov 10, 2010

N07-211 - Adaptive Intelligent Systems (AIS)

A Modified GMAW System for Distortion Reduction and Travel Speed Increase through Separate Heat Input and Deposition Rate Control

SPONSORSHIP of original SBIR/STTR Topic

SYSCOM: NAVSEA

Transition Target: Future Surface Combatant

Original Sponsoring Program: PEO Ships NSRP

TPOC Phone Number: 301-227-5017



TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

Other Potential Applications:

Automotive/robotic welding, cladding, pipe welding, manual welding.

Business Model:

AIS plans to license out the technology and provide engineering services to support the technology.

Objective:

AIS would like to obtain interest from prime contractors for particular applications where an insertion of the technology can bring significant cost reduction. Identify DoD acquisition programs to fund maturation of the technology.