

Topic: N162-130

## Grid Logic Incorporated

### Rapid Sealing Technology for Navy Undersea Surveillance System Cable Joints

Grid Logic has developed a technology for rapidly fusing thermoplastic components to create high-performance seals and joints for demanding applications. The non-contact welder could be adapted for a wide variety of irregular/inaccessible joint types. In December 2018, Raytheon used the Grid Logic's SBIR prototypes for Navy tests to validate seal performance under high pressure water environment in which sensitive devices were sealed for long-term operation on the ocean floor. Tests substantially exceeded performance targets. The company showed potential for reducing processing time from hours to minutes and equipment costs from over \$1 million to the low \$100,000s. Grid Logic develops manufacturing and repair technologies. The company will offer thermoplastic welders and certified components to defense and commercial customers. It expects that its systems will be used by prime contractors as part of high-performance solutions.

### Technology Category Alignment:

Computational Research Engineering Acquisition Tools and Environment

Design and Integration

Manufacturing Technology for Affordability

Structures and Protection

### Contact:

George Caravias

[caravias@grid-logic.com](mailto:caravias@grid-logic.com)

(810) 728-2468

**SYSCOM:** ONR

**Contract:** N68335-18-C-0831

Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

ONR Approval #43-5915-19

Topic # N162-130

Rapid Sealing Technology for Navy Undersea Surveillance System Cable Joints  
Grid Logic Incorporated

WHO

**SYSCOM:** ONR  
**Sponsoring Program:**  
**Transition Target:** Raytheon Integrated Defense Systems program

**TPOC:**  
Dr. Ignacio Perez  
[ignacio.perez1@navy.mil](mailto:ignacio.perez1@navy.mil)

**Other transition opportunities:**  
Commercial undersea communications cable laying providers.  
U.S. Navy and commercial high-performance, long-term sealing for surface and subsurface electronics.



Copyright Grid Logic Inc. 2019. All rights reserved.

WHAT

**Operational Need and Improvement:** Permitted rapid deployment of undersea cables and similar electronic devices.

Delivered process time reductions from hours to minutes in Navy application.

**Specifications Required:** Specifications developed with Raytheon Integrated Defense Systems.

**Technology Developed:** Thermoplastic welder and method for manufacturing high-performance thermoplastic components that can be sealed for demanding applications.

- Non-contact
- Very low processing time relative to current methods
- Tight process control
- Automation of qualified recipes for joint formation
- Mobility and potential for operating devices in harsh conditions

**Warfighter Value:** Enables new U.S. Navy scenarios for rapidly and inexpensively sealing electronic devices and assembling plastic components on site or in expeditionary environments.

WHEN

**Contract Number:** N68335-18-C-0831 **Ending on:** November 7, 2019

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Initial welder prototypes available for Raytheon tests	Low	Performance to specification	7	1st QTR FY20
Thermoplastic component manufacturing method	Low	Performance to specification	7	4th QTR FY19
Weld quality performance data	Low	Performance to specification	7	1st QTR FY20
Preparation for transition event	Med	Performance to cost and specification	7	1st QTR FY20

HOW

**Projected Business Model:** Grid Logic will sell thermoplastic welders customized to applications. It will also provide certified thermoplastic component kits to meet demanding application environments.

**Company Objectives:** Sale and support of welding devices and certified components to standards set for demanding applications.

**Potential Commercial Applications:** Undersea cable laying operations.  
Oil field and mining piping operations.

**Contact:** George Caravias, Chief Executive Officer  
[caravias@grid-logic.com](mailto:caravias@grid-logic.com) 810-728-2468