

Topic: N181-021

Lynntech, Inc.

Innovative Ultra Violet and Ozone Resistant Material for Hydraulic Clamp Cushions

Lynntech is developing a single-loop hydraulic line clamp cushion that meets or exceeds Navy reliability requirements resulting in fewer maintenance cycles, lower costs, and increased operational readiness. Clamp materials, derived from UV and ozone resistant polymers, have demonstrated pass performance after hydraulic fluid immersion, fuel immersion, heat aging under standardized test conditions, and continue to pass specifications after exposure to accelerated degradation conditions (equivalent to >66,000 hours of UV and ~18,000 hours of ozone exposure at 50,000 ft). Lynntech's multidisciplinary staff has a 33 year history of developing and transitioning technologies to make a warfighter's job safer or better. These advanced clamps can be applied to any airframe and will be provided to NAVSUP and OEM manufacturers.

Technology Category Alignment:

Air Platforms

Battlespace Environments

Materials & Manufacturing Processes

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**SYSCOM:** NAVAIR

**Contract:** N68335-19-C-0326

 Corporate Brochure: [https://navystp.com/vtm/open\\_file?type=brochure&id=N68335-19-C-0326](https://navystp.com/vtm/open_file?type=brochure&id=N68335-19-C-0326)

# Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2020-843

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## WHO

**SYSCOM:** NAVAIR

**Sponsoring Program:** PMA-265 F/A-18 Program Office

**Transition Target:** F/A-18 Hornet/Super Hornet,

**TPOC:**  
(301)342-7994

**Other transition opportunities:** CH-53K King Stallion Heavy Lift, OEM Prime Contractors (LMCo/Sikorsky, Boeing), NATO/allied airframes, non-DoD aircraft and helicopters.



2020 Lynntech Inc

## WHAT

**Operational Need and Improvement:** The U.S. Navy launched a Service Life Modification program to enable fighter jets to fly more than 50-percent longer than originally intended, which would extend the service life of the Navy's fleet of F/A-18E-F Super Hornets into the 2040's. It is expected that the Super Hornet's service would be extended from 6,000 flight hours beyond 10,000 flight hours. Hydraulic line clamps have a high rate of replacement due to cushion failure, and the indirect cost of a clamp failure during flight is untenable.

**Specifications Required:** Navy is seeking alternative materials for hydraulic clamp cushions that meet or exceed the requirements listed in the MIL-DTL-85052/1C and MIL-DTL-85052B specification sheets, and also exhibit resistance to degradation from exposure to UV and ozone.

**Technology Developed:** Lynntech is developing single-loop hydraulic line clamp cushion materials derived from a combination of UV and ozone resistant polymers that have demonstrated pass performances after hydraulic fluid immersion, fuel immersion, and heat aging under standardized test conditions. Developed clamp cushion materials has also continued to pass specifications even after exposure to accelerated degradation conditions (equivalent to >66,000 hr of UV and ~18,000 hr of ozone exposure at 50,000 ft).

**Warfighter Value:** Several warfighting advantages are provided by this technology as it is anticipated to provide fewer maintenance cycles, lower sustainment cost, and increased operational readiness in support of current and future Navy and Marine Corps operations.

## WHEN

**Contract Number:** N68335-19-C-0326 **Ending on:** August 25, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Prototype Cushion/Clamp Test	Low	Pass lab testing of prototype clamps	3-4	August 2019
Complete Cushion/Clamp Development	Med	Pass MIL-SPEC validation and certification testing	4	August 2021
Delivery Prototype, End-user Evaluate	Med	Deliver clamps to end-user, end-user evaluate clamps	5-6	August 2022
Receive NSN, Deliver Clamps to NAVSUP	Med	Modify MIL-SPEC, receive NSN, deliver clamps to NAVSUP	7-8	August 2023

## HOW

**Projected Business Model:** Lynntech Inc. plans to transition these improved hydraulic line clamp cushions into the fleet by either i) fabricating the new clamp cushion and providing it to a clamp assembler, or ii) procuring the steel bands, assembling the clamp and providing it to NAVSUP and the Super Hornet and King Stallion OEM prime contractors.

**Company Objectives:** Lynntech's objectives are to develop and transition to the fleet single-loop, hydraulic line clamp/cushions with superior mechanical and materials properties, meeting the validation and certification testing according to MIL-DTL-85052/1C and MIL-DTL-85052B for inclusion in the Qualified Product List (QPL). Lynntech is a for-profit small business and we believe that if we successfully meet the above objectives, sales and profit will follow.

**Potential Commercial Applications:** The commercial market for cushioned pipe clamps is substantial, given the broad range of applicable industries, regions, types and applications that can be served with Lynntech's new materials. As an example, developed materials can be expanded into products that serve civilian market segments needing cushioned clamps with increased resistance to hydraulic fluid and fuel.

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