Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2020-969

Topic # N112-154

Selective Electroplating Technology Improvement (SETI)

Corrdesa

WHO

SYSCOM: NAVAIR

Sponsoring Program: COMFRC

Transition Target: Fleet Readiness Centers

TPOC:
(904)790-6380

Other transition opportunities:
AFLCMC, USAF C-5, C-130, F-35

U.S. Navy photo/Released, https://www.navair.navy.mil/media/4956

Notes: P-8 flight line selective-anodize repair of damaged static port, still corrosion free after 2 years in the field.

First Article, ruggidized version produced for Lockheed Martin for ZnNi repair.

WHAT

Operational Need and Improvement:
The US Navy operates in very hostile, corrosive locations, placing substantial environmental stress on weapons systems, demanding high performance materials and coatings for their protection. Such protective coatings degrade and become damaged. There is a need for a plating/anodizing system that can be used to repair coatings, in-situ at both the Fleet Readiness Centers (FRCs) and Detachment Sites.

Specifications Required:
A mobile, selective plating/anodizing system that can be used, locally on the flight line. It must be non-drip, to avoid contamination of adjacent components and electronics and reduce hazardous emissions to the operator. Repairs must be executable within a one hour time frame.

Technology Developed:
A portable, non-drip selective plating/anodizing system for repair of protective metal coatings directly on the aircraft or in the workshop. The scalable, closed-loop electrolyte flow technology avoids unwanted drips & runs onto components adjacent to the plating area and significantly reduces the risk of hazardous material exposures to the artisans. By enabling repair work on the flight line this system significantly reduces turn time for the repair, thereby improving platform readiness by protecting aircraft structures from corrosion.

Warfighter Value:
Bringing non-drip plating and anodizing directly to the aircraft will save time by avoiding disassembly of components and shipping to off-site, plating shop facilities.

WHEN

Contract Number: N68335-16-C-0449 **Ending on:** January 23, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
First prototype non-drip anodizing/plating system	Low	Delivered	6	April 2017
Corrosion tests of anodized coupons (ASTM B117)	Low	Pass - establishing approved process	6	October 2017
P-8 flight line repair demonstration on static port	Low	No dripping, <30 minutes repair time	7	July 2018
Second prototype non-drip anodizing/plating system	Low	Addresses GAP analysis	7	September 2019
Anodizing demonstration with larger custom tooling - on static port surrogate	Med	Reduced process time, no dripping	7	August 2020
P-8 follow-up demonstration with larger custom tooling	Med	Reduced process time, no dripping	8	October 2020

HOW

Projected Business Model:
Corrdesa has an established manufacturing partner with the capability to produce the number of systems required by the FRCs.

Corrdesa intends to patent the scaled-up tooling design and license for use in related manufacturing processes.

Company Objectives:
At the FST event we want to make contact with other defense sustainment organizations that could benefit from localized, non-drip metallic coatings repair (anodize, plating), in NAVSEA for example.

Corrdesa will further develop this technology for in-situ, larger scale coatings applications for both OEM operations and sustainment, for example, treatment of friction stir-welds and heat affected zones from welding.

Corrdesa have developed a custom, ruggedized unit for Lockheed Martin F-35 program to repair damaged, legacy cadmium coatings with zinc-nickel. This configuration will be sold worldwide.

Potential Commercial Applications:
The non-drip plating/anodizing system can also be used in commercial MRO (Maintenance Repair Overhaul). Corrdesa have already demonstrated the system to Delta Airlines (Atlanta) and will develop this opportunity.

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