

SEEDING THE FUTURE

SoluStat – The Next Generation Diagnostic for Aerospace Chemical Stripping Solutions

ADVANCED STRIPPING SOLUTION CONTROL

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SBIR COMPANY NAME: FIGURE ENGINEERING

TECHNICAL PROJECT OFFICE: 76PMXG/MXDECA, TINKER AFB, OK

SPONSORING ORGANIZATION: AFSC/76PMXG

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THE BASICS

- A new diagnostic for determining the health of coating removal baths for aerospace metals.
- Tests the solutions within ten minutes and allows for less frequent changing out of the chemical baths.
- Expanded the company's capabilities toward an advanced sustainment technology focus.



Photo courtesy of figureengineering.com.

NEW TECHNOLOGY IS POISED TO ENABLE AEROSPACE MAINTENANCE OPERATORS TO MORE EASILY TEST FOR THE VIABILITY OF CHEMICAL STRIPPING SOLUTIONS, SAVING MILLIONS OF DOLLARS.

With the support of SBIR/STTR, Virginia-based Figure Engineering has developed SoluStat, a new diagnostic for determining the health of coating removal baths for aerospace metals.

With this technology, the maintenance techs will have a reduced workload for regular chemistry testing and contaminant testing – a process which can lead to waste due to not directly measuring the solution performance. SoluStat tests the solutions within ten minutes and allows for less frequent changing out of the chemical baths.

With the success of the SoluStat project, Figure Engineering has been able to continue hiring through the economic trials of the Covid-19 crisis, and professional setbacks, including a facility fire.

The project has also expanded the company's capabilities toward an advanced sustainment technology focus, which opens the doors to other maintenance, repair and overhaul (MRO) aerospace and defense industries.

BEHIND THE TECHNOLOGY

Before the development of SoluStat, testing stripping solution baths was a tedious process and didn't give chemists or operators information about the performance of the bath. Maintenance laboratory chemists would take weekly samples to test for acidity, and would take monthly samples to check for specific contaminants.

Unfortunately, this process required the chemists to know specifically what they were testing for, and it led to unknown contaminants being missed. Such oversights made it necessary for the baths to be frequently switched out, which is expensive and wasteful, not just in material, but in man-hours.

The use of SoluStat allows testing to be done in about ten minutes, and gives a direct view of strip rate and safety to parts, significantly lengthening the life cycle of the chemical baths, and saving both money and time for the operators.

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This technology was developed by working with the 76th Propulsion Maintenance Group to determine what specific challenges Air Force Maintenance faces, and to tackle those challenges. It was designed for use by aerospace maintenance engineers.

In order to address the greatest number of challenges, SoluStat has two versions, one of which is a tabletop device that is capable of testing eight different stripping solutions, and one of which is a tank-mounted device that checks the bath semi-autonomously, allowing for greater utility.

Figure Engineering is currently in discussion with the maintenance wing at Tinker Air Force base, and with the Navy Fleet Readiness Center Southwest in San Diego to transition the technology for use.

The company intends to use the success of the program to expand into other areas of industrial and defense challenges.

SBIR FUNDING AND MATERIAL COMMAND'S EXPERTISE WERE CRITICAL

The SBIR funding and expertise gained at Tinker Air Force base and 76th Propulsion Maintenance Group was instrumental in the success of the project.

"The number one thing really people should know about the technology and about SBIR in general is that SoluStat and other technologies that come out of the SBIR program are able to be sole sourced," said Jon McDaniels, the Vice President of Figure Engineering. "If the warfighter can't use these great new technologies because they're stuck in a long, drawn-out procurement process, it's not meeting the mission."

The Air Force has invested \$2.4 million in the project, and is projected to save an estimated \$50 million, with the transition into use of SoluStat and throughout the life of the technology. 

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