SURVICE ENGINEERING COMPANY

ELECTRIC VERTICAL TAKE-OFF & LANDING (eVTOL) UNMANNED AIRCRAFT SYSTEMS (UAS)

ABOUT SURVICE

SURVICE Engineering Company has over 40 years of experience in supporting the U.S. Department of Defense (DoD) and industry with specialty engineering services and design expertise. SURVICE's core competencies include the following: systems analysis and engineering, test and evaluation, modeling and simulation/software engineering, information technologies and management, and dimensional metrology and reverse engineering.

SURVICE currently has 11 operations located across the continental United States, with most in close proximity to its customer base and/or major range test and facility bases. One such example is the Applied Technology Operation (ATO). ATO is located just outside Aberdeen Proving Ground, MD, and focuses on leading-edge research and development across engineering disciplines. SURVICE taps into its extensive science and technology bench and collaborates with industry, academic, and government partners to develop and deliver innovative, disruptive next-generation technologies to the Warfighter.

GAME-CHANGING CAPABILITIES

Our work in UAS development and testing is an example of providing the Warfighter with new game-changing capabilities for transportation and logistics to reduce the need for convoy and manned air drops of supplies.

WORLD-CLASS INDUSTRIAL DESIGN

Our Industrial Design and Robotics Team has experience in a broad range of hardware and software technologies, allowing us to develop and fabricate tailored solutions to meet unique end-user requirements.

ADVANCED COMPUTING AND CYBER TECHNOLOGIES

SURVICE develops custom, highly optimized software-implementing neural networks and machine-learning technologies across a broad spectrum of applications, such as computer vision techniques to automate drone operations. We have also developed and implemented NIST-approved secure and global communications to conduct and oversee operations anywhere in the world.

DRONE RESEARCH FACILITY

ATO's 15,000 ft^2 Drone Research Center provides development and testing of the latest in unmanned multirotor platforms and integration of custom payloads and autonomous technologies. It supports advanced prototyping capabilities, including custom electronics, high-performance computing, and the latest in virtual reality and augmented reality visualization. While specifically targeting tactical applications supporting the DoD, many of the developed and integrated technologies range from military to commercial applications. We recently added a second 10,000 ft^2 production hangar to accommodate the Tactical Resupply Unmanned Aircraft System Program of Record awarded to SURVICE by U.S. Navy PMA-263.

The facility is FAA COA-certified for Group 3 VTOL flights (120 acres at an altitude of 400 ft). Because it is co-located at the Harford County Airport, SURVICE has access to dedicated flight space for operating our drones, enabling us to conduct flight testing in a secure and safe space.

ABOUT THE TACTICAL RESUPPLY VEHICLE (TRV)

The TRV family of drones, developed in collaboration with UK-based Malloy Aeronautics, represents field-proven capability at tactically-significant payloads and ranges.

TRV OBJECTIVES

- Objective capabilities: 10-450 lb load capacity
- Multirole autonomous unmanned missions in a tactical and contested environment
- Augmentation of existing assets for "last mile" logistics for assured resupply

TRV ACCOMPLISHMENTS

- Common Control Module (CCM)*
- SATCOM Logistics
- Stock List Level 3 Kit
- Thermal Management Kit
- Integrated/Ruggedized
- Tablet Communications
- Mini-Speedbag
- Request Puck*
- Drop Rig**
- ISP Kit (spares)
- ATAK App Plug-in
- Computer Vision (CV) Rig

**Patented | **3 Patents Pending*

Platform Specifications and Ongoing Efforts on Back

WWW.SURVICE.COM/TRV

ELECTRIC VERTICAL TAKE-OFF & LANDING (eVTOL) UNMANNED AIRCRAFT SYSTEMS (UAS)

ONGOING SPIRAL DEVELOPMENT EFFORTS

- ***Autonomy*** – Develop/enhance autonomous operations and supporting technologies
- ***Military Commercial-Off-The-Shelf (COTS) Transition*** – Increase hardening while maintaining low-cost COTS subcomponents
- ***Spiral Technology Development*** – Continuously improve and evolve tactical capabilities
- ***Vehicle Intelligence*** – Enable ground combat element Marine operators
- ***Interface Standardization*** – Establish interface standards to streamline payload integration
- ***Testing & Evaluation*** – Validate/refine performance with Warfighter involvement

eVTOL PLATFORMS

*Numbers are engineering estimates * Demonstrated/validated (to date) ** Theoretical range at sea level on ISO day*

PLATFORM	OVERVIEW	PAYLOAD (LB)	RANGE (KM)
EAGLE			
	The Eagle is a SURVICE-built, NDAA-compliant vehicle capable of carrying 10 lb. It utilizes the same standardized mounting system and the same technologies as the larger TRVs and is a cheaper asset to test new technologies before scaling to larger platforms. With full payload, the gross vehicle weight is under 55 lb, allowing it to be flown in a variety of airspaces.	0	18
		10	6
TRV-150*			
	The TRV-150 is a variant of the Malloy Aeronautics TRV family of tactical drones specifically designed to support assured logistics resupply. The vehicle's performance was designed around the ability to deliver supplies. It has evolved from this intended purpose and is now the truck of the UAV world, carrying anything that will fit under the skids.	0	45
		25	35
		50	30
		100	18
		150	8
P4-C**			
	The P4-C vehicle aims to deliver a rapid response solution to a wide range of applications. It has the potential to provide a cost-effective, sustainable alternative to traditional delivery systems with a class-leading, 450-lb payload capacity creating opportunity for new and disruptive mission types.	0	45
		25	42
		50	40
		100	35
		150	30
		450	20
GRAZER-A			
	The Grazer-A is a development platform specifically built for academic partners. Designed with built-in computer vision hardware on an agile airframe optimized for longer flight times, the Grazer-A provides an open platform for research and development.		

Grazer-A

Eagle

TRV-150

P4-C

www.survice.com/trv | 410-273-7722 | applied-technology-info@survice.com | 2023

The TRV family of tactical drones is being collaboratively developed by the UK-based Malloy Aeronautics and the Maryland-based SURVICE Engineering Company under contract with the U.S. Department of Defense.

MALLOY AERONAUTICS LTD