

Topic: N172-100

D'Angelo Technologies, LLC

Single Surface High Altitude Low Opening Parachute

The parachute resulting from this project is a low weight, small pack volume, single surface canopy for High Altitude Low Opening (HALO) personnel jumps. The parachute is made from high strength composite fabric and is bonded instead of sewn. D'Angelo Technologies, LLC (D5T), a WOSB, specializes in providing the warfighter with innovative technology solutions and is developing this canopy for Marine Corps multi-mission and resupply operations. Completion of production designs for the only known hybrid single surface HALO canopy are scheduled for 2022. This scalable design allows D5T to manufacture canopies for other applications without major redesign. Phase II full scale systems will be dropped and analyzed to demonstrate glide and payload performance capability. The ultimate goal is to license manufacturing to a US parachute manufacturer.

Technology Category Alignment:

Air Platforms

Materials & Manufacturing Processes

Battlespace Environments

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SYSCOM: MARCOR

Contract: M67854-19-C-6505

Department of the Navy SBIR/STTR Transition Program

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MCSC-PRR-3618

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Single Surface High Altitude Low Opening Parachute
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WHO

SYSCOM: MARCOR

Sponsoring Program: PM Infantry Combat Equipment (ICE), Air Reconnaissance Equipment (ARE)

Transition Target: APS-1 or MC-6 replacement

TPOC:
sbir.admin@usmc.mil

Other transition opportunities: Special Operations Command (SOCOM) organizations.

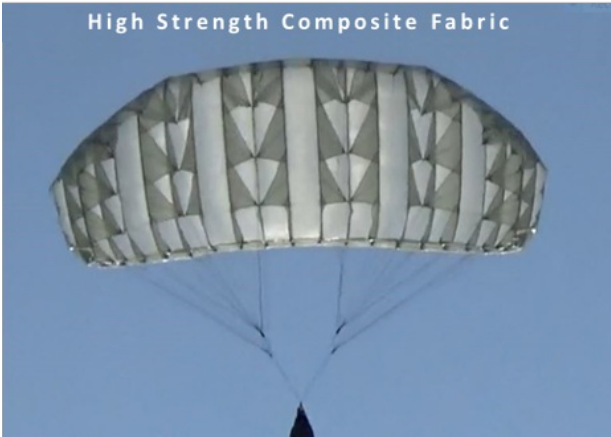


Image courtesy of D'Angelo Technologies, LLC

This technology is directly applicable and usable by any organization that utilizes a parachute.

Notes: Picture depicts D5T's early hybrid Single Surface (SS) canopy manufactured from high strength bonded composites fabrics.

D5T, D'Angelo Technologies, LLC
APS-1, Augmented Parachute System-1
MC-6, Maneuverable Canopy-6

WHAT

Operational Need and Improvement: USMC desires a High Altitude Low Opening (HALO) parachute canopy with a single surface providing lift capability, leverages high strength bonded fabrics, and reduces weight of overall parachute system. The current parachute system weighs 60 lbs. which is approximately 14% of entire system weight; the USMC desires to reduce this weight.

Specifications Required: Threshold (T) and Objective (O) goals are:

- Deployment method: (T) hand deployed pilot chute, (O) Drogue Deployment
- Altitude: (T) 4,000-10,000 ft. Mean Sea Level (MSL), (O) 1,000-22,000 ft. MSL
- All up-weight capacity: (T) 200-375 lbs., (O) 165-425 lbs.
- Glide ratio: (T) 3.5:1, (O) 5:1
- System weight: (T) 40 lbs., (O) 25 lbs.
- Airworthiness Reliability: (T) reliability 95% w/ 90 confidence level, (O) 99.5% / 90 confidence level

Technology Developed: D5T is optimizing its parachute canopy design by combining classic Single Surface (SS) hybrid designs with modern canopy shaping and materials. D5T's canopy incorporates a short ram-air section that provides a framework for the remainder of the single-skin parachute canopy, dramatically reducing the parachute weight and volume. Our parachute canopy is manufactured from a high strength, bonded composite fabric providing superior strength.

Warfighter Value: Utilizing high strength, bonded composite fabric our Single Surface canopy:

- Reduces material square footage by approximately 40%
- Reduces material bulk by approximately 35%
- Reduces weight by approximately 60%
- Increases fabric strength by approximately 30%
- Allows for field repairs to be completed quickly

WHEN

Contract Number: M67854-19-C-6505

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Canopy Stability	Med	Stable Parachute Deployment / Flight	TRL 3	4th QTR FY20
Flight Characteristics Refinement	Med	Stable Maneuverability and landing characteristics	TRL 4	4th QTR FY21
Glide Ratio 5:1	High	Glide Ratio Achieved	TRL 5	3rd QTR FY22
Reliability Testing/Refinement	Med	Reliability equal or greater than existing parachute systems	TRL 6	4th QTR FY22

HOW

Projected Business Model:

Licensing the technology for Full Rate Production (FRP) to an existing parachute manufacturer.

Company Objectives:

During the next 18 months D5T will complete the SS HALO design, conduct Low Rate Initial Production (LRIP), and complete DT&E (Development Testing & Evaluation) ultimately entering into LRIP with the end goal of entering a Phase III contract with the USMC.

D5T would like to meet with other Service organizations that have an improved parachute canopy requirement; specifically, Army, Navy, Air Force and Special Operations Command (SOCOM).

D5T seeks Phase III funding to upgrade our 4,600 sq ft. 20' High Bay facility to increase the manufacturing capacity needed for LRIP.

D5T and our small business partner have master riggers on staff and are able to manufacture the SS canopies required throughout the LRIP phase.

Potential Commercial Applications:

Fire Jumpers
Sport Parachutists
Lockheed Martin has indicated interest in this type parachute of for deployment of sensors.

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