

Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

MCSC-PRR-1925

Topic # N142-087

Expeditionary Portable Oxygen Generation System

TDA Research, Inc.

WHO

SYSCOM: MARCOR

Sponsoring Program:

Transition Target: Forward Resuscitative Surgical System

TPOC:

sbir.admin@usmc.mil

Other transition opportunities:

U.S. Army Medical Units

The expeditionary portable oxygen generation system can be used in medical facilities of various sizes, emergency management agencies, disaster aid and humanitarian aid agencies, and municipal fire and rescue squads.



Photo provided courtesy USMC, VIRIN: 160801-M-QM580-126

Notes:

LPM: Liters Per Minute

PSIG: Pounds Per Square Inch Gauge

FRSS: Forward Resuscitative Surgical System

EPOGS: Expeditionary Portable Oxygen Generating System

SWaP: Size, Weight and Power

WHAT

Operational Need and Improvement:

The objective is to develop a portable oxygen generation system that consumes less electrical power, and has a compact cube/size and reduced weight. This objective is in support of the expeditionary medical requirements of the USMC.

Specifications Required:

- Smaller, lighter, man-portable (2-4 personnel)
- More energy efficient (requiring less electrical and mechanical power)
- Produces medical-grade oxygen (United States Pharmacopeia (USP) 93% oxygen)
- Flow rate greater than 15 Liters Per Minute, produce 2200 PSIG
- Total weight does not exceed 250 pounds, volume does not exceed 20 cubic feet
- Maximum power should not exceed 1200 Watts
- Ability to be transported in all tactical/medical vehicles including helicopters
- Operate in all climates with no degradation at temperatures between -40 deg F and 125 deg F

Technology Developed:

The size and power reduction of the EPOGS are made possible through the incorporation of a more selective oxygen/nitrogen separation sorbent and by the implementation of innovative adsorption/regeneration cycling schemes.

Warfighter Value:

SWaP improved thereby reducing logistical burden

- Reduced power requirements by 33% (from 1800 Watts to 1200 Watts)
- Decreased size by 40% (from 34.5 cubic feet to 20 cubic feet)
- Decreased weight by 61% (Goal from 644 lbs. to 250 lbs.)

WHEN

Contract Number: M67854-16-C-6504 **Ending on:** August 8, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Breadboard testing complete	Low	Meets flow/purity/power requirements	4	3rd QTR FY17
Design Review of Prototype	Low	Design meets flow/purity/power requirements and MIL-STD	4	1st QTR FY18
Develop laboratory prototype	Low	Meet flow/purity/power requirements and MIL-STD-810G requirements	5	3rd QTR FY18
Production-type prototype completed and tested	Med	Meet flow/purity/power requirements and successful testing against MIL-STD-810G	6	4th QTR FY18

HOW

Projected Business Model:

TDA will contract a third party medical device manufacturer to produce the EPOGS which will be sold directly to the USMC.

Company Objectives:

TDA Research, Inc. is a technology developer that uses various pathways to commercialization. Depending on the technology and manufacturing process, we will manufacture products in-house and sell directly to customers or we will license the technology to a third party.

Potential Commercial Applications:

The potential for commercial application and dual use is high. The proposed system would be easily portable and well suited in areas where limited power is available. The expeditionary portable oxygen generation system can be used in medical facilities of various sizes, emergency management agencies, disaster aid and humanitarian aid agencies, and municipal fire and rescue squads.

Contact: Gokhan Alptekin , Principal Investigator
galptekin@tda.com (303)940-2349