

Department of the Navy SBIR/STTR Transition Program

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ONR Approval #

Topic # NRL-4

Black Ghost

U.S. Naval Research Laboratory

WHO

SYSKOM: ONR

Sponsoring Program:

Transition Target:

TPOC:

Other transition opportunities:



WHAT

Operational Need and Improvement:

Specifications Required:

Technology Developed: ZBlack Ghost is a ceramic turboshaft gas engine for unmanned aerial vehicles that has decreased fuel consumption and uses new ceramic designs to lower weight, enable superior heat transfer capabilities, and to support mechanical strength. Fuel consumption is reduced by increasing the turbine inlet temperature by using a heat exchanger to recycle waste heat from the exhaust. Ceramic injection molding (CIM) is being used to manufacture complex parts at low cost and high yield rates. The engine with a ceramic turbine rotor and stator can operate at 1225 degrees C, about 300 degrees C hotter than typical uncooled metal turbines. The gas engine design reduces operating and maintenance costs. It provides more onboard electric power for small long-endurance UAVs, which improves payload and mission capabilities.

Warfighter Value: Ceramic turboshaft engine for unmanned aerial vehicles that runs on jet fuel, produces 16 horsepower, and weighs 16 pounds. The tested design is quieter, more reliable, and longer lasting than internal combustion engines with a lower cost per flight hour.

WHEN

Contract Number: T2-ORTA-NRL-4

Milestone	Risk Level	Measure of Success	Ending TRL	Date
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HOW

Projected Business Model:

Company Objectives:

Potential Commercial Applications:

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