Department of the Navy SBIR/STTR Transition Program

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

MCSC-PRR-1349

Topic # N132-086

High Power Density, High Efficiency Advanced Generator for DEW Systems

Candent Technologies Incorporated

WHO

SYSCOM: MARCOR

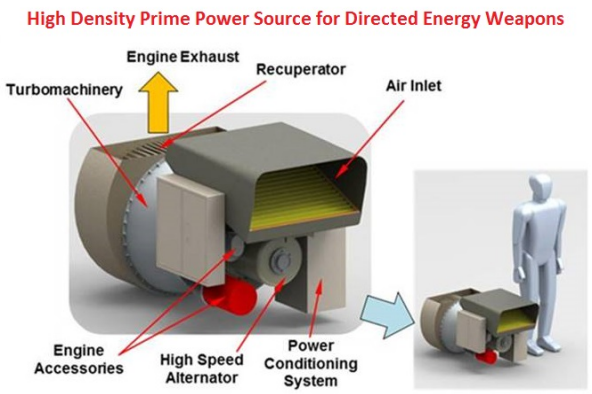
Sponsoring Program: MCSC / JNLW

Transition Target: Joint Non-Lethal Weapon Programs

TPOC:
sbir.admin@usmc.mil

Other transition opportunities:
High Energy Laser (HEL),
Mobile Electric Power (MEP),
Shipboard Power,
Technology is highly scalable in the range of 50kW to 1500kW, and is suitable for commercial applications, such as distributed generation, micro grid power, standby and baseline power.

Notes:
Non-Lethal Weapon (NLW)
Active Denial Technology (ADT)
Directed Energy Weapon (DEW)
Joint Non-Lethal Weapon Directorate (JNLWD)
Size, Weight, and Power (SWaP)



WHAT

Operational Need and Improvement: A small, light-weight, efficient prime power system capable of producing large amounts of power in very short but numerous bursts is needed for Directed Energy Weapons (DEW) applications.

Specifications Required:
- Average Power Output: 150 kW to 250 kW
- Fuel Type: JP8 Fuel
- Fuel Efficiency: 4.6 kWh/kg at 75% load factor, > 4 kWh/kg at 25% load factor
- Operating Temperature Range: -50° C to +50° C
- Output Voltage: 345 VDC +/- 10%
- Output Specific Power (Volume): Threshold: 6,000 W/ft3; Objective: 16,000 W/ft3
- Output Specific Power (Weight): Threshold:100 W/lb; Objective: 500 W/lb
- Efficiency: 96% efficient generator head

Technology Developed: Candent Technologies has developed highly efficient, advanced small gas turbine technology, which when integrated with state of the art high speed generators and micro tube heat exchangers, serves as a compact, lighter, prime power source for Directed Energy Weapons that meets stringent SWaP requirements.

Warfighter Value: The Candent Technologies advanced high density prime power source technology dramatically reduces the size of the ADT/NLW making it compatible with smaller tactical vehicles and small naval combatant craft. This enables the JNLWD to achieve its mobility goals, and provides the Warfighter with non-lethal escalation-of-force options that can avoid casualties and collateral damage.

WHEN

Contract Number: M67854-15-C-6502 **Ending on:** September 7, 2016

Milestone	Risk Level	Measure of Success	Ending TRL	Date
SBIR Phase II Base- System Design	Low	SWaP Compliance	4	4th QTR FY16
SBIR Phase II Option - Prototype Fab/Test	Med	Spec Performance Demo	6	1st QTR FY18
SBIR Phase III - Heat Recovery System Integration/test	Low	Enhanced Performance Demo	7	1st QTR FY18
SBIR - Phase III - Production Config Prototype/testing	Med	Production Configuration Unit Test	8	4th QTR FY18
EMD - Milestone B	Med	Spec Compliance	9	3rd QTR FY19

HOW

Projected Business Model: Our business model is based on three strategic premises:
1) to leverage the strengths of the company;
2) to outsource the manufacturing function; and
3) to partner with a Prime/OEM

1. Leverage of Strengths. The greatest strength of the company lies primarily in the breadth of knowledge and expertise of the Candent team, which includes decades of experience in all the facets of the aerospace and defense industry, such as engineering, management, manufacturing, supply chain, logistics support, and business development.
2. Outsourcing Manufacturing: This will lower substantially the material overhead rates, and avoid the need to invest large amounts of capital to establish a production manufacturing facility. Focus will be assembly and test.
3. Partnering: Candent Technologies intends to partner with Tier 1 suppliers of Directed Energy Weapons and power generation while continuing to focus Research & Development activities on the prime power source.

Company Objectives: To fully develop, test, and deliver the prime power technology to JNLWD for the ADT/NLW PoR, and continue to develop derivatives for other military applications as well as commercial markets.

Potential Commercial Applications: The versatility and scalability of the system makes it highly compatible with commercial power generation applications, such as standby and baseline power for systems up to 1500kW, distributed generation/micro grids, mobile electric power, and marine vessel service/auxiliary power, as well as hybrid electric drive systems for land or marine vehicles.

Contact: Hernando Munevar, President & CEO
hmunevar@candent-technologies.com 317-336-4478