

Expeditionary Technologies Assessed by TROPEC

Field Assessments

The Field Assessment Reports listed below are available to military stakeholders by contacting tropec@ornl.gov.

Technology Area	Assessment Type	Technology Scope	Technology Description
Controls	Field	Programmable Thermostat with Passive Occupancy Sensor	Self-programming thermostat with passive occupancy sensing.
Data Center	Field	Liquid Cooling of IT Equipment	Sealed server liquid cooling to cool electronic equipment and push the heat to the outside environment.
Electronics	Field	Battery Charging	Provides sequential and multiple power source charging; linking of power managers in a network; and direct powering of man-packable devices.
Environmental Control Units	Field	Two Stage Environmental Control Unit	Direct expansion cooling unit with two stage scroll compressor.
Environmental Control Units	Field	Duct Tees	Allows two tents to be ducted to a single Environmental Control Unit.
Environmental Control Units	Field	Environmental Control Unit with Modulating Scroll Compressor	Environmental Control Unit with soft start capacity and modulating scroll compressor.
Lighting	Field	LED Tent Lighting	Replacement/retrofit of 2-foot T-12 fluorescent lamps with LED replacement lamps.
Lighting	Field	Automated Lighting Controls	Automated lighting controls for shelter lighting.
Lighting	Field	Portable Solar Powered Exterior Lighting	Portable solar power charged battery system and outdoor lighting solution to replace trailer mounted diesel generator based lighting.
Lighting	Field	Portable, Highly Efficient Lighting	Portable high efficiency, high beam lumination for flood or spotlight application conditions.
Microgrid	Field	Microgrid Generator Sets	Microgrid generator sets that integrate storage and renewable power systems.
Power Distribution and Generation	Field	Multi-Fuel Generator	Converts COTS gasoline only generator systems into flexible and versatile multi-fuel systems, capable of operation with all
Power Distribution and Generation	Field	Multi-Fuel Generator	Lightweight, low noise, modified COTS portable generator capable of starting and running on JP-8 and other heavy fuels.
Power Distribution and Generation	Field	Hybrid Power System	Hybrid power system using portable solar and generator power sources to provide operational continuity and reduce fuel use.
Power Distribution and Generation	Field	Hybrid Power System	Hybrid power distribution system using solar, battery bank w/generator.
Power Distribution and Generation	Field	Hybrid Power System	Auto-start hybrid power system that has options for use with wind or solar panels.
Shelters	Field	Radiant Barrier Insulation Liner	Expanded plastic mat with metallized aluminum facing on both sides for installation between tent liner and exterior shell.
Shelters	Field	Inflatable Modular Shelter	Inflatable modular shelter allowing for multiple configurations and large-scale applications.
Shelters	Field	Energy-Efficiency Expeditionary Shelter	Composite building system utilizing polystyrene structural members, walls, roof and floor with glass fiber reinforced concrete coating to provide high strength and high R value.
Shelters	Field	Expeditionary Structure	Lightweight, rigid, packaged suite to include shelter, latrine, food prep/kitchen and laundry in a mobile footprint. Aimed in part at

Laboratory Assessments

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Data Center	Lab	Small Scale Air Conditioning for Electronic Enclosures	Miniature air conditioning/dehumidification unit for cooling electronics enclosures.
Data Center	Lab	Liquid Cooling of IT Equipment	Sealed server liquid cooling to cool electronic equipment and push the heat to the outside environment.
Data Center	Lab	Self Contained Modular Data Center	Self contained, mobile, reliable, secure data center that can be used outdoors.

Electronics	Lab	Electronic Voltage Regulation	Regulate line to neutral voltage on 120/240 V split phase services to improve efficiency and reliability of motors.
Energy Monitoring	Lab	Facilities Energy Monitoring System	Wireless monitoring and display of facilities energy, fuel, natural gas, and water use to enable energy saving actions.
Energy Monitoring	Lab	Server Memory Replacement	High-efficiency drop-in replacement for standard server memory.
Environmental Control Units	Lab	High Efficiency, Variable Speed Split Heat Pump System	High efficiency ductless split heat pump system with 18 SEER inverter driven precharged compressor package.
Environmental Control Units	Lab	Air Conditioner EER Testing	Comparing EERs for high efficiency, ductless, split cooling units in diverse climate conditions.
Environmental Control Units	Lab	Solar Powered DC Air Conditioner	DC powered high efficiency ductless split cooling unit.
Lighting	Lab	Portable Solar Powered Exterior Lighting	Portable solar power charged battery system for outdoor lighting fixtures to replace trailer mounted diesel generators.
Lighting	Lab	LED Tent Lighting	Replacement/retrofit of 2-foot T-12 fluorescent lamps with LED replacement lamps.
Power Distribution and Generation	Lab	Portable Hybrid Power System	Hybrid power systems using portable solar and generator power sources to provide operational continuity and reduce fuel use.
Power Distribution and Generation	Lab	Hybrid Power Microgrid	Integrated solar/Li-Ion battery power system with controls for diesel generator loading.
Power Distribution and Generation	Lab	Mobile DC Micro-Grid Power System	DC micro-grid with battery storage to supply DC power directly from source to DC end use devices such as lights, fans, and notebook PCs.
Shelters	Lab	High Efficiency Environmental Control Units	High efficiency, ductless, split cooling unit.
Shelters	Lab	Shelter Insulation with HVAC Air Tempering	Blanket-type covering over tent that insulates and performs heat and moisture exchange between incoming and exhaust air.
Shelters	Lab	Radiant Barrier Insulation Liner	Expanded plastic mat with metallized aluminum facing on both sides for installation between tent liner and exterior shell.
Shelters	Lab	Tent Liner Low-Emittance Surface Coatings Low-emittance surface coatings	Low emittance interior surface coating that reduces radiation heat exchange from heated surface to interior space.
Shelters	Lab	Exterior High Reflectance Coating	Exterior ceramic coating for roof and walls of fixed structures that reduces solar loads.
Water	Lab	Water Production from Air System	Potable water generation system that condenses water from air.
Water	Lab	Wastewater Re-Use System	Wastewater bio-reactor to process black water before release.

