National Defense Center for Energy and Environment

EXPEDITIONARY DIRECT CURRENT POWER DISTRIBUTION (DCPD)

PROJECT OVERVIEW

A satisfactory means of expeditionary, tactical DC power distribution (DCPD) has not been fielded. DCPD will provide an intuitive material solution that enables the Warfighter to distribute power between existing and future DC sources and loads with minimal required training. Just as the 3-prong NEMA power plug has become a recognizable interface for AC power, DCPD will standardize a power distribution architecture and connectors suitable for the majority of DC loads. DCPD will consist of a power distribution box, cables, and standardized connectors that will allow compatibility with currently-fielded and future DC sources.

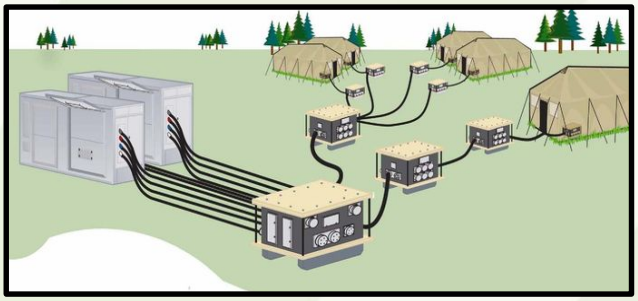
BENEFITS

Improved Operational Effectiveness:
Reduced training; lighter and more agile force; reduced labor; reduced cognitive burden; joint interoperability; increased reliability.

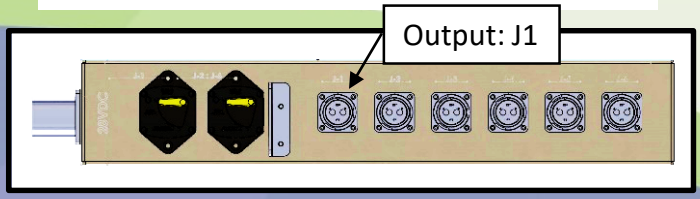
Improved Mission Capability:
Helps enable MDO & EABO; helps integrate current and emerging capabilities; improved efficiency, operational reach, persistence, resilience, and sustainability; reduced need for tactical resupply.

PATH FORWARD

Phase I: Prototype design & fab.; Pre-insertion T&E; Employment strategy and planning
Phase II: Unit integration; Train w/ Experimental Units on employing DCPD vice current solution; Support the process of making Unit equipment compatible with DCPD
Phase III: Operational Employment at User Evaluations and exercises
Transition: Technical data package (TDP), interface control document (ICD)



With MEPDIS-R (above), AC sources are quickly and conveniently distributable to a multitude of AC loads using familiar interfaces. Small Unit DC power currently undergoes wasteful and unnecessary conversions and lacks an analogous, streamlined, easy-to-use means of distribution.



A conceptual DCPD power strip is shown above. On the left is a NATO slave input, a prominent source of DC power in the field. Six standardized output connectors are provided to connect to DC loads. The left most output, J1, is designed to deliver a full 850W of electrical power via its own dedicated 30A circuit breaker for high-power applications. The remaining five output connectors share power from a common 30A circuit breaker and are intended to power typical DC loads including radios, laptops, C2, small weapons systems, and other equipment. Thus, a single DCPD power strip can deliver 1700W of ~24VDC power to as many as six devices at one time.

DoD Executive Agent
Office of the Assistant Secretary of the Army for Installations, Energy, and Environment

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FOR FURTHER INFORMATION

National Defense Center for Energy and Environment
http://www.denix.osd.mil/ndcee/home
Naval Surface Warfare Center Carderock Division (NSWCCD)
https://www.navsea.navy.mil/Home/Warfare-Centers/NSWC-Carderock/