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A River of Energy Solutions

Power & Energy in Austere Locations: An Industry Perspective

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Agenda

- Operational Context
- Discussion
 - Industry Solutions
 - Past, Present, Future
- Conclusions
- Questions and “maybe” Answers



The Real Challenge



Supply Convoy Example – Logistics Nightmare

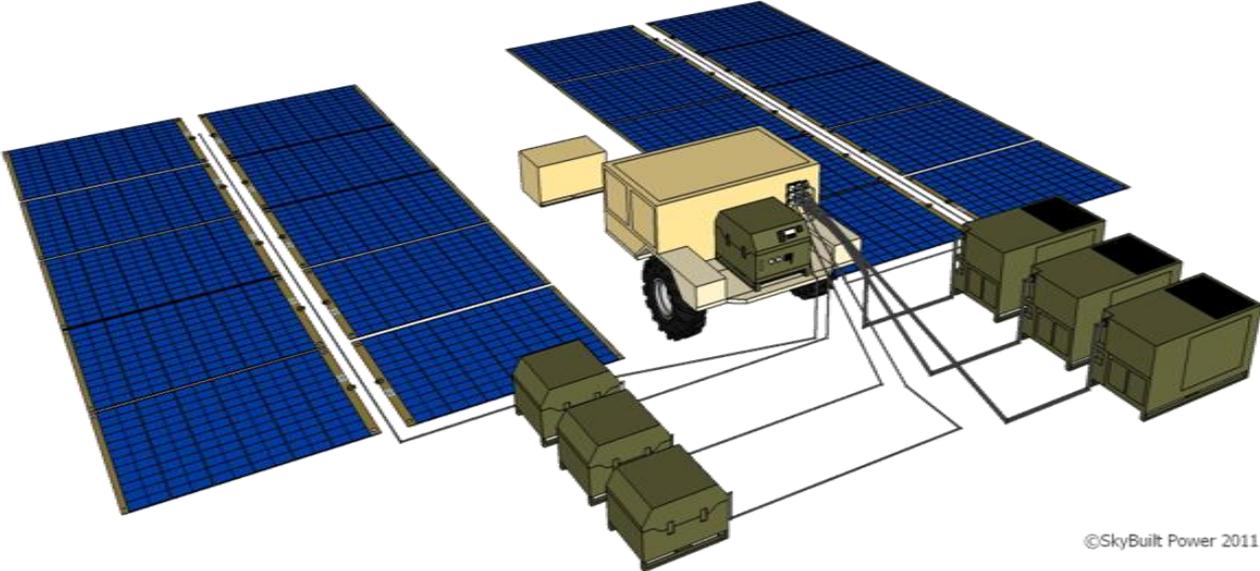
Operational Context

- Capabilities necessary for increasingly complex, integrated and networked Military Operations will demand more and more power
- The enemies of the future
 - State and non-state
 - More sophisticated and adapt more quickly
 - Asymmetric
 - Understand the importance and necessity of sustainment
- Operational Construct
 - Command Infrastructure
 - Personnel, Systems, Expeditionary
 - Mounted, Dismounted / Aerial, Ground / Base Camps, Tactical Sites
 - Sustainment – “Beans and Bullets” - horizontally integrated

Current Solutions



The Future



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The Future



INTELLIGENT MICROGRID SOLUTIONS

THE INTEGRATED SMART-BEAR POWER SYSTEM

A LOCKHEED MARTIN INTELLIGENT MICROGRID SOLUTION

The U.S. Air Force's Basic Expeditionary Airfield Resources (BEAR) program equips forces with lightweight, air-transportable assets used to establish mobile air bases. To improve the reliability of power to critical systems, increase the efficiency of generation to reduce costs, and enhance security by reducing reliance on fuel convoys, Lockheed Martin is providing the Integrated Smart BEAR Power System (ISBPS). The ISBPS is a rapidly deployable intelligent power system integrating a variety of energy sources, including renewables, into the existing BEAR power grid.

SDC
Secondary distribution centers (SDC) transform power from the medium voltage (4160 VAC) diesel generator power grid to a usable voltage (208 VAC) and provide distribution panels for end user power connections.

THE ISBPS
The ISBPS improves upon the SDC by integrating and intelligently managing additional renewable and conventional power sources, reducing fuel use and allowing grid tied or grid independent operation of electrical loads.

LOCKHEED MARTIN

Discussion

- Past
 - Power & Energy were capability key enablers, but there was plenty of it.
- Present
 - Power & Energy are capability enablers
 - At a cost of lives and funding
 - Protecting LOCs distracts from combat activities
 - Fuel becomes a KPP for materiel life cycle cost calculations
 - Fuel incorporated in future war planning
 - Power and energy at the point of use
 - Energy security and surety incorporated in the leadership calculus
 - Energy conservation affected by behavior changes in the Force
- Future
 - Modular, simple, robust
 - “Smart”, microgrid, scalable, demand optimized, open architecture
 - Renewable and alternative energy integrated into the solution

Conclusions

- Power & Energy will remain critical capability enablers
- Smart controls will serve as the foundation to the future of Military power
- Monitor and Manage Power & Energy at the individual level
 - “There’s an app for that!!”
- Expect a transformational energy breakthrough in the future
 - Energy Storage
 - Propulsion
 - Generation
 - ???

Power Anywhere™

QUESTIONS???