Remote Power and Micro-Grids

Scope:

- The military requirement and context  
  Brigadier Steve Vickery

- Options to inform the requirement  
  Mr Jim McMenemy

- Ongoing developments – the future  
  Lieutenant Colonel Nigel Young RE

*The view of the British Army and the MoD’s Equipment and Support organisation*
Context:

- The changing character of warfare
- The Divisional war-fighting context
  - Symmetric
  - Armoured warfare
  - Power at the halt
- Countering Insurgency
  - Dismount demands
  - 12+ years of operating in remote sites
Infrastructure

Remote Power and the use of Micro-grids

- The ‘dual’ military requirement
  - Capable of powering; Sights, radio, domestic, ECM, IT,
  - Storage capacity
  - Ease of use
  - Ease of maintenance – remote monitoring
  - Reduce logistic drag
  - Transportable
  - Efficient
The ‘dual’ military requirement (continued)

- Security and Safety (cyber threat)
- Government’s Green initiatives
- Scalability (plug and play)
- Power of opportunity
- Mixed / complementary provision
Infrastructure

Remote Power and the use of Micro-grids

➢ Options to inform the Requirement

DSEI
12 – 15 September 2017
The World Leading Defence & Security Event
ExCel, London www.DSEI.co.uk

Army Warfighting Experiment 2017 (AWE 17)

Capability Concept Demonstrator

Operational Concept Demonstrator
Remote Power and the use of Micro-grids

Principles

- Use of an open system approach (Generic Base Architecture) to allow the integration of management, storage and renewables
- Reduced complexity through a ‘plug and play’ approach
- Makes use of in-service equipment, build upon previous investment
- Minimise human intervention/supervision

Remote System Monitoring and Control

Intelligent Power Management

Generator Management

- Enables integration with in-service generators
- Generators run at their most efficient output, then turn off

Energy Storage

- Scavenges surplus power in the grid
- Can run the camp from storage and turn generators off
- Provides a backup for critical systems

Demand Management

- In-service distribution hardware with added metering and switching
- Prioritises power to critical systems in emergency
- Stops generator overloads

Integrated Renewables

- Integrating renewable sources into the base power grid - can be plugged in anywhere in the base
- Increases surety of supply and backup power for critical systems
Remote Power and the use of Micro-grids

Example 1 (UK MoD)
Remote Power and the use of Micro-grids

Example 2 (NATO/LTA)
The Future Need – Project “Field Power”

- The replacement of all current UK military general purpose deployable power generation and distribution equipment
- In-service 2022
- ~ £300M
The Future Need – Project “Field Power”

- Generate
- Distribute
- Store
- Manage
Generate

- 0 – 350Kw (~1Mw)
- Tactical vrs Static
- Small (man portable), med (veh/trailer), large (truck)
- Variable speed/generator managed
- Digitally controlled
- Scalable / parallel / load switching / load sharing
Distribute

- 1 / 3 phase
- Ease of planning/construction/commission
- Legislation . . . (qualifications of personnel)
- Tactical vrs static
Storage

- Peak demand vrs average
- Battery technology
- Cost
Manage

- Micro-grid
- Automatic/controllable
- Fuel saving

- Linked to a Facilities Management system in camp infrastructure
The future?
Questions?

HOW IN THE HELL...

DID ENGINEERS OF THE FUTURE...

FORGET SEATBELTS AND AIRBAGS?