The Alternative Energy Coalition: A Struggle for Power in the Expeditionary Environment
THE CHALLENGE
Marine Commandant General James F. Amos:
(Excerpt from the General’s comments on March 1, 2011 before the House Armed Services Committee)

“The Marine Corps is leading the development of expeditionary energy solutions …. reducing energy demand in our platforms and systems, increasing the use of renewable energy, and instilling an ethos of energy and water efficiency in every Marine. Our priority is force protection — saving lives by reducing the number of Marines at risk on the road hauling fuel and water.”
DOLLAR COST OF TACTICAL GENERATORS

Assumes fully burdened cost of fuel

Assumes 33% typical load factor

Disregards maintenance and depreciation
THE HUNT
EXFOB EVALUATORS LOOK FOR ALTERNATIVE-ENERGY SOLUTIONS

✓ That are light-weight, portable
✓ That will endure harsh climates
✓ That will stand up to rough handling
✓ That ensure electrical power off-grid
✓ That are easy to set up by a small team under stress

✓ That reduce fuel consumption
NEST ENERGY AT EXFOBS - 2010

QUANTICO

29PALMS

MARCH

AUGUST
ONR DATASET FROM EXFOB4 / 29PALMS

Eagle Hybrid Power Trailer – AGM Batteries

1. [Diagram element 1]
2. [Diagram element 2]
3. [Diagram element 3]
ONR DATASET FROM EXFOB4 / 29PALMS

Eagle Hybrid Power Trailer – LiFePO Batteries
THE MASTERMIND
A “SYSTEM OF SYSTEMS”

- Eagle Hybrid Power Trailers
- SOLIS-EM
- ROCS Remote Operational Control System
- Raptor Solar Light Trailers
- Future renewable energy sources
SOLIS ENERGY MANAGEMENT & CONTROL

- Monitors fuel/battery status
- Alerts to potential problems
- Secure “extranet” data transmission
- Manages fossil & renewable resources
- Climate database helps predict fuel use
- Controls multiple resources simultaneously

✓ Reduces fuel consumption
REMOTE OPERATIONAL CONTROL SYSTEM

ROCS

• Generator management
• Compatible with TQG “family”
• Local or remote access (Internet)
• Simple operation, field installable
• Controls up to 256 tactical gensets

✓ Reduces fuel consumption
SYSTEM OF SYSTEMS DEMO

TQG Start-Stop

Microgrid - Building

Raptor Light Trailer
SYSTEM OF SYSTEMS DEMO

<table>
<thead>
<tr>
<th>CUSTOMER</th>
<th>UNIT</th>
<th>LOCATION</th>
<th>CTL TYPE</th>
<th>DESCRIPTION</th>
<th>SERIAL#</th>
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<tbody>
<tr>
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<td>0005</td>
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<td>Local Microgrid Control</td>
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SYSTEM IDENTIFICATION
User Name: nest
Customer: 00001
Location: Local Microgrid Control
Unit #: 0005
Serial #: CBP0000002
Date: 04/06/2011
Time: 12:50:54
Update: 30 seconds

LOAD AND ENERGY CONTROL
- Load #1: OFF
- Load #2: OFF
- Load #3: OFF
- Load #4: OFF

TQG Start-Stop
Microgrid - Building
Raptor Light Trailer
SYSTEM OF SYSTEMS DEMO

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TQG Start-Stop

Microgrid - Building

Raptor Light Trailer
A CLOSER EXAMINATION...
EAGLE HPT-T (TACTICAL)

- Supports 10kw peak load
- Cuts attached genset run time by 50%
  - Easy to set up, “plug & play”
  - Towable—weight under 4200#
- Manages genset from local or remote

✔ Reduces fuel consumption
EAGLE HPT-G (GENERATOR ONBOARD)

- Lithium battery pack
- Supports 10kw peak load
- Supports 3kw average load for about a week
- Towable—weight under 4200#
- Controls onboard genset automatically
- Integrated SOLIS Energy Management

✓ Reduces fuel consumption
RAPTOR SOLAR LIGHT TRAILER

- Zero maintenance
- 12-hour nighttime illumination
- 100% solar, uses no fossil fuel
- Complete automatic operation
- Easy to set up, “plug & play”
- Inverter for plug-in items

✓ Reduces fuel consumption
<table>
<thead>
<tr>
<th></th>
<th>Terex AL4000</th>
<th>NEST Raptor</th>
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<tbody>
<tr>
<td>Purchase price</td>
<td>$8,900.00</td>
<td>$17,609.19</td>
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<tr>
<td>Fuel cost, annual</td>
<td>$36,724.00</td>
<td>$0.00</td>
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<tr>
<td>Maintenance, annual</td>
<td>$13,140.00</td>
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<tr>
<td>Battery pack, every three years, annualized cost</td>
<td>$1,066.67</td>
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<tr>
<td>Total annual cost of operation</td>
<td>$99,864.00</td>
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<tr>
<td><strong>Total 3-Year Cost of Operation</strong></td>
<td><strong>$308,492.00</strong></td>
<td><strong>$20,809.19</strong></td>
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</table>
RAPTOR SOLAR LIGHT TRAILERS, POST EXFOB
EAGLE HPT, POST EXFOB
NEXTFOB

CURRENT TEMP: 120°
EAGLE HPT-EM (EXTENDED MISSION)

- Supports 3kw missions for 15 days
- Lithium battery pack (U.S. MADE)
  - NEST super-light solar panels
    - Handles 10kw peak load
  - Towable—weight under 4200#
- Controls onboard genset automatically
- Integrated SOLIS Energy Management

✓ Reduces fuel consumption
VEHICLE INTEGRATED POWER UNIT REGULATOR

- Mounts to tactical vehicles
- Three models - support 1.5 to 4kw peak load
  - Reduces vehicle idle time by 50%
  - Automatic engine start/stop
  - Simple field installation
- Supports 12 or 24v battery systems

✔ Reduces fuel consumption
EXFOB = WIN-WIN
NEST Energy has alternative energy-based systems—in production-- that will reduce risks Marines and other branches of service face hauling and guarding fuel supplies in expeditionary environments.

They’re ready now.
Nest Energy Services LLC
2602 N. Third St. Unit B
Prescott Valley, AZ  86314
Toll-free:  877-640-4701

WWW.NESTENERGYSERVICES.COM