Little Brother – Small Fuel Cell Powered UGV

Fuel Cell removed from vehicle
- Performed analytical and experimental vibration analyses
- Base plate bending mode at 7.5 Hz
- Investigating fixes to stiffen base plate
- Investigating new isolators and isolator location
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Inverter arrived 9 Aug.’06
- Wiring to vehicle complete
- Need to identify ARL’s output requirements (single 110 VAC plug?)
- Need to finalize vehicle mounting
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Original Plan
Inverter mounted on top of exhaust duct, behind DE device

Current Plan
Inverter mounted next to DE device, on top of fuel cell cover

NEW ISSUE:
4/21/06 DE device footprint is 29” x 8”
8/23/06 Baseplate is 17.5” x 28.5”

NEED FINAL WIRING, WEIGHT, and MOUNTING OF DE DEVICE
Little Brother misc.

Improving wiring for safety, accessibility, and reliability
  Power switch, Quick disconnects, distribution block
  Fuel Cell control and communication cable conversion to plug-in
EMI gasket source located and material ordered
On-board computer received Aug. 11
Nuvera will lends us a CAN card for Fuel Cell data logging

Testing Program scheduled for early September
  Speed/Torque mapping
  Control communication range
  Hydrogen consumption rate
Fuel Cell Powered UGV
8/2/2006
BURRO – LARGE UGV

Current Status:
Lift Arms, Cab, Body and auxiliary hydraulics removed
3D modeling underway
Working on getting it running again
   Must by-pass all safety interlocks
BURRO – LARGE UGV
BURRO – LARGE UGV

Weight Analysis:
As Delivered (7/10/06) 8,350 lbs
Stripped Down (7/27/06) 4,330 lbs
3D model (8/23/06) 3,958 lbs (-8.6%)

- Drivetrain (chains, gears, axles, hubs) 799 lbs
- Chassis/frame 769 lbs
- Diesel Engine 748 lbs
- Hydraulic Pumps and motors 698 lbs
- Wheels 520 lbs
- Fluids 424 lbs
Decision Drivers for final configuration:

Weight
Alternative Fuel source

WEIGHT ISSUE:
Original target was 2,500 lb vehicle carrying a 2,500 lb load
To meet that goal requires complete chassis/drivetrain redesign
Or
Change target and build larger vehicle

ALTERNATIVE FUEL ISSUE:
If stick with Fuel Cells – Hydrogen storage is major concern
Quantity desired requires many tanks or very high pressure