

NAS NORTH ISLAND - NAVY REGION SOUTHWEST NAVY ENVIRONMENTAL LEADERSHIP PROGRAM

POLLUTION PREVENTION

HYBRID ELECTRIC TOW TRACTOR VEHICLES

LEAD ACTIVITY

Naval Air Station (NAS) North Island

STATUS

Active

MISSION

Reduce air emissions by replacing petroleum-fueled vehicles with electric vehicles

REQUIREMENT

Fuel consumption and urban pollution are two major concerns regarding vehicle use on Naval bases. In order to reduce diesel consumption and emissions, the Department of Defense (DoD) has commissioned the design of hybrid electric vehicles.

DESCRIPTION

In a joint Air Force/Navy technology demonstration program, a variety of electric- powered hybrid vehicles are being evaluated for possible future use. One of the demonstration vehicles is a Hybrid Electric Tow Tractor (HETT). The HETT is an Air Force MB-4 Tow Tractor with a modified hybrid electric drive train technology that will be used to tow heavy loads such as large military aircraft.

The design specifications for the vehicle are a weight of approximately 26,500 pounds, a calculated drawbar pull greater than 14,000 pounds, and a turning radius of less than 300 inches, while in four-wheel steering mode. The HETT is using a MB-4 chassis that has an enclosed cab for the operator and one passenger. The design is compatible for towing C-130 aircraft and is operable at temperatures from -25° Fahrenheit (F) to 110° F for two hours under full load conditions before recharging and/or refueling is necessary. Since a tow tractor is only used intermittently, two hours of electric power is usually sufficient. In an instance of continuous long-term use or when no power outlet is



HETT



HETT-Backview

available, a diesel-motored generator automatically supplements the energy stored in the battery when the battery is low. Due to its the high operating voltage, the generator can be used as a battery charger when no power outlet is available. The battery also can be recharged at recharging stations.

NAWC Lakehurst is participating in the HETT Program as the Navy's technical point of contact (POC). The operational test was conducted by ISE Research at U.S. Marine Corps Air Station (USMCAS) El Toro in the spring of 1998, and C-130 aircraft compatibility testing is planned for USMCAS Miramar and NAS North Island.

BENEFITS

- Reduces air emissions and diesel fuel consumption
- Saves money because electricity costs less than petroleum fuel
- Saves time usually lost on recharging electric vehicles because hybrid capabilities allow batteries to be charged in the field without a break in service

ACCOMPLISHMENTS/CURRENT STATUS

Date	Activity
MAR 1998	Critical design review
NOV 1998	Demonstration at NAS North Island initiated

FUTURE PLAN OF ACTION & MILESTONES

Date	Activity
Ongoing	Evaluation of HETT at NAS North Island

COLLABORATION/TECHNOLOGY TRANSFER

If successful, the HETT could be tested at other Air Force and Navy aviation sites.

BIBLIOGRAPHY

- HETT Critical Design Review, ISE Research, March 26,1998

RELATED GOVERNMENT INTERNET SITES

[DOE Office of Transportation Technologies - Electric Vehicle Program](#)
[DOE Idaho National Engineering & Environmental Laboratory - Electric Vehicle Field Operations Program](#)
[EV World](#)

RELATED NAVY GUIDEBOOK REQUIREMENTS

- 10003 Cost Effective Waste Reduction

UPDATED: 01/23/02