

A publication for members of the Hybrid Electric Truck Users Forum (HTUF) - a project of the US Army and WestStart.



# Hybrid DiaLog

November 2002

Issues of Interest for Hybrid-Electric Trucks

## Big Turnout - Next Steps Set

### HTUF Chattanooga Forum Packed - User 'Working Groups' Launched

*Missed the meeting?  
Use this issue to keep  
current in the process and  
share your comments.*

The second **Hybrid Truck Users Forum (H-TUF)** in Chattanooga Oct. 15 & 16 featured a standing-room-only turnout of more than 150 fleet operators, truck makers and system developers engaging in focused discussions on developing - and using - heavy-duty truck technologies.

Fleet operators represented roughly half the attendees, with more than 30 total fleets taking part representing nearly 700,000 vehicles on the road - including five different military fleet types from the US and Canada.

Perhaps most important was what came "out" of the conference - the desire of fleet operators - and truck makers - to form **Working Groups** around those vehicle classes and applications that appear most promising for first commercial efforts.

#### Those preliminary categories are:

- **Class 7 and 8 refuse collection trucks**
- **Class 4-6 urban delivery trucks, including package and beverage delivery**
- **Class 4-8 Specialty Trucks, including utility and telcom aerial lift trucks, derrick diggers, fire trucks**
- **Class 7 and 8 LTL urban delivery trucks (warehouse to store, regional distribution)**

The other significant outcome came from the User's session during the first day of the forum. During that gathering fleet operators heard the results of a survey identifying truck and system makers' views on best hybrid applications and barriers to commercialization.

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### **Utility/Specialty Segment First User Working Group Sets Meeting for Dec. 13 in Florida**

The first **HTUF User Working Group** has launched and set its first meeting for Dec. 13.

The working group is organizing around the **Utility/Specialty** truck segment identified at HTUF and has set its kick-off meeting to coincide with the ETI

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### **Also Inside this Issue**

**User Session Results:** Top 10 findings from HTUF User's session.

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**Sneak Peak:** AVS provides a preview look at its new hybrid delivery truck.

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**Commercialization Needs:** Truck maker survey identifies market launch needs.

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**Hybrid Certification:** California approves interim emission testing certification rules for hybrid buses - sets truck framework.

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## Top 10 Findings

### User Session Results are Key

On the first day of the Chattanooga H-TUF program, truck users engaged in a focused conversation with truck makers and hybrid system developers, discussing what it would take to move hybrid trucks into commercialization.

More than 30 different fleets took part in the session, and the findings were instructive.

Here are the **10 Big Findings**:

1. **There are no technical "show stoppers"** preventing the use and commercialization of hybrid trucks.
2. The system makers believe **reliability and durability is there** now for hybrids.
3. Truck makers believe **early year model hybrids might carry a 20-40% price premium** over the vehicles they replace - many fleets seemed willing to pay that if price reductions were seen in the future.
4. There is a need for **commonality of components** to help reduce costs.
5. There is a **need for generalized, common platforms**.
6. **Truck makers need more volume** - but 5,000 vehicles a year is a good market in truck industry.
7. There is an **"abyss" issue** - a gap between where the industry is now and how to launch the first volumes of vehicles.
8. **Need a commitment to demonstration fleets by applications** - 30-to-50 trucks per application is the minimal next level.
9. Must **get vehicles into user's hands!**
10. **Need cooperative working groups of users by application**, setting out general, common needs and volume purchase commitments.

These findings from user discussions led directly to the launching of the first Working Groups.

## Dec. 13 - Florida

### Working Groups Launch *From page 1*

(Electric Transportation Industry) Conference taking place in December in Hollywood Beach, Florida. The conference was selected as a good venue because many of the interested utility fleet managers will already be attending.

This first working group is targeted at **Utility/Specialty** vehicles because one of the most **highly motivated fleet** groups represented at the Chattanooga HTUF was the utility fleet operators.

**Florida Power and Light (FPL)**, long a player in alternative fuel vehicles, offered to serve as the host for the first meeting. WestStart is supporting the effort.

**The Working Group structure is meant to bring together fleet users** in each promising segment to identify common needs and platforms. Working Groups for the refuse truck and package/beverage delivery segments are starting to form.

#### **ARE YOU INTERESTED IN TAKING PART?**

For more information on the Utility/Specialty Working Group meeting, e-mail:

Fred Silver at WestStart, [fsilver@weststart.org](mailto:fsilver@weststart.org), or  
 Bob Schomber at FPL, [bob\\_schomber@fpl.com](mailto:bob_schomber@fpl.com).

**[Click here for agenda.](#)**

To become involved in any Working Group, contact Fred Silver.

## 2nd H-TUF Packed - Next Steps Launched - *continued from page 1*

Fleet managers and other attendees also received briefings on the **latest in hybrid technology from the U.S. Army**, which has several development projects underway, as well as from key technology developers. One company, AVS (one of the hosts of the Chattanooga meeting) also **unveiled its heavy-duty hybrid urban delivery truck** prototype and allowed users to drive it (see sidebar, below).

One of the more interesting presentations for fleet users came from the **FedEx delivery truck alliance**. Under this effort, FedEx has developed a performance specification for its workhorse package delivery truck and worked with system developers to create prototypes. The promise was, if the prototypes met the spec, FedEx would commit to purchases.

Two companies delivered hybrid-electric delivery truck prototypes that are currently being tested, BAE Systems and Eaton Corporation. They briefed attendees for the first time on their designs. **What is most promising is that these systems are available to anyone, not just FedEx - in fact, FedEx is encouraging others to use them.** These drive systems may also support several other hybrid applications.

Attendees will receive a CD-ROM copy of the presentations. If you were not able to attend the forum but want to keep up with the process, please contact Monica Alcaraz at WestStart ([malcaraz@calstart.org](mailto:malcaraz@calstart.org)) to obtain a copy. The CD costs \$25.

The location and time of the next HTUF meeting is currently being developed. More information will be available soon. In the meantime, the HTUF process continues.

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### *Impressive Debut* **AVS Unveils Heavy-Duty Hybrid Delivery Truck**

AVS took full advantage of its role as host of the Chattanooga HTUF meeting by unveiling - and allowing fleet operators to drive - **its new hybrid-electric tractor**. The truck is based on an International tractor and was customized for operations in an urban delivery duty-cycle.



The truck is powered by a **240-kW electric drive system** from Enova, which receives electricity from both a large battery pack and a **60-kW turbine generator** from Capstone Turbines. The turbine generator achieves 2007 emission standards and is powered by liquefied natural gas, but will soon also be able to burn diesel or propane.

**Performance?** These trucks are designed for heavy-duty operations with high-speed requirements. In the standard configuration, **they are capable of 55+ mph speeds but will typically be used in routes with average speeds of less than 20 mph**. The trucks will accommodate stop-and-go driving applications such as urban delivery. This vehicle will also accommodate hub-style applications where a single distribution center is the heart of the delivery process.

**For the driver, it means no shifting** - just a single switch, no transmission. It's also almost silent, and is capable of driving through neighborhoods on batteries only.

Of course, **it's also still a prototype, and is much more expensive than a diesel truck**. But requirements for emissions are increasingly stringent, and expectations from customers for friendlier vehicles are growing. In full production, over a full life cycle, these trucks hold the promise of paying for themselves.

[Click here for more.](#)



## **CARB Approves Hybrid Bus Interim Certification Rules: *Not Everyone is Pleased***

The California Air Resources Board (CARB) has officially adopted **an interim emission certification process for heavy-duty, hybrid transit buses**, intended to give hybrids full credit for their emission reductions.

The new certification process is **voluntary and is in effect for a three-year period from 2004-2006**. It is based on the concept of "**chassis**" testing, not just engine testing, to measure the real benefits a hybrid system brings. The approach may become the framework for heavy-duty hybrid trucks, as well.

While industry worked closely with CARB to craft a process that would encourage hybrids in the market, several companies had serious concerns that the CARB rules were still too restrictive. In particular, **Allison and BAE Systems** testified that the certification rules would **not allow them to use the most promising small diesel engines**, because those engines do not come factory-equipped with diesel particulate devices. They asked for the flexibility to incorporate the particulate devices as add-ons but that was not added to the rule.

Their other concerns were focused more on the CARB Transit Bus rule itself than on the testing protocol. The two companies are focusing on diesel-electric hybrids, but believe CARB's highly restrictive rules on transit districts that use diesel buses will make it hard for many agencies to use diesel hybrids - even if cleaner.

However, both companies said they would probably use the other approach CARB left open - for the next three years, any hybrid bus can claim an automatic 25% emission reduction, without chassis testing.

[To see the CARB rule, click here.](#)

## **What Will it Take for Hybrids? Truck and System Maker Commercialization Survey**

At the Chattanooga HTUF meeting, WestStart provided an overview of the results of an **extensive series of conversations with truck and hybrid system makers** about what they believe is required to launch hybrid trucks into the market.

Fourteen of the largest suppliers were interviewed, including nine truck makers and five system makers. Some highlights:

### **Key industry "drivers:**

- Fuel consumption/fuel economy
- Tougher truck emissions and environmental concerns
- Positive image

### **To succeed, hybrids must:**

- Provide duty-cycle benefits (stop and go applications)
- Fit in "premium" or subsidized markets
- Add image value to users

### **Best First Applications:**

- Class 8 Refuse trucks
- Class 4-6 urban delivery
- Specialty trucks (including utility aerial lift trucks)
- Class 7-8 LTL/regional delivery

### **Commercialization Needs:**

- More hybrid knowledge and experience for truck users and makers
- "Next level" volumes of hybrid trucks in operation in first applications
- Government funding support

*The Hybrid Truck Users Forum (H-TUF) is a joint project of the U.S. Army National Automotive Center (NAC) and WestStart to assist with the commercialization of heavy-duty hybrid technologies. The Army has already selected hybrids for its future combat vehicles to significantly reduce its fuel use and increase performance.*

*For additional information on the HTUF program, please call Fred Silver, program manager, at 626 744-5600, or e-mail him at [fsilver@weststart.org](mailto:fsilver@weststart.org).*

*Do you find this publication valuable? Please let us know.*



## Specialty Truck Working Group Meeting December 13th – Preliminary Agenda and Registration Information Announced

Immediately following the EVAA Electric Transportation Industry Conference (ETI)

Primary Focus: Aerial Lift Trucks – Restoration Vehicles and Vehicles of Similar  
Configurations - Discussion of Utility Step Vans  
Vehicle Classes 5-7

A Specialty Truck Working Group is emerging through the strong interest of Utility Fleets participating in the **Hybrid Electric Truck Users Forum (H-TUF)**. **Florida Power and Light** will be hosting an initial Working Group meeting immediately following the EVAA Electric Transportation Industry Conference in Hollywood Beach, Florida. Working Group participants will focus on identifying common requirements that allowing truck manufacturers to produce a hybrid truck product for this market segment - and deploy initial volumes. Anticipated benefits include significant fuel economy gains, emission reductions, auxiliary power, etc. **While the purpose of this initial meeting is to identify common needs and associated potential purchase volume, users, truck manufacturers, suppliers and researchers are also welcome.**

If you have any question in the interim, please contact Fred Silver (626)-744-5687 [fsilver@calstart.org](mailto:fsilver@calstart.org) or Bob Schomber at (305)-552-2054 [bob\\_schomber@fpl.com](mailto:bob_schomber@fpl.com)

### Current Specialty Working Group Participants

Electric Power Research Institute

- Florida Power and Light
- Illinois Power
- New York Power Authority
- Pacific Gas and Electric
- Southern California Edison
- Tennessee Valley Authority
- Memphis Light Gas and Water
  - Georgia Power
  - Gulf Power
- Los Angeles Dept of Water and Power
- Sacramento Municipal Utility District

The Hybrid Truck Users Forum (H-TUF) is a partnership of the US Army's National Automotive Center and WestStart, an advanced transportation consortium. Its goals are to assist and speed the commercialization of heavy-duty hybrid trucks for fuel efficiency, emissions and performance benefits. The program links military development expertise with the needs of private industry and fleets nationwide.



## Specialty Truck Working Group Meeting Preliminary Agenda

- 10:30am                   **Hotel Meeting Room Working Group  
Convenes/Attendee Introductions**  
“ Welcome-Purpose of Meeting-Framework of Working Group”  
*Bob Schomber Florida Power and Light*  
*Fred Silver-WestStart/CALSTART*
- 10:45am                   **Can We Leverage Existing Hybrid Development  
Efforts?**  
“Hydraulic Hybrids, Fed Ex Hybrid Delivery Vehicle Program, AVS Class 6  
Hybrid Tractor, SCE Hybrid Trouble Truck, US Army Common Chassis  
Hybrid FMTV”  
*Tim Calhoun- Fleet Manager Florida Power and Light*
- 11:15pm                   **Results of WestStart Utility Fleet Managers’ Survey**  
“A summary of interviews with Utility Fleet managers regarding their fleets, chassis type,  
fuel economy issues, required performance and interests in hybrid drive-trains”  
*Bill VanAmburg- WestStart/CALSTART*
- 12:15pm                   **Lunch provided by Florida Power & Light Co.**
- 1:00pm                    **Confirmation of Commonalities**  
“Discussion of Common Vehicle Characteristics, Feature Preferences and  
Estimated Purchase Quantities”
- 2:30pm                    **Set Working Group Goals and Timeline**  
“What does the working group see as their vision and mission - how to  
accomplish the vision and over what timeframe”
- 3:00pm                    **Meeting Ends**

**A RIDE 'N' DRIVE** and Breakfast in Conjunction with the Electric Transportation Industry Conference and the Specialty Truck Working Group is available at no added

charge, starting at 8:30am. Please catch an early shuttle and return for the working group meeting at the Hotel which convenes at 10:30 AM



On Friday, December 13 the Ride and Drive is at John Lloyd State Park, a 253-acre barrier island situated between the Atlantic Ocean and the Intercoastal Waterway. This beachfront park preserves some of South Florida's vanishing natural resources...from the sea turtle nesting beaches to Whiskey Creek, a protected zone for the endangered manatee.

This is your setting to test drive the latest in electric drive technology. This venue will provide an extended course for battery electric, hybrid and fuel cell vehicles and a short course for low speed vehicles.

Jumpstart the day at our "sunny-side up" breakfast, generously sponsored by American Honda Motor Co.

### **Registration Information**

This Specialty Truck Working Group Session will be free for those that are registered at the Electric Transportation Industry Conference. For those of you that are not registered you can participate in the working group by registering on-site at the conference for a one-day ETI Conference Industry pass of \$60.00. This will provide you with breakfast and participation in the ETI Ride and Drive where you can drive a variety of Hybrid Electric Vehicles. For an additional \$40.00 fee you can also have access to the exhibition hall the day before the event. Since time is running short, you may want to reserve a room at the ETI hotel as soon as possible in order to take advantage of a special room rate. A block of rooms and a special group rate have been negotiated for conference attendees and exhibitors. To receive this specially reduced rate of \$165 (single or double), you must call 1.800.WESTIN1 (800.937.8461) or 888.627.9057 and reference the "EVAA Conference." This special rate will be in effect only until *November 8, 2002*.