

TUG Tidbits

Newsletter of the Natural Gas Transit Users Group



September, 2007

- ◆ TUG Meeting November 7-8 at FAB Industries
 - ◆ LA Metro Tests Supersized 100-Passenger CNG Bus
 - ◆ *All You've Ever Wanted to Know about CNG Cylinders* – TUG Webcast 2
 - ◆ Who has the Biggest Natural Gas Bus Fleet?
 - ◆ Orange County, CA Plug-In CNG Hybrid?
 - ◆ New Natural Gas Bus Purchases Around the World
-

TUG Meeting November 7-8 at FAB Industries

The next meeting of the Natural Gas Transit Users Group (TUG) will be hosted by FAB Industries November 7-8 in Anniston, Alabama. This two-day meeting includes:

- Presentations on improving bus fuel economy
- Tours of FAB and NABI bus production facilities
- Discussions of how to avoid bus fires and how to put them out if they happen
- Review of recent natural gas vehicle incidents

If you received this newsletter, you should also have received a detailed meeting announcement, response form, and agenda. We look forward to seeing you in Anniston! Anniston is only 85 freeway miles from the Atlanta airport and 60 freeway miles from the Birmingham airport. Contact Hank Seiff at hseiff@cleanvehicle.org or 703-534-6151 if you have any questions:

There is no charge to attend TUG meetings!

LA Metro Tests Supersized 100-Passenger CNG Bus

Los Angeles Metro's Orange Line is a 14-mile landscaped transitway and bike path through the San Fernando Valley, running east and west between North Hollywood Metro Rail Station and Warner Transit Center. It began serving the public in October

2005 with streamlined 60-foot articulated “Metro Liner” buses built by NABI and up-fitted to CNG by FAB Industries.

In August, in response to greater than anticipated customer demand for Metro Orange Line service, the Los Angeles Metropolitan Transportation Authority (Metro) announced the public debut of its supersized new 65-foot Metro Liner demonstration bus for daily revenue service.



65-ft CNG Articulated LA Metro “Metro Liner”

Just 10 feet shorter than a Metro Rail subway car, the extra-long transit vehicle is a first-of-its-kind, designed exclusively for operation on the Metro Orange Line, and is the highest capacity articulated compressed natural gas bus in operation in North America.

The new bus provides room for 66 seated passengers compared to the 60-foot model’s 57 seats. When fully loaded with seated and standing passengers, the new 65-foot bus can accommodate up to 100 passengers compared to the 60-foot model’s capacity of 84.

“Due to the overwhelming success of the Metro Orange Line, San Fernando Valley commuters have said ‘Super-size me,’ and Metro has listened,” said Pam O’Connor, Santa Monica City Councilmember and Metro Board Chair. “This new vehicle is roomier, quieter, more streamlined and, what’s more, operates on environmentally clean natural gas.” “The new 65-foot articulated CNG bus takes our current pace-setting vehicle design and moves it to the next level,” said Roger Snoble, Metro CEO. “It will enable us to meet the increasing Orange Line passenger demand without increasing our operating costs.” “This new bus was designed exclusively for operation on the Metro Orange Line with our passengers in mind,” added Richard Hunt, General Manager for Metro San Fernando Valley service sector. “It continues Metro’s tradition of offering the latest innovations in transit technology that directly benefit our riders.”

Metro will evaluate bus performance, including its maneuverability, passenger capacity, passenger acceptance and operating range during the one-year demonstration period. The vehicle should help alleviate the need of adding more buses to meet demand during peak periods, and could be flexibly phased into service as fleet replacements over time.

Innovations incorporated into the new vehicle include an advance design exhaust system that further reduces exterior noise. The manufacturer also moved the vehicle’s air conditioner location for a quieter interior ride. Advance design frameless tinted

windows give the vehicle a more streamlined, rail-like appearance and reduce passenger window glare.

To reduce vehicle weight, the 65-foot Metro Liner uses four less CNG storage tanks, and consequently weighs about the same as the 60-foot Metro Liner. Vehicle acceleration and braking is expected to be on par with the 60-foot models. The longer vehicle will have a tighter turning radius than many of Metro's existing 40-foot buses and easing steering for its operators. (Information and photo courtesy of LA Metro)

All You've Ever Wanted to Know about CNG Cylinders – TUG Webcast 2

TUG held its second quarterly webcast on September 5, exploring the subject of *All You've Ever Wanted to Know about CNG Cylinders*.

Livio Gambone, Manager of Vehicle Programs, Gas Systems Engineering, Powertech Labs Inc, Surrey, BC, Canada, opened the webcast with a formal presentation (for copies contact Hank Seiff at hseiff@cleanvehicle.org or 703-534-6151) which included information on

- Fuel Tank Technologies
- Service Conditions
- Tank Design Considerations
- Testing of Fuel Tanks
- In-Service Performance
- In-Service Inspection

Livio and John Dimmick (who has had 30 years experience in design, manufacture, test and application of high-pressure gas cylinders and vessels while employed at Pressed Steel Tank Co and is now an independent consultant) then answered questions from the audience. Questions included:

- Concerns about moisture in PRDs freezing and causing failures during winter months (go to <http://www.cleanvehicle.org/committee/technical/PDFs/Web-TC-TechBul4-PRDs.pdf> for a technical bulletin on this issue)
- How to destroy an out of service cylinder (see "Disposal procedure" in CGA publication C-6.4)
- Description and prognosis for cylinders with composite fiber delamination (composite fiber pulling away from cylinder liner – Level 3 non-repairable damage).

Our next TUG webcast will be held in December - you will receive an email notice 3-4 weeks in advance. Please contact Hank Seiff (hseiff@cleanvehicle.org, 704-534-6151) to suggest topics you'd like us to cover.

Who Has the Biggest Natural Gas Bus Fleet?

With, 4,000 natural gas buses, Beijing, China is the largest NGV bus fleet in the world. (Source: NGVA Newsletter 7-27-07). LA Metro has the biggest US fleet with 2225 of its 2490 buses operating on natural gas (2006 figures).

Orange County, CA Plug-In CNG Hybrid?

As a result of a July 9 presentation to the Orange County Transportation Authority's (OCTA) Board of Directors on bus hybrid technology and OCTA's efforts to have a fleet of clean burning vehicles, the Board directed staff to look further at the possibility of adding CNG hybrid buses to OCTA's fleet, including plug-in CNG-electric hybrids. The agency wants to decrease both petroleum fuel usage and emissions, with an eye on ultimately operating on hydrogen. OCTA presently operates four hybrid vehicles, two diesel-electric and two gasoline-electric. The CNG hybrid(s) could be part of the present order for 377 New Flyer CNG buses. (Information from 8/6/07 *Fleets and Fuels*, July 9 presentation to OCTA Board of Directors, and Supervisor Bill Campbell's 7/13/07 Third District Report)

New Natural Gas Bus Purchases Around the World

Boston, MA: Using a \$100,000 DOE award, CityView Trolley Tours is acquiring the company's first two CNG trolleys. (Source: NGVAmerica Newsletter, 8-8-07)

Pima County, AZ: Tucson Unified School District (TUSD) and Continental Elementary School District are adding 15 new CNG school buses thanks to an Arizona Department of Environmental Quality grant program to reduce the exposure of schoolchildren to diesel emissions. TUSD will almost double its CNG fleet, adding another 11 of the 15 CNG vehicles to its existing fleet of 12. (Source: NGVGlobal 7-11-07)

Karachi, Pakistan: Swede Bus Pakistan Ltd is set to take delivery of their first 15 CNG buses. Company CEO, Ahmed Shabbir, says the buses are the first OEM CNG buses for Pakistan, and that the company plans to have 250 CNG buses operating in Karachi shortly. The buses use the company's own body design, under the ORYX brand, built on Ashok Leyland chassis and assembled in Abu Dhabi by Transcontinental Industries. The buses are fitted with dedicated Hino Euro 3 engines and Faber composite CNG cylinders. Swede Bus Company is viewed as a pioneer in Pakistan, importing the first Euro 2 buses, built by Scania, to Pakistan in 2002. (Source: NGVAmerica Newsletter 8-24-07).

Helsinki, Finland: Ten new natural gas buses were added to the 72 already in service in August. In addition to emissions below Euro 5 levels (which do not take effect until 2009), the buses have a quieter engine than diesel and could use bio-gas as a fuel, as is done in Sweden. (Source: Helsingin Sanomat International Edition 8-6-07)

Sør-Rogaland, Norway: Norway's fledgling 77-strong compressed natural gas (CNG) bus fleet will increase to more than 100 with the pending delivery of 35 Euro 5 CNG buses from Volvo Bus. (Source: NGVGlobal, 6-27-07)

Madrid, Seville and Burgos, Spain: EMT de Madrid has chosen Irisbus Iveco for 60 new CityClass CNG units. With this order, EMT will have 350 CNG buses in its fleet by the end of 2007. Irisbus Iveco is also delivering 30 CityClass CNG models to Seville, adding to the current CNG bus fleet of 50. And in June, Burgos, a city in the north of Spain, added two new CityClass CNG buses to its 12 unit CNG fleet.

Please send all questions, comments, requests for information, etc. to Hank Seiff at 703-534-6151 or hseiff@cleanvehicle.org. See the TUG website at <http://www.nrel.gov/vehiclesandfuels/ngvtf/tug.html>