3RD OCTOBER 2016 | RIYADH – SAUDI ARABIA

4TH UITP MENA BUS SEMINAR

Fuel Efficiency & Alternative Energy

Organiser

UITP MIDDLE EAST & NORTH AFRICA

Local Host

SAPTCO
Saudi Public Transport Company

INTRODUCTION

In the last hundred years we have made monumental advances in our transportation technologies. Wonderful inventions such as the train, bus and airplane have allowed us the freedom to travel and explore this great planet for lower price. Industrialization gave us the ability to mass produce public transit vehicles so that everyone could be free to move. Unfortunately we are still using primitive and environmentally harmful petroleum fuels to propel our mass transit services. This page explores alternative methods of public transportation that seek to lessen the environmental impact of public transit. Alternative fuels can help solve some of the challenges faced by today's stakeholders. Environmental and health issues provide powerful arguments to support alternative fuels. Buses powered by natural gas, for example, emit significantly less toxic fumes than those powered by diesel. The benefits of adopting alternative fuels are evident in a growing body of success stories, ranging from individual retrofits at small transit districts to wholesale fleet replacements by major metropolitan authorities. Successes are most prevalent among buses, but they are common in many other transit vehicles, including shuttle vans and service vehicles. Therefore, we will be considering in our 4th Bus Seminar this important topic and we will focus on the below points

- Average per-passenger fuel consumption of various bus application "public transit – intercity – school"
- Which technology or fuel/technology combination gives the best overall energy efficiency?
- Which technology or combination is best for reduced local emissions and improved urban air quality?
- Clean fuel options can be implemented for existing bus fleets

Alternative fuels are derived from resources other than petroleum. Some are produced domestically, reducing our dependence on imported oil, and some are derived from renewable sources. Often, they produce less pollution than gasoline or diesel.

Ethanol: is produced domestically from corn and other crops and produces less greenhouse gas emissions than conventional fuels.

Biodiesel: is derived from vegetable oils and animal fats. It usually produces less air pollutants than petroleum-based diesel.

Natural Gas: is a fossil fuel that generates less air pollutants and greenhouse gases.

Prospane: also called liquefied petroleum gas (LPG), is a domestically abundant fossil fuel that generates less harmful air pollutants and greenhouse gases.

Hydrogen: can be produced domestically from fossil fuels (such as coal), nuclear power, or renewable resources, such as hydropower. Fuel cell vehicles powered by pure hydrogen emit no harmful air pollutants.

HYBRID TECHNOLOGY OVERVIEW

A hybrid-electric bus is powered by an electric motor, and a smaller than normal conventional internal combustion engine. To achieve heightened efficiency, the battery powered electric motor allows the combustion engine to operate at periods of maximum efficiency. The major components of a hybrid drive system include an internal combustion engine (ICE), a generator, a battery pack, and an electric motor. The most commonly used batteries in hybrid vehicles are lead-acid or nickel-metal hydride. Ultra-low sulfur diesel is the most common fuel used to power the combustion engine in hybrids, although other fuels such as gasoline, compressed natural gas (CNG), liquid natural gas (LNG), biodiesel, and hydrogen have also been used.

ELECTRIC TECHNOLOGY OVERVIEW

Electric vehicles powered solely by a rechargeable battery. Battery electric buses in general have a large amount of batteries on-board to achieve a sufficient driving range resulting in a considerable additional weight and space requirement. To resolve the trade-off between on-board battery requirement and driving range some electric battery manufacturers produce E-buses with rapid-change battery racks.

WHY HYBRID BUSES?

Hybrid buses offer a wide range of benefits including significantly lower emissions, increased efficiency, and decreased maintenance costs. Reduced Emissions Hybrid buses are estimated to cut emissions by as much as 75 percent when compared to conventional diesel buses. The emissions reductions are a function of the electric drive, ultra-low-sulfur diesel (ULSD) fuel use in conjunction with particulate trap technology and improved fuel economy from the hybrid system.

WHY ELECTRICAL BUSES?

» Global Regulation

Increasingly stringent regulations are stipulated on cities to reduce air pollution through global organizations (European Commission directs through European Air Pollution Policy). Direct costs to society from air pollution (damage to crops and buildings, Health etc) amount to about €23 billion per year (SOURCE: EU)

» Air Quality

Air pollution is directly related with severe health problems. Electric buses have no tailpipe emissions and help in reducing overall pollution levels, particularly in congested city centres worldwide

» Energy security

Buses form a large part of public transportation worldwide. Converting diesel buses to electric fleet reduces reliance on diesel for public transport and other "stationary" forms of electricity (Hydroelectricity, Solar etc) could be utilized

» Cost of motoring

Fuel costs form majority of the cost of transportation, which are increasing every year because of unstable oil prices, and expected depletion of fossil fuels in near future

» Noise

Commuters in congested city centres struggle with the increasing levels of noise pollution which also impacts health. Electric buses provide a noise-free urban transport solution

UITP coordinates a consortium of 40 partners to work on the 4 year demonstration project ZeEUS (Zero Emission urban Bus System) aiming at extending the fully-electric solution to a wider part of the urban bus network. The project was launched January 2014 and covers innovative electric bus solutions with different electric powertrain systems to be demonstrated in 8 European cities with 35 electric 12m buses (including next to battery electric vehicles also plug-in hybrids and electric trolleys with batteries).

PARTICIPATION FEE

UITP Member	**€ 250.00**
Non-Member	**€ 500.00**

UITP applies a 30% discount for Developing Countries . Please contact UITP for details

* Participation Fee includes:

- Registration for 4th UITP MENA Bus Seminar
- Lunch & Coffee breaks as per program
- Seminar Material
- Certificate of Participation

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VISA INFORMATION

Visa invitation letters will be supported by UITP. Participants who require an entry visa must allow minimum 2 months preparation time for the visa application. Visa assistance will be provided Only for the delegates who have registered and paid in full to UITP. Visas are at the discretion of immigration. For Further information please contact **UITP**

LANGUAGE

4th UITP MENA Bus Seminar will be held in English & Arabic

Venue

To be advised