

Advanced Clean Transit Technology Symposium Mobile Source Control Division, Air Resources Board

February 8, 2016



North America's leading Transit Bus
Manufacturer and Parts Supplier



North America's leading Motor Coach
Manufacturer and Parts Supplier

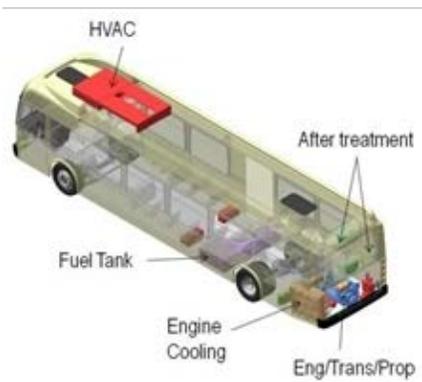


Facilities Throughout North America and California - Serving a Broad Mix of Transit Needs Throughout the State

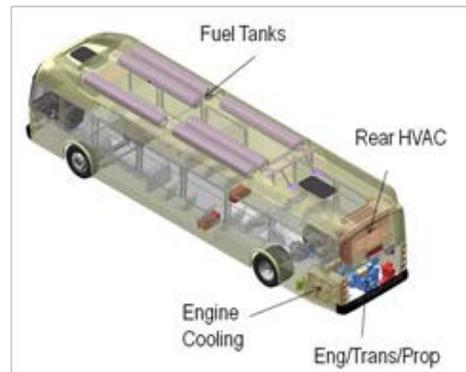
- Los Angeles County Metropolitan Transit Authority
- Orange County Transit
- Long Beach Transit
- San Diego MTS
- Golden Gate Bridge Highway & Transportation District
- AC Transit
- Sunline Transit Agency
- OMNI Trans
- San Francisco Municipal Railway
- Santa Clara Valley Transportation Authority
- Norwalk Transit System
- City of Montebello
- City of Glendale
- City of Gardena
- City of Torrance
- Fresno Area Express
- Golden Empire Transit District
- Santa Monica Municipal Bus Lines
- San Mateo County Transit
- Chula Vista Transit
- City of Commerce
- City of Elk Grove, Development Services, Transit
- Golden Empire Transit District
- Stanislaus Regional Transit
- Napa County Transportation
- Santa Cruz Metro Transit
- City of Culver City
- National City Transit
- North County Transit District
- SFO Airporter Shuttle Service
- San Jose Airport
- Santa Cruz Metro Transit
- ATC / Vancom (Santa Rosa)
- City of Vacaville



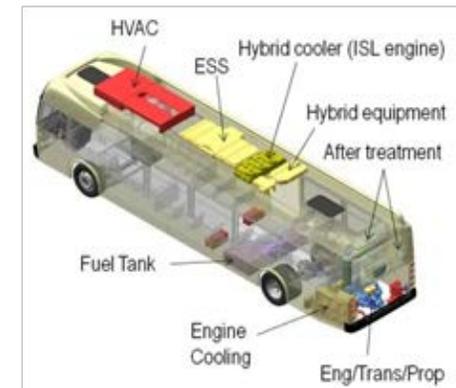
Clean Diesel



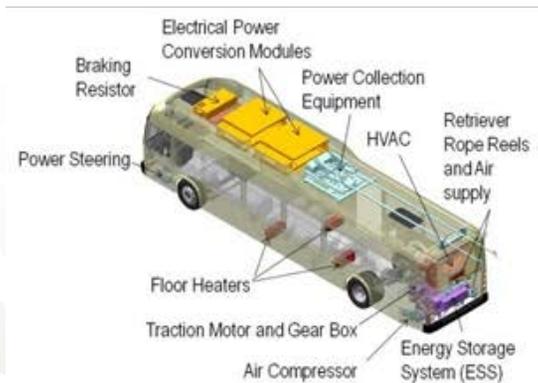
Natural Gas



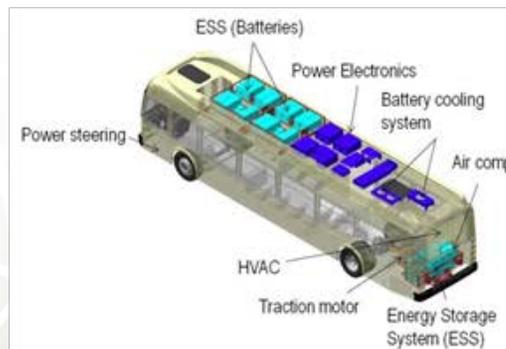
Hybrid-Electric



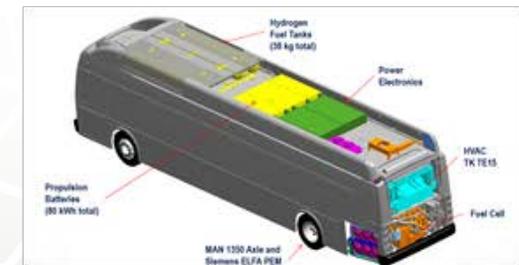
Electric-Trolley



Battery-Electric



Hydrogen Fuel-Cell





New Flyer Has Partnered with Industry Leading Propulsion Technology Innovators



BAE SYSTEMS

BALLARD®
PUTTING FUEL CELLS TO WORK

SIEMENS

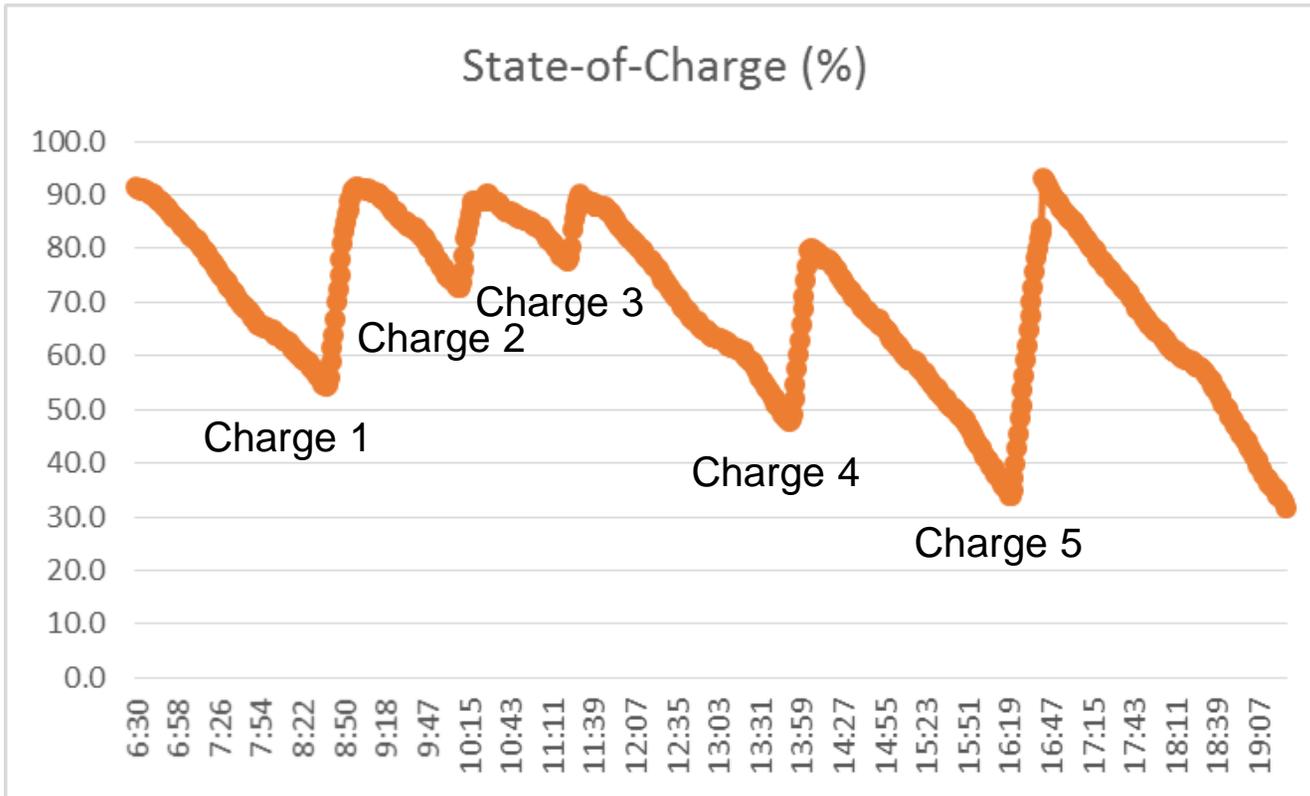
vossloh
KIEPE

Allison®
Hybrid

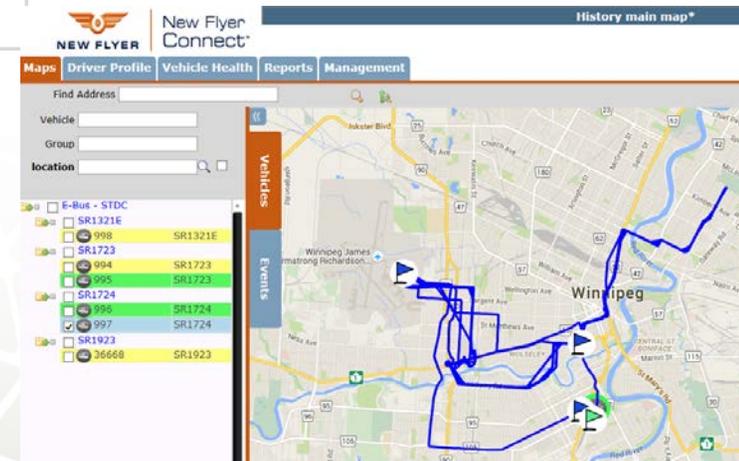
HYDROGENICS
SHIFT POWER | ENERGIZE YOUR WORLD



New Flyer Battery-Electric Bus Are in Operation Daily "The Technology Works"



Telematics Tracking



DATA SHOWN FOR FEBRUARY 5, 2016

Winnipeg Transit Bus 997

Outside Temperature = 12° F

Distance Traveled = 123 miles

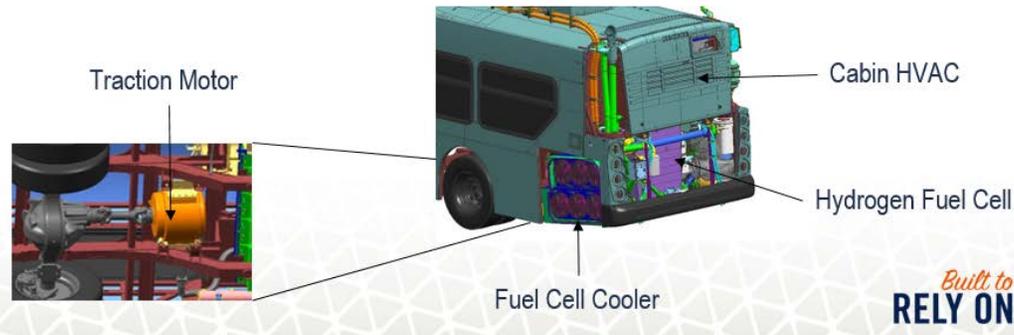
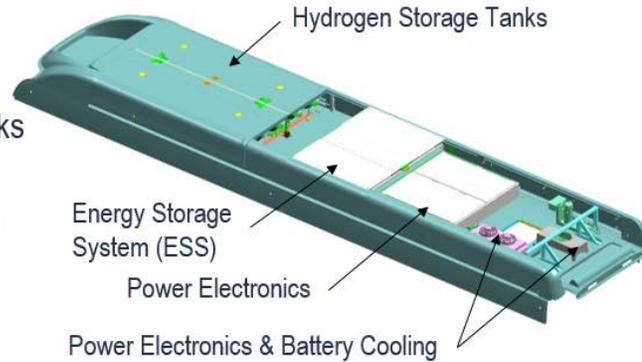
Time On-Route = 12.5 hours

Rapid Charging – 5 Opportunity Charges during the day

New Flyer is Investing Heavily in Hydrogen Fuel Cell Technology with Active Development and Commercialization Programs

Fuel Cell Bus System Layout

- Dense Energy Storage – H2 tanks
- Energy Conversion – FC
- Short term energy/power – ESS
- System Loads – Propulsion/Auxiliaries



Fuel Cell and Hydrogen Tank Module – Installed in Xcelisior® XHE60



- Introduce Cummins Westport ISL-G Near Zero NOx Natural Gas Engine
- Support Ongoing Battery-Electric Bus Deployments to Ensure Industry Leading Reliability and Up-Time
- Continue Assessing and Testing Newest Generation of Lithium-Ion Energy Storage System (ESS) Batteries
- Provide Leadership and Support for Battery-Electric Bus Charging Standards
 - SAE J3105 – Overhead Rapid Charging
 - SAE J3068 – Plug-In Charging
 - SAE J2954 – Inductive (Wireless Charging)



U.S. Department of Transportation
Federal Transit Administration



ELECTRIC POWER
RESEARCH INSTITUTE



AMERICAN
PUBLIC
TRANSPORTATION
ASSOCIATION

California Environmental Protection Agency
 **Air Resources Board**

- Complete Altoona Testing of Fuel Cell Buses
 - XHE40 (40 Foot Fuel Cell Bus , California Energy Commission / SunLine Transit Agency)
 - XHE60 (60 Foot Articulated Fuel Cell Bus, FTA National Fuel Cell Program / AC Transit)



Built to Rely On.™

Contact:

David Warren

Director of Sustainable Transportation

New Flyer of America Inc.

david_warren@newflyer.com

320-203-4979