ISO 9001

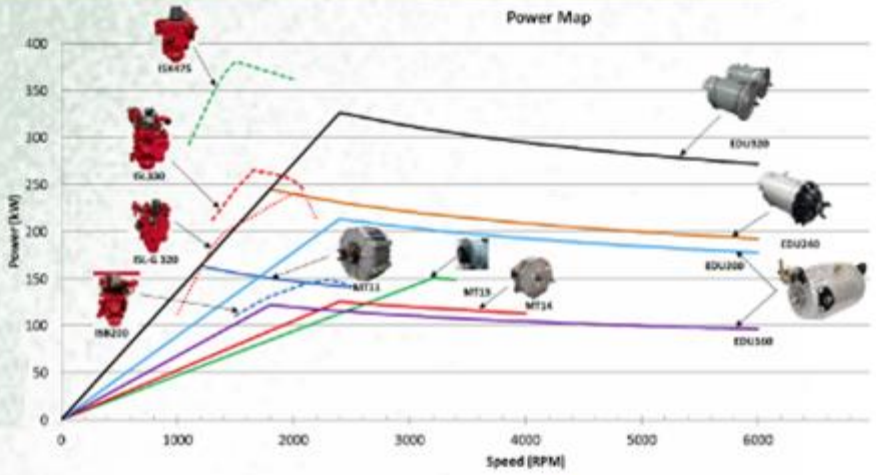
ISO 14001

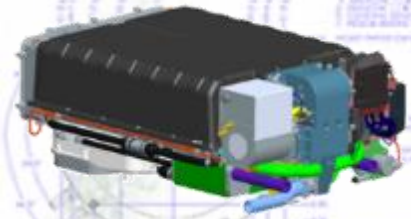
Innovation

Quality

Service

US Hybrid





Integrated Electric, Fuel Cell and Hybrid Powertrain Components Powering Clean Mobility

US Hybrid Group

US Hybrid

FuelCell Engine Div.

Magmotor

US Hybrid HQ: Torrance, CA	
Year Established	1999
Core Competency	Electric Powertrain for Electric, Hybrid and Fuel Cell Heavy Duty Vehicles

FC Engine Div. South Windsor, CT	
Year Established	2013
Core Competency	Fuel Cell Power Plant

Magmotor Corporation Worcester, MA	
Year Established	1876 (Acquired by US Hybrid in 2008)
Core Competency	Servo Motors and Drives Automation, Robotic and Semiconductor Mfg.


Torrance, CA


Torrance, CA


Honolulu, HI


South Windsor, CT


Worcester, MA

US Hybrid Business Focus is

Medium & Heavy-Duty Commercial Vehicles

We have been making & operating Fuel Cell Vehicle for decades

20kW FC Bus

Hyundai

60kW FC Cargo Van

UTC PC40 BOP

FC Converter
UL/NEBS

H2 Ride FC Bus

FC Transit Bus BOP

FC-Refueler

FC Tow Tractor

FC Cargo Van

MTA Shuttle

Air Force Shuttle

Weapon Loader

FC Drayage Truck

SPOD: AFRL

FC Transit Bus

H_2Sweeper

H_2ParaTransit

GSE, Aviation, Truck & Bus

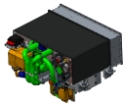
1999 2002 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

Acquired UTC PEM Fuel Cell

FCe™150

FCe™80

FCe™50



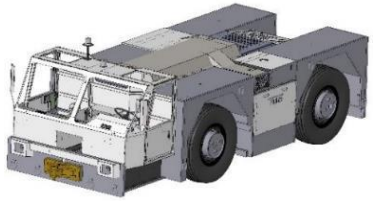
FCe™100

RNG
FC

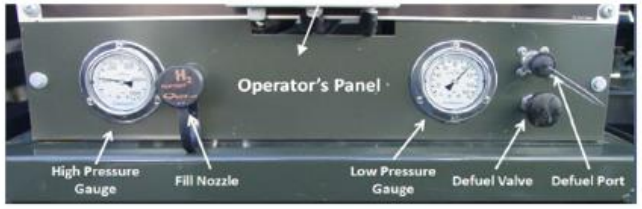
Fuel Cell Electric Vehicles Experiences

Hydrogen Fuel Cell Vehicles	Customer
H_2Shuttle	Air Force, HCATT, 2002
H_2-StepVan	Air Force, HCATT, 2005, 60kW
H_2Tug	Air Force, HCATT, 2012
H_2Fuler-R12	Air Force, HCATT, 2014
H_2Ride	Air Force, 2015
H_2 Weapon Loader	Air Force, HCATT, 2016
H_2 SPOD	Air Force, HCATT, 2017
Hickam Renewable H_2 Fueling Station	150kW Solar PV, 480kg, H_2 storage, 350/700 bar 2002
H_2Truck	POLA/POLB
H_2Sweeper	Caltrans
H_2Ride	Hilo-MTA, National Park, Air Force, CSULA, Sunline
H_2Transit	Sunline/BAE
H_2-Van	SARTA, Para-Transit, Ford Transit

Air Force Fuel Cell GSE (TUG U-30, R-12 Aircraft Refueler & Weapon Loader)



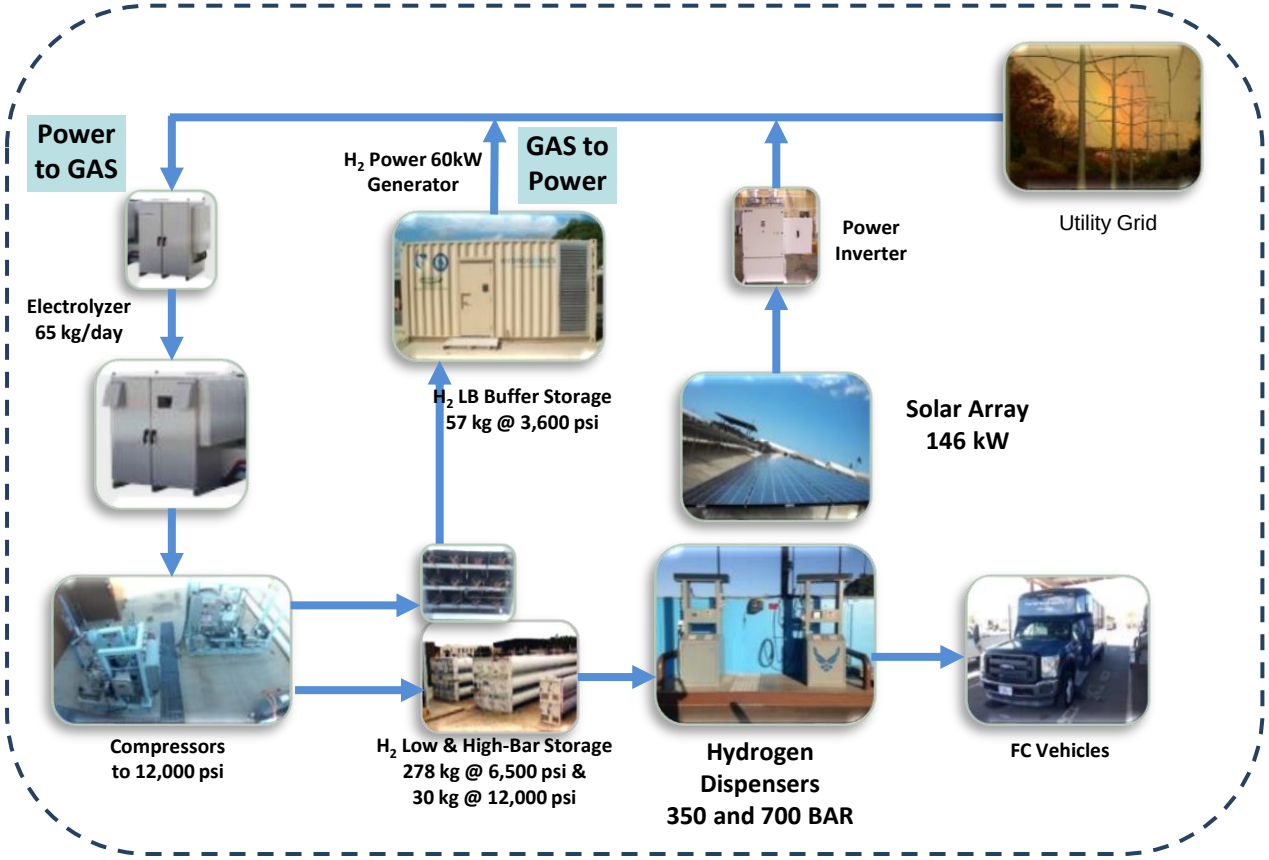
Fuel Cell Plug-In Hybrid Electric Re-Fueler (R12)



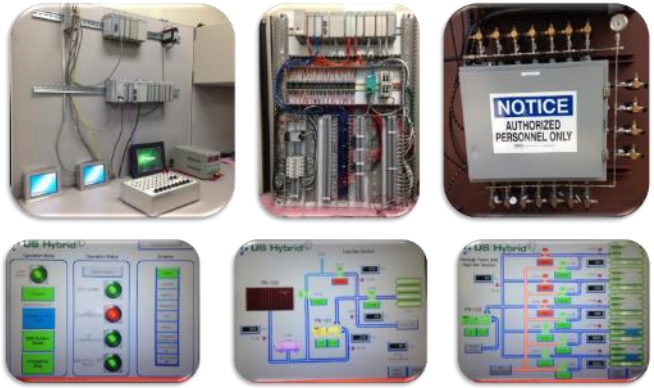
FC R12 Fueler, fueling at H_2 station

Air Force Fuel Cell Logistics Vehicles

Renewable Energy Hydrogen Station

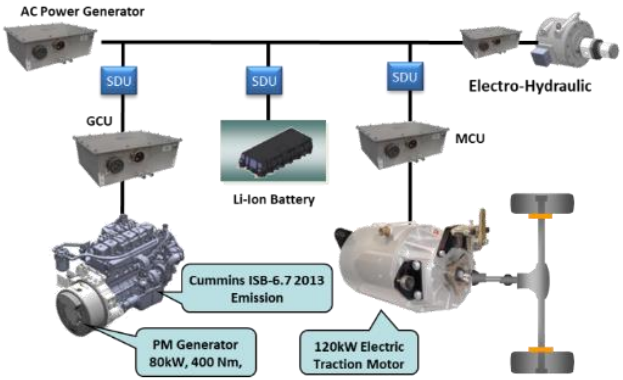


Controller, PLC, GUI & Telematics

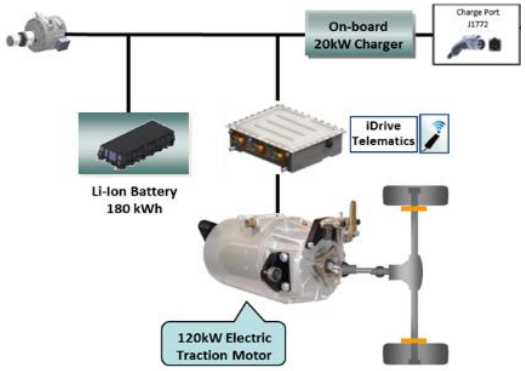


Hybrid, Battery & Fuel Cell Street Sweepers NY, CA, Tokyo

Diesel Electric Hybrid

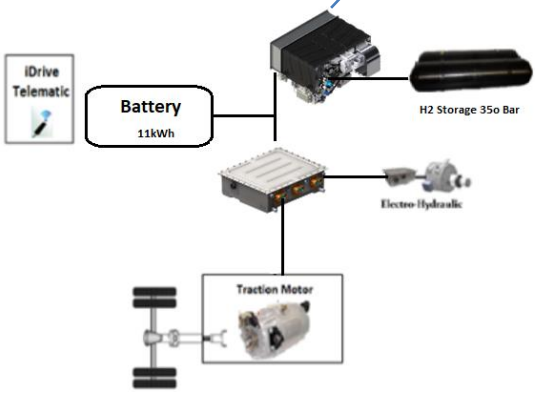


Battery Electric



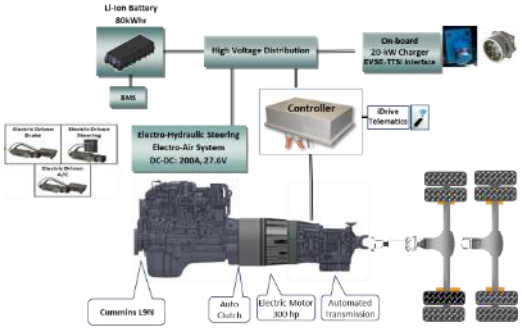
FuelCell Electric

Drives like Electric Fuels faster than CNG

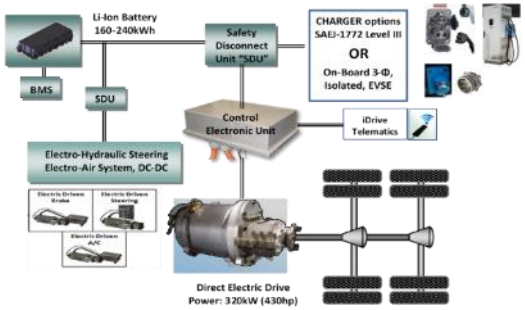


Hybrid, Battery & Fuel Cell Electric Drayage Truck (POLA/POLB)

CNG/LNG Hybrid Electric

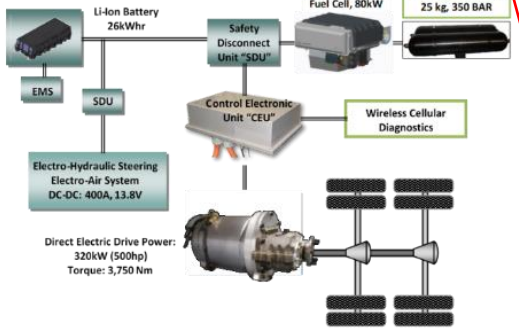


Battery Electric



Fuel Cell Electric

Drives like Electric Fuels like CNG



FC engine mounted
under hood

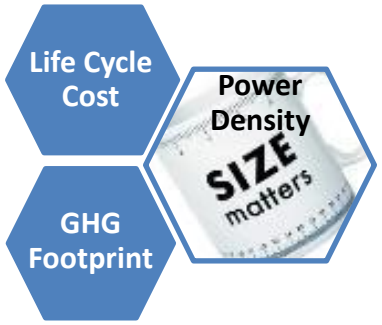
Powered by US Hybrid; Fuel Cell Transit Buses

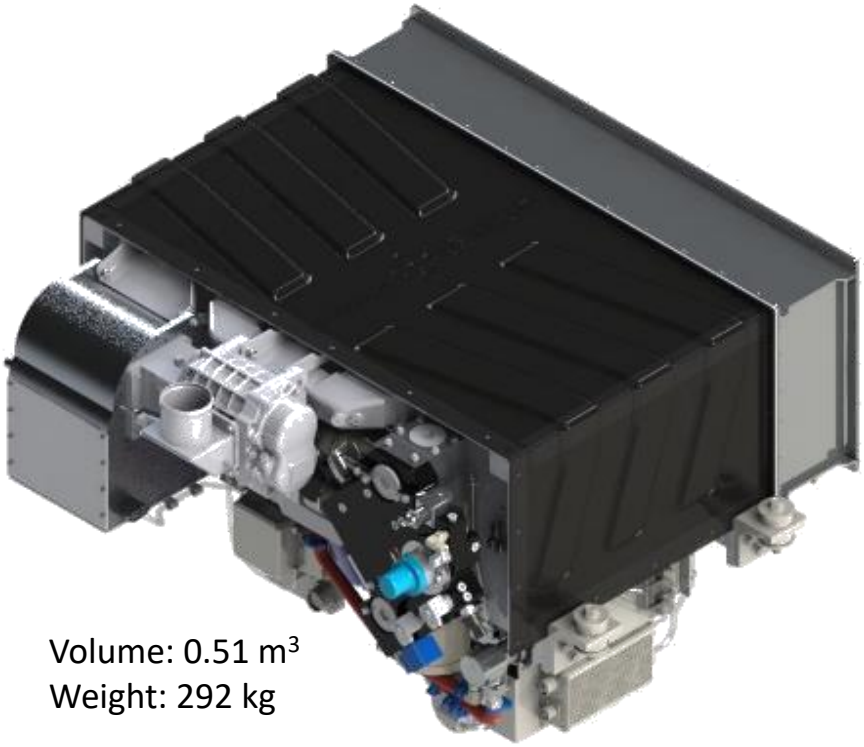
FC engines are installed in the engine bay using OBDII CAN diagnostic tools

FCe™50

Integrated Fuel Cell Engine

Most Efficient Zero emission engine for Transportation





Volume: 0.51 m^3
Weight: 292 kg

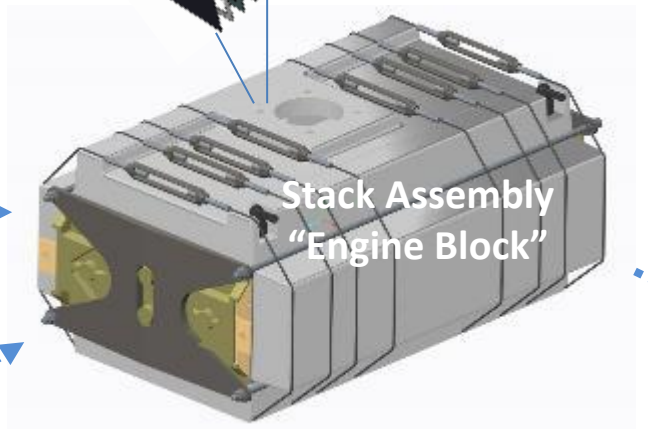
Volume: 1.6 m^3
Weight: 996 kg

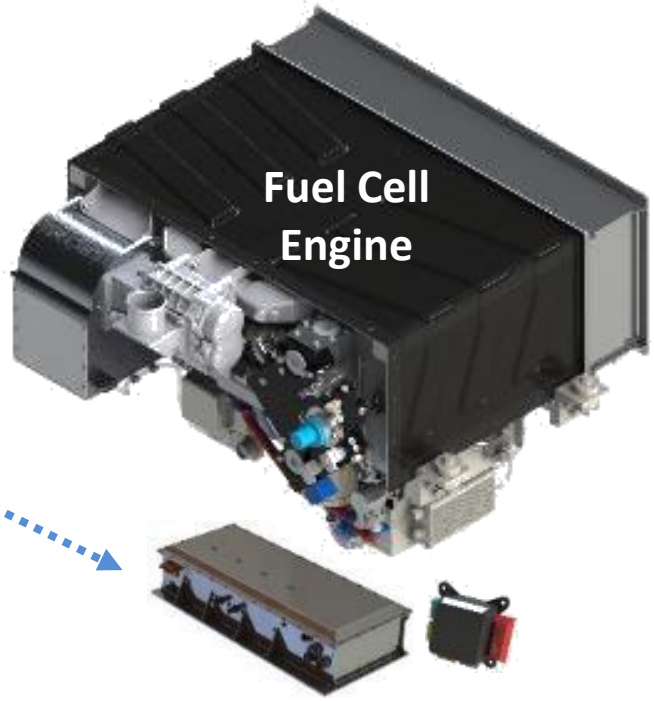
Fuel Cell Engine Automotive Components (Qualified supply chain)

Cell Assembly
"Cylinders"

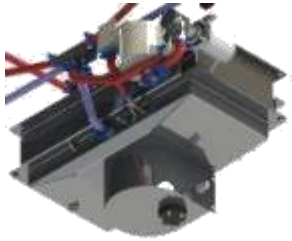
Fuel Processing Unit
"Injectors"

Hydrogen
Fuel IN





Air IN



Thermal Management System
"Radiator"

Power Processing Unit
"ECU"

Air Processing Unit
"Compressor"

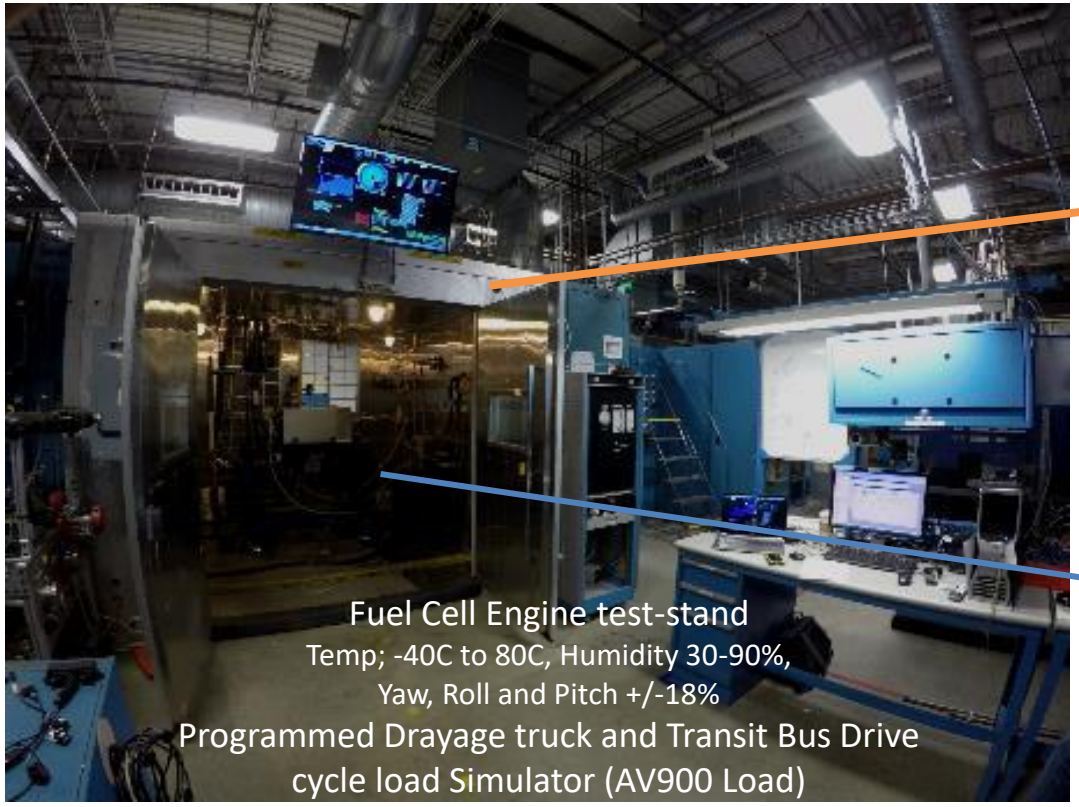
Exhaust
Water Vapor

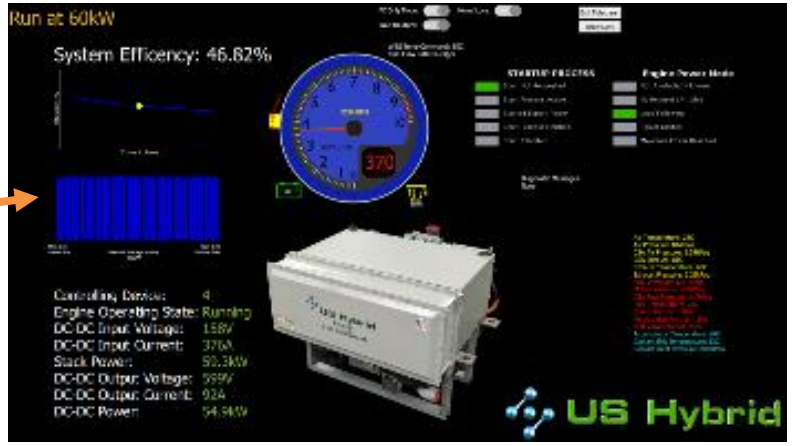
OUTPUT
Electric Power

Assembly and testing like conventional engine

FCe™80 FC engine

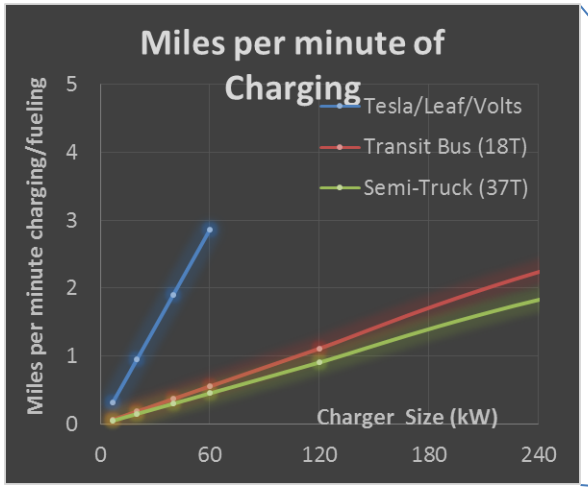
at the test-stand running Port of Los Angels Drayage Truck Duty cycle.

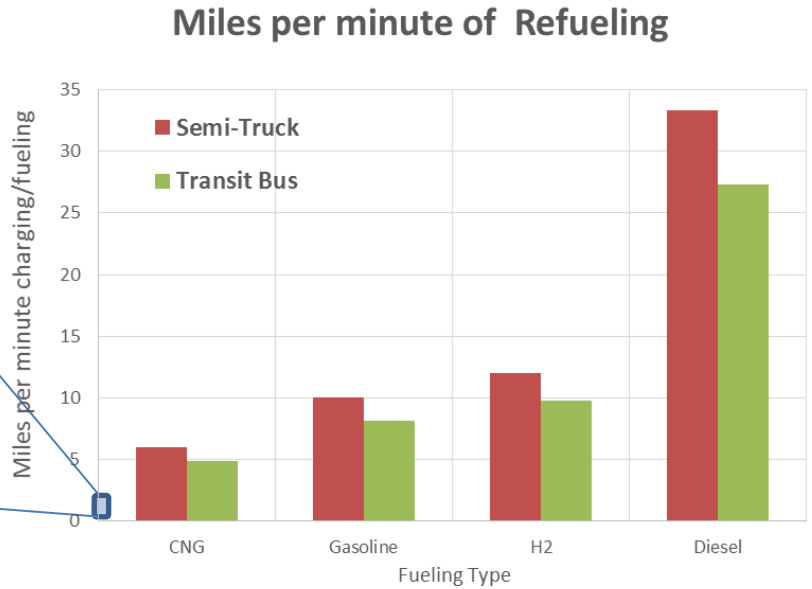




Fuel Cell Engines enable;

1. 24/7 operation
2. No payload, productivity and range compromise
3. Most Efficient Zero Emission transportation engine
4. **Faster fueling than CNG, higher productivity & performance than battery Electric**





Fuel Type and Energy Content	Net Engine Output (Drayage Cycle)
Diesel: 37.1 kwh/gal	**2.7 kWh/kg** (4 mpg)
Natural Gas 33.4 kWh/gge	**1.8 kWh/kg** (3.1 m/gge)
Hydrogen: 39.7 kWh/kg	**17 kWh/kg** (8 mile/kg)
Gasoline: 32.9 kWh/gal	**1.9 kWh/kg** (3 mpg)
Li-Ion Battery: (180 Wh/kg)	**0.17 kWh/Kg** (1/11 mile/kg)

Thank You

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