



# Gasoline Hybrid-Electric Drive System

ISE ThunderVolt® Transit Bus Hybrid Gasoline (TB-HG)

For large transit buses with demanding combinations of inner city and highway driving requirements.



ISE ThunderVolt® TB40-HG  
New Flyer 40' bus

Low Emissions

Excellent Low Speed Acceleration Response & Control

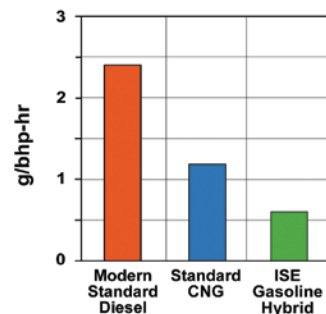
Smooth And Quiet Operation

Exceptional Fuel Economy

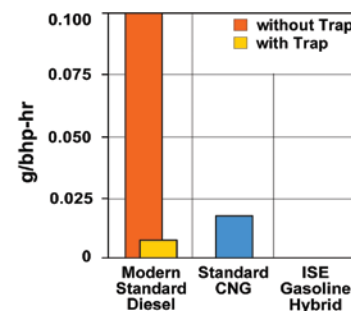
CARB Certified Alternative Fuel System

ISE's primary product offering is a complete integrated drive system that contains all the components necessary to operate a vehicle utilizing hybrid-electric.

## NOx



## PM



## Motive Drive System

NO TRANSMISSION REQUIRED

4:1 Combining gearbox between drive motors and differential  
 Siemens MONO Inverter..... 4 x 300A rms (continuous)  
 Motor+Gearbox..... Dual AC Induction Motors  
 Rated Power ..... 170 kW / 228 hp  
 Peak Power ..... 300 kW / 402 hp  
 Rated Torque..... 1760 Nm / 1297 lb-ft  
 Peak Torque..... 4240 Nm / 3124 lb-ft

## Power Source: Engine/Generator

Engine ..... Ford Triton V10, 6.8 L, ULEV  
 Fuel ..... Gasoline (87 Octane)  
 Generator ..... Siemens PM Synchronous 145 kW generator  
 200 kW option available

## Vehicle Network and Control

EVCU (Electric Vehicle Control Unit) ..... SAE J1939 2.0b  
 multiplexing between vehicle  
 and hybrid drive system  
 DICO (Drive Controller Gateway) ..... Interface between  
 the vehicle communications  
 bus and the drive controller  
 high speed network  
 RDS (Remote Diagnostic System)..... SAE J1939 based  
 and network monitoring,  
 GPS Automatic Vehicle Location Data and Fault storage,  
 Ethernet, RS485, EIA232

## Performance at GVW *all accessories running*

Starting Grade ..... > 18%  
 Top Speed (Batteries / Ucaps)..... 65 /60 mph  
 Acceleration (0-30) ..... < 20 sec.  
 Range (typical, 100 gal tank) ..... > 300 miles  
 Fuel Economy (typical) ..... 3.5-4.5 mpg  
 Emissions ..... CARB engine certification  
 NOx + NHMC: 0.6 g/bhp-hr  
 PM: <0.01 g/bhp-hr  
 Noise ..... Very quiet inside & outside,  
 Idle stop operation reduces  
 noise and vibration even further.  
 Maintenance ..... Expected lower maintenance than  
 standard drive system.  
 - no transmission, regenerative braking  
 results in longer brake life,  
 electric accessories, longer engine life

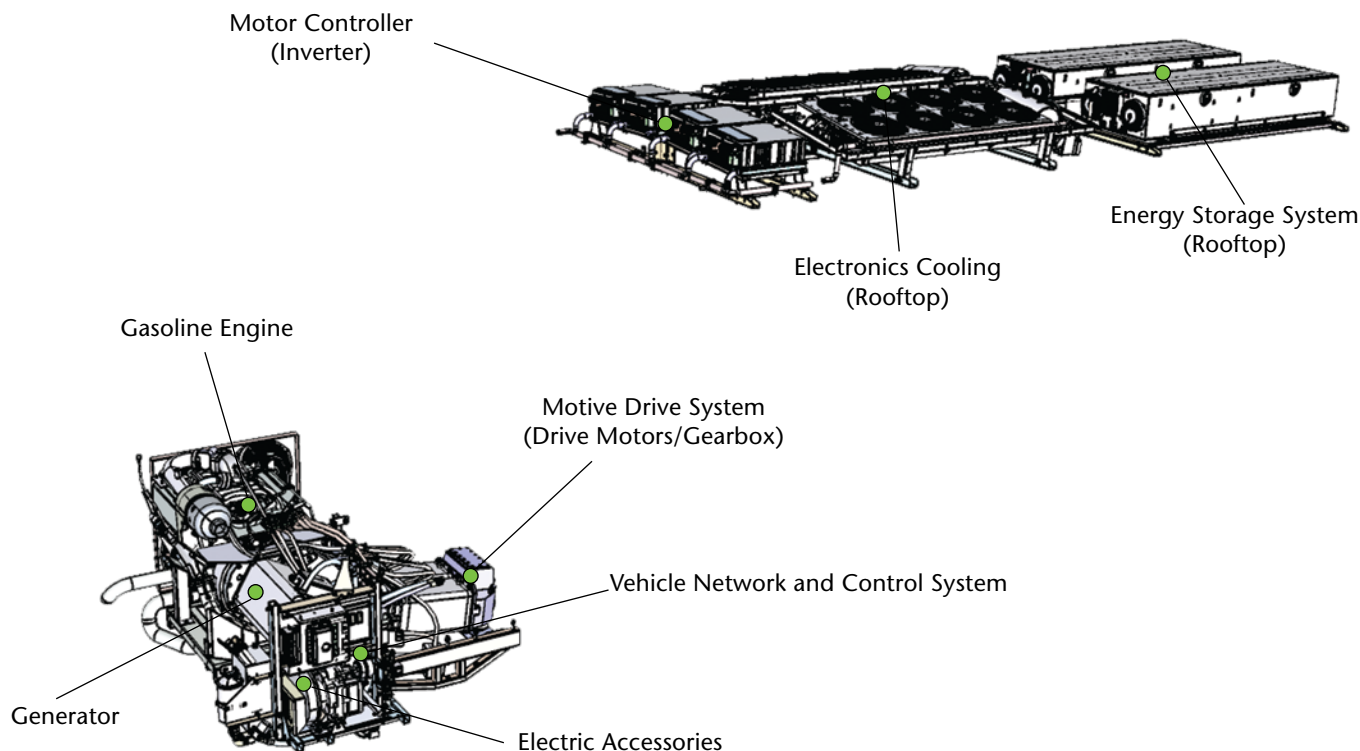
## Energy Storage

Ultracapacitors ..... 200 kW ISE ThunderPacks®  
 Maxwell Ultracapacitors

## Electric Accessories

230 VAC ..... Independent of engine,  
 90% efficiency, low noise,  
 low maintenance, long life  
 Air Compressor ..... Scroll, No oil, 14.7 CFM@115 PSI  
 Hydraulic Pump ..... Vane, 4 or 6 GPM, 1750 PSI  
 Air Conditioning ..... Electric

## COMPONENTS OF THE GASOLINE HYBRID-ELECTRIC DRIVE SYSTEM



Transportation recharged.™

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