

balance™ hybrid electric

Improve fuel economy by up to **40%** and reduce your maintenance costs by up to **30%**



Azure Dynamics' Balance™ Hybrid is **driving a world of difference** in cities throughout North America.



balance™ architecture

1 INTEGRATED STARTER/ GENERATOR (ISG)

Used to start the engine and to generate power.

2 CLUTCHED FEAD

Clutch at crank shaft opens when engine off & ISG then spins the disconnected Front Engine Accessory Drive (FEAD) system (power steering/brake pump, water pump, alternator & A/C compressor).

3 VEHICLE CONTROL UNIT (VCU)

Controls all hybrid components and coordinates their operation with the Ford systems (e.g. start/stop).

4 2ND 12 VOLT BATTERY

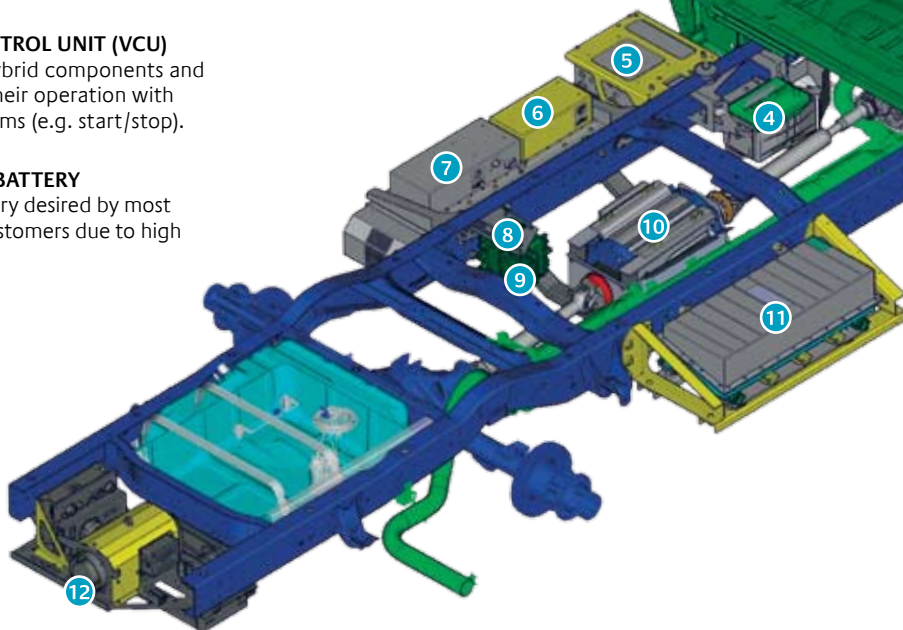
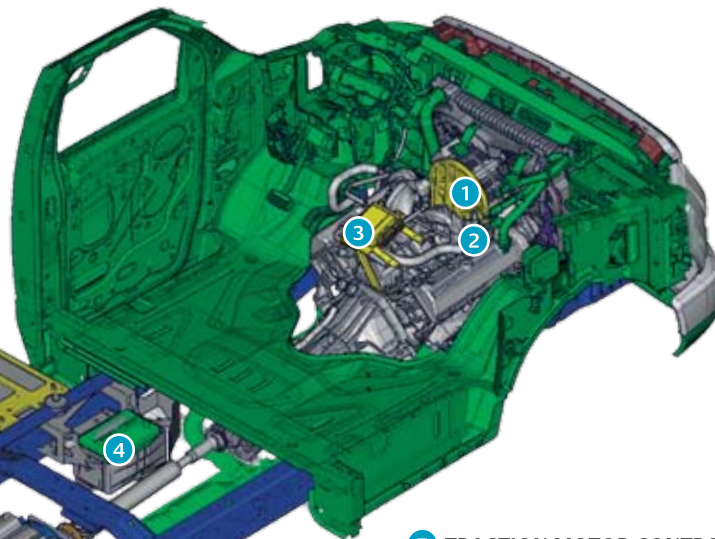
2nd 12V battery desired by most shuttle bus customers due to high 12V loads.

5 HIGH VOLTAGE JUNCTION BOX

Distributes DC power from battery to components and contains high-voltage fuses.

6 ISG MOTOR CONTROLLER

Converts DC from the battery to 3 phase AC for the ISG motor. Controls the speed and torque of the ISG motor.



9 2ND DC/DC CONVERTER

2nd DC/DC converter required for Balance™ shuttle bus due to high 12V loads.

10 TRACTION MOTOR

Converts electrical energy to wheel torque in order to propel the vehicle. Speed & torque outputs are based on accelerator input as well as vehicle operating conditions.

11 ENERGY STORAGE SYSTEM (ESS): HIGH VOLTAGE BATTERY PACK

Liquid cooled high voltage Li-Ion battery pack. Stores energy and includes internal sensors and controller.

12 ELECTRIC AIR CONDITIONING UNIT

Converts DC from the battery to 3 phase for the air conditioning compressor motor.

7 TRACTION MOTOR CONTROLLER

Converts DC from the battery to 3 phase AC for the traction motor. Controls the speed and torque of the traction motor.

8 DC/DC CONVERTER

Converts high-voltage DC power to keep the 12V batteries charged and to supply power for 12V accessories.



hybrid electric attributes

- High voltage maintenance free battery
- Regenerative braking reduces brake wear
- Engine idle off feature saves fuel and reduces emissions
- Electric drive mode at low vehicle speeds
- Altoona tested for 7 year / 200,000 miles
- Max speed: up to 75 mph (application specific)
- Acceleration within 10% of stock vehicle

chassis mandatory specifications

- See Azure Specifications & Ordering Guide (SPC500985) for guidelines
- See Azure Body Builder Supplement (MAN501056) for guidelines
- Chassis / GVWR: E-450 Cutaway / 14,050 lbs
- Engine/Transmission: 5.4L EFI FFV V8 Gas Engine / Elect. 5-Spd Auto OD with Tow Haul
- Wheelbase / Rear Axle Ratio: 158" / 4.56 Non-Limited Slip
- Front GAWR: Front Max GAWR (5000 lbs)
- Auxiliary 12V Battery required
- Minimum body width requirement of 86"
- Not Available: Traction Control, Heater/AC Connector Packages, Anti-theft, Speed Control, In-Dash Computer, Crew Chief & Trailer Tow package.

sales inquiries

AZURE DYNAMICS SALES TEAM
 T 248.658.7555
 E sales@azuredynamics.com
 W azuredynamics.com