Allison Electric Drives™

leaders in advanced hybrid technology

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As we study our global need to reduce our dependency on fossil fuels and strive to improve our air quality, Allison Electric Drives is proud to bring a new product to the bus market with practical technology that provides tangible advancement and operating benefits.

The Allison Electric Drives EP hybrid propulsion system bridges the gap between traditional mechanical engine propulsion systems and zero-emission technologies.

The EP System can significantly lower vehicle emissions and improve fuel economy, while increasing bus acceleration and brake life.

It is our collective responsibility to make the earth a better place than we came into it. The Allison Hybrid Electric Drives EP System exemplifies our efforts to preserve and improve the quality of our environment for future generations.
The secret to the Allison Electric Drives EP System lies in its simplicity. The system consists of six components: EV Drive unit, DPIM, Energy Storage Unit, two System Controllers and a Range Selector.

System components are designed to fit in virtually the same space claim as a conventional drivetrain. This compact package easily installs in low- and high-floor bus chassis.

The following describes each component and its functionality.

**E V DRIVE**
The Allison E V Drive appears similar to the Allison Transmission B Series and is equipped with:
- Planetary gears and clutches
- Electronic solenoids and valves
- Two motors/generators

All components work together to create two continuously variable operating ranges.

The electric motor/generators act as variable clutches to accelerate, slow or hold planetary components. The EV Drive is truly an infinitely variable transmission with respect to torque and speed. It is a vehicle designer’s dream come true.

**DUAL POWER INVERTER MODULE (DPIM)**
The Dual Power Inverter Module converts electrical energy into alternating current or direct current. The E V Drive motor/generators use and produce alternating current. The Energy Storage Unit can only store direct current. The DPIM converts electrical energy for easy transfer, storage and use.

**ENERGY STORAGE UNIT**
Energy Storage Units supply electrical energy to the E V Drive’s electric motors. Units vary in design and size per vehicle type and vocation. Stored electrical energy is created during normal motor/generator operation and during regenerative braking. Energy Storage lessens the demands on the clean diesel, thereby reducing emissions, fuel consumption and noise.

**SYSTEM CONTROLLERS**
The EP System uses two System Controllers (Hybrid Control Modules). The System Controllers act like the “brain,” processing information from system components and driver inputs. The System Controllers provide system command and control for precise vehicle propulsion and energy production. They include diagnostic and reprogramming features.

**RANGE SELECTOR**
The range selector is identical to the electronically controlled Allison Automatic range selector. The driver pushes D for “Forward” or R for “Reverse.”
The Allison E P System can significantly enhance the performance of transit, suburban coaches and articulated buses operating in a variety of environments – whether it be stop-and-go city traffic, over the road or a combination of the two.

**TRANSIT AND ARTICULATED BUS**

Imagine standing at a bus stop and not smelling the pungent exhaust fumes of a transit bus as it accelerates from the curb. Imagine not hearing the familiar roar of the engine as the bus merges into traffic. It’s possible with the Allison E P System. The Allison E P System reduces emissions up to 90% as compared to conventional diesel-fueled buses, and it’s practically silent when operating on pure electrical power.

The Allison E P System is much more efficient and economical to operate than alternative fuel systems. Rest assured, you won’t sacrifice passenger comfort for fuel economy or reduced emissions; the Allison E P System provides a remarkably smooth ride.

**SUBURBAN COACH**

Out on the open highway, the Allison E P System accelerates with ease, to merge into traffic and then maintain appropriate road speed. With no sacrifice to fuel economy.

In fact, a bus equipped with the E P System and a smaller horsepower engine can out-accelerate a comparable bus equipped with a larger conventional engine and transmission propulsion system. And consume less fuel in the process. The blend of mechanical and electrical power provides seamless acceleration. While significantly reducing emissions.

The ride is quiet, smooth and quite comfortable. Regardless of road speed. Just what your passengers expect.

**MORE EFFICIENT USE OF POWER**

A few years ago, powering a 20-ton bus with a diesel engine designed for a three-ton pickup truck would have seemed impossible. With the E P System, it’s simply a matter of making the best use of available horsepower.
Architecture and Benefits

The Allison parallel system has two paths: a pure mechanical path and pure electrical path to achieve the highest energy efficiency for transit and coach duty.

The Allison E™ System is very easy to integrate. It has roughly the same footprint as your current Allison Automatic. There are no expensive fueling stations to purchase and maintain, so there is very little alteration to your existing fleet infrastructure.

FUEL ECONOMY

The Allison E™ System provides up to a 60% improvement in fuel economy.

Enhanced Acceleration

An Allison Hybrid Electric Drives E™ System can significantly out-accelerate a vehicle equipped with a conventional drivetrain. And the acceleration is seamless.

Gradeability

The E™ System can easily meet or exceed APTA White Book Requirements.

Cost to Implement

A hybrid electric system has virtually no infrastructure costs. Compare this to implementing other alternative fuel systems, which can cost as much as $15 million in facility modifications and equipment.
Easy to drive

The driver interface has not changed. To start driving the bus, the driver pushes D on the range selector and releases the air brake. It’s that simple. Your driver is ready to start your bus route.

Product support

With over 1,600 authorized Allison Transmission distributors and dealers all over the world, Allison is uniquely capable to support the Allison E® System. That commitment includes the parts, service and in-depth expertise you have enjoyed for many years with Allison Transmission products in the bus industry.

For more information, contact your local Allison Transmission representative.