

Vehicle Projects Through the Years at GE



imagination at work

Steinmetz Electric Car, 1914



Also known as the Detroit Electric Car, this was a pure electric vehicle that was built as an alternative to gasoline powered vehicles. Able to reach a top speed of 40 miles per hour the Steinmetz Car was powered by fourteen, six-volt batteries. Steinmetz, the founder of GE's research lab, was a pioneer in electrification technology and responsible for many of the fundamental breakthroughs that enabled the modern day electrical grid. In 1920 he went on to found the Brooklyn Car Company with the vision of setting up a network of vehicle grid stations for re-charging electric cars.

GE-100, 1977



Produced around the time of GE's centennial anniversary, the GE-100 was a four passenger compact electric vehicle whose production was driven by the innovative spirit of GE's first 100 years. Showcasing the greatest GE

technologies at the time, the GE-100 featured an electric motor and industrial drives and controls, installed with upgraded commercially available batteries, and completed with Lexan windows and lighting.

Electric Test Vehicle-1, 1978

(GE/Chrysler/U.S. Department of Energy)



The Pure Electric Test Vehicle (ETV1) was a joint project featuring GE technology and an automotive body design by Chrysler. Using commercial lead

acid batteries and GE traction motor/drive and controls developments, ETV-1 was the first ground-up modern day electric vehicle design.

Hybrid Test Vehicle, 1982

(GE/Volkswagen/U.S. Department of Energy)



Following the late '70s energy crisis, this collaboration produced a vehicle designed to minimize petroleum use. Partnering with Volkswagen Research and the U.S. Department of Energy, GE

built and demonstrated a Hybrid Test Vehicle. Running off a combination gasoline engine and electric motor, GE's HTVs were truly a vision of the future, as they ran similar to today's emerging plug-

in hybrid cars. This five-passenger full-size luxury sedan was equipped with air conditioning, power steering, breaks, spacious seats, windows and achieved over 100 miles per gallon!

ETX-I, 1984

(GE/Ford/U.S. Department of Energy)



The ETX-1 pure electric car was a joint partnership that embodied the two-passenger Ford Mercury LN-7 model. GE developed alternating current (AC) technology that replaced previously used direct cur-

rent (DC) technology. The ETX-1's compact high-speed induction motor and automatic two-speed transmission was the first model with AC technology packaged in a modern front wheel drive vehicle.

ETX-II, 1984

(GE/Ford/U.S. Department of Energy)



GE followed up the ETX-I with the ETX-II just a year later, this time using a larger model Ford Aerostar van. Again powered with an automatic two-speed transmission,

the ETX-II also had a 75 horsepower motor, high temperature battery, and introduced a rear-wheel drive compact powered axle and interior permanent magnet (IPM) system.

Hybrid Bus, 1996

(GE/Orion/Federal Transit Administration)



The GE hybrid bus, created in partnership with Orion and the Federal Transit Administration was developed to address the issue of fuel emissions in urban areas. This bus was the first to show

that it was technically feasible to greatly reduce fuel emissions in a transit bus. It paved the way for today's hybrid buses and established the emissions requirements for New York City's hybrid transit buses.

MEVP, 1989-1993

(GE/Ford/U.S. Department of Energy)



Created in partnership with Ford and the U.S. Department of Energy, MEVP used a GE motor and AC propulsion system controls. This Modular Electric Vehicle Program (MEVP)

featured a pure electric motor with a high-speed induction motor, which was incorporated into a single-speed transaxle configuration. The MEVP was first used as part of

the Ford International Electric Vehicle Program Demonstration. More than 100 MEVP vehicles were built and tested throughout the world.

Electric Bus, 2003

(GE/Electric Fuel Corporation/Federal Transit Administration)



Developed with the Federal Transit Administration (FTA) and Electric Fuel Corporation, the electric bus brought zinc-air, NiCd, and ultracapacitor energy storage devices together

into a high efficiency, high performance low cost system. By intelligently managing power flowing into and from the various batteries, GE's electric bus can achieve a 130-

mile driving range on a single charge. This project established fundamental principles of GE's dual battery concepts.

OHV, 2007

(GE/U.S. Department of Energy/Komatsu)



This power system runs with a 600 hp battery pack that captures braking energy to save fuel and increase productivity. An off-highway vehicle, also known as a haul truck, is used for open pit mining operations and GE's new hybrid systems provide a path towards lower operational costs and lower emissions.

Hybrid Locomotive, 2007

(GE/U.S. Department of Energy)



This hybrid diesel-electric locomotive captures energy dissipated during braking and stores it in a series of lead-free rechargeable batteries that allow operators to draw an additional 2,000 horsepower when needed. Designed to emit half as much nitrogen oxide as locomotives built 20 years ago, the hybrid locomotive also reduces fuel consumption and emissions by 10 percent.

LWFC Bus, 2011

(GE/Federal Transit Administration/Northeast Advanced Vehicle Consortium/A123)



Building on the electric bus project of 2003, GE again is working with the Federal Transit Administration (FTA) to advance electric propulsion for transit applications. The dual battery system will combine advanced high energy and high power density batteries. A demonstration is planned for 2011 using a lightweight bus platform powered by a hydrogen fuel cell for efficient, zero tailpipe emission operation.



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