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Printed in the USA
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ACS-64 | ELECTRIC PASSENGER LOCOMOTIVE

Built across **America**

SIEMENS

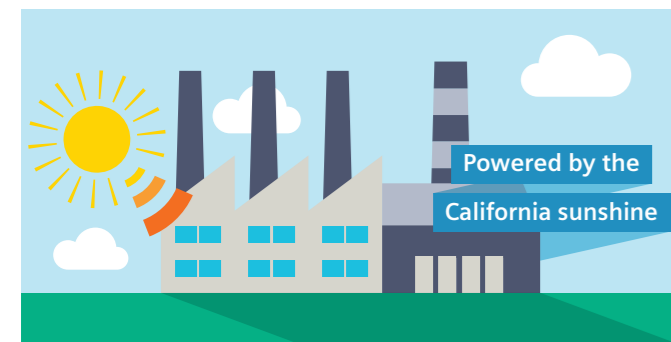
Manufacturers from across the Northeast Corridor **contribute components to the ACS-64 Electric Locomotive**



Siemens Mobility and more than 60 manufacturers in over 20 states were part of a national community that built state-of-the-art (ACS-64) electric locomotives

The next era of high-performance, energy-efficient electric locomotives enable Amtrak to provide improved performance, reliability and mobility for regional and intercity routes along the country's heavily-traveled corridors.

A true "Made for America" manufacturing and technology transfer story, Siemens Mobility – a global leader in rail innovation – produced the locomotives at its solar-powered rail manufacturing plant in Sacramento, Calif., with major components sourced from more than 60 suppliers, manufacturers and distributors from more than 50 cities and over 20 states.



Economic Growth

Amtrak has modernized its equipment fleet to meet growing demand and help America compete in the global marketplace. The locomotives will power the economic future of the Northeast region as one of the busiest rail segments in the world.

Mobility

The ACS-64 locomotives operate at speeds up to 125 mph on the Northeast Corridor (NEC) along the Washington-New York-Boston route and on Keystone Service trains at speeds up to 110 mph on the Keystone Corridor from Philadelphia to Harrisburg, Pa. In addition, all long-distance trains operating on the NEC will be powered by the ACS-64 locomotives.

Reliability

This equipment replaced locomotives that have been in service between 25 and 35 years with average mileage of more than 3.5 million miles. In total, the current fleet has traveled more than 200 million miles.

State-of-the-art features & benefits

Power

The ACS-64 locomotive has a peak of 8,600 horsepower (6.4 MW) with excellent acceleration capabilities to attain revenue service speeds of 125 mph pulling up to 18 Amfleet coach cars, while at the same time providing up to 1,000 kVA (1 MVA) of head-end power for auxiliary train equipment such as interior lights, electrical outlets and air conditioning and heating for passengers.

Regenerative Braking

The electro-dynamic brake system of the ACS-64 has the ability to put a maximum of 5 MW of electricity back into the catenary overhead power source during regenerative braking. The regenerative braking can feed up to 100 percent of the energy generated during braking back to the power grid.

Safety

The Amtrak-specific design meets the latest Federal Railroad Administration (FRA) safety requirements including crash energy management (CEM) components like front-end strength and a crumple zone for collision with large objects, in addition to an enhanced safety cage, push back couplers and anti-climber functionality.

Maintenance

The ACS-64 locomotive is designed for improved safety and reliability. Its enhanced design also allows for more efficient and cost-effective maintenance to ensure locomotives are returned to service as quickly as possible.

Smart Technology

The state-of-the-art microprocessor system installed in the locomotive allows for self-diagnosis of technical issues. The on-board computer system can notify the engineer and operator of any maintenance issues and can take self-corrective action to maintain operation of the locomotive and ensure safety. For example, the computer may identify a technical issue and can automatically notify the engineer, switch to a back-up or redundant system or decrease speed and operational performance if necessary.

Redundancy

The ACS-64 is based on Siemens Mobility's newest platform, the Vectron. For example, dual auxiliary inverters provide redundancy to ensure that heating and cooling systems, lighting and door systems remain in service should one inverter fail.

Energy Efficiency

The ACS-64 locomotive is equipped with regenerative braking, which allows energy to be fed into the power system for use by other trains. The manufacturer estimates that when fully deployed and operated as designed, the regenerative braking feature may result in the generation of 3 billion kilowatt hours of energy.

At an estimated 10 cents per kilowatt hour, the energy generated equals \$300 million in electricity being returned to the power system for use by other trains. This is compared to locomotives that do not have this state-of-the-art regenerative capability.

Performance on the move

Offering Tailored Service

Efficiency counts – everywhere in the United States. As an operator, you are completely focused on the business of service and transportation. You not only need easy-to-maintain vehicles, but an expert service partner.

Effective operations require maximum availability, which can only be ensured through service and maintenance, precisely tailored to your needs. Siemens Mobility Customer Services and maintenance programs will support all the operations and service plans your business requires. After all, putting great things in motion means having reliable vehicles available – at all times.

To ensure the locomotive engineers and mechanics are properly trained, Siemens Mobility and Amtrak developed a multi-pronged approach that included classroom and instructional time, software-based training and simulation, and hands-on training in the field at Amtrak's Wilmington test track. With more than 2,000 course hours slated as part of the program, Siemens Mobility and Amtrak began training on the electric locomotives in spring 2013.



Manufacturing in America

Supporting a Comprehensive Domestic Supply Chain

The Amtrak locomotives were assembled at the Siemens Mobility Sacramento, Calif., rail manufacturing plant powered by renewable energy, with parts built from its plants in Norwood, Ohio, Alpharetta, Ga., and Richland, Miss., and provided by more than 60 suppliers, representing more than 50 cities and 20 states. The locomotives were built in excess of Amtrak's Buy America standards which required 51% of components come from "local" or U.S. suppliers.

Building the ACS-64 Provided Work For:



- Over **60** suppliers
- More than **20** states
- Over **50** cities



The new Amtrak locomotives will help power the economic future of the Northeast region, provide more reliable and efficient service for passengers and support the rebirth of rail manufacturing in America. Built on the West Coast for service in the Northeast with suppliers from many states, businesses and workers from across the country are helping modernize the locomotive fleet of America's Railroad.

Joseph Boardman, Amtrak President and CEO

Press Release, Amtrak Unveils Advanced Technology Locomotives for Northeast Service, Amtrak, May 13, 2013