SIEMENS

Ingenuity for life

America's Passenger Rail Experience

Charger I Diesel-Electric Passenger Locomotive

usa.siemens.com/mobility

Come aboard and discover the locomotive that forges new paths – ensuring a successful future for your regional or intercity traffic.

A Better Tomorrow

The future is coming at full speed

How will we leave a better tomorrow for our children? By improving the economy, protecting the environment and making it easier to connect with each other. Enhancing the regional transportation infrastructure and passenger service will strengthen business interaction, provide access to employment opportunities and tourism. Environmentally responsible rail travel will give passengers an efficient and reliable mode for long distance, commuter and intercity transit. These solutions are here today. Siemens' service-proven high-speed diesel-electric locomotive is ready for the transition and can also address changing markets and new customer service demands. The Siemens Charger facilitates a fast and efficient commute, allowing extra time for work or relaxation by not only avoiding traffic congestion but also relieving it. Your investment decisions today will determine your business and customer success tomorrow.

Growing Challenges

Travelers turning to rail at record speed

Passenger rail ridership is at an all-time high. In 2018, Amtrak carried more than 31.7 million passengers; marking the highest annual ridership total since they started operations in 1971. The state corridor routes where some of these new locomotives will be deployed are among services with the highest ridership growth. Improved rail systems will move passengers to their destinations faster and in more comfort, bypassing traffic, long trips to the airport and airline delays.

The Charger locomotive will better connect our exciting cities, making travel easy, reliable and affordable. Improved transportation increases tourism and commercial development, creating employment opportunities for sites along the rail as well.

Moving Ahead

Your investments are backed with proven experience

Innovations with a great future potential requires one thing above all: extensive experience. The Charger is manufactured in the United States and is based on 130 years of comprehensive global expertise in the development, production and maintenance of rolling stock.

Siemens Charger locomotives are like your business – individual and customizable, yet based on a common platform with customer specific technical solutions and standard energy efficiency features. This keeps you in step with the times and positions you as a sustainable mobility provider.

Protecting Your Future

A cleaner, greener way to travel

Reduced traffic congestion and air miles translates into lower levels of pollution and a higher quality of life. Customers across the U.S. rely on the Charger locomotives to lead their clean, efficient and high-performance rail services.

The locomotive will be all-round environmentally friendly, thanks to the new diesel engine's lower emissions and reduced noise; regenerative electrical braking; and energy efficient LED lighting throughout.

All locomotive equipment, including the engine, are designed and selected to emit the lowest possible noise for increased passenger comfort in the stations as well as in residential areas.

Siemens is not only building lower emission transportation solutions but also using renewable energy and sustainable manufacturing processes at our Sacramento, Calif. plant that is powered by 2MW of solar energy meeting up to 80% of electricity needs.

95%
Particulate Matter (PM) Reduction
compared to Tier 0 standard

89%
Emissions Reduction
compared to Tier 0 standard

"These new locomotives will offer increased reliability, more hauling power, improved safety features and lower emissions."

Richard Anderson
Amtrak President & CEO

"These new locomotives will help support our mission to provide reliable public transportation to passengers throughout San Diego County. In addition to increased reliability, they will also incorporate new technologies that reduce emissions and will improve air quality in the region."

Bill Horn
NCTD Board Member and County Supervisor for the 5th District

Nationwide Ridership Proves a Rising Success

- **Illinois:** Ridership on state-supported passenger trains in the Midwest enjoyed a robust growth over the last 10 years.
- **California:** In 2018 ridership reached 6 million passengers annually between the three state supported California routes.
- **Washington:** In 2018 ridership levels reached 802,000 with the new Chargers successfully completing their first year of operations in the Pacific Northwest.
- **Florida:** Virgin Trains USA is providing a new, fast way to move between major Florida destinations. Ridership is developing positively along the corridor.
- **Maryland:** Aiding commuter services in Maryland on state supported corridors with, on average, 40,000 daily riders.

The High-Speed Diesel-Electric Locomotive

Smart Innovation

Lightweight and fast

The lightweight design of the Charger locomotive is complemented by the Cummins QSK 95 diesel engine rated up to 4,400-horsepower. The Charger is designed to achieve revenue service speeds of 125 mph while saving on fuel costs. The locomotive's optimized lightweight design results in substantial fuel savings over the competition and includes a large 2,200-gallon fuel tank for greater range.

Safety

Siemens locomotives are the first-in-class to provide a Federal Railroad Administration (FRA)-approved crash energy management (CEM) design with push back couplers and an enhanced crew safety cage. CEM provides crew and passengers significant safety improvement.

Maintenance

The locomotive has been designed with ease of maintenance as a prime factor intended to minimize turnaround times. The modular equipment design allows for flexibility and simplified installation and removal, featuring a maintenance friendly machine room that is open and clutter free, with improved access to wiring and piping.

Smart technology

The state-of-the-art microprocessor system installed in the locomotive allows for self-diagnosis of all systems. The on-board computer system can notify the engineer, operator and remote site 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, and switch to a back-up or redundant system or decrease speed and operational performance if necessary. Maintenance requirements can also be transmitted remotely for better in-service planning and preparation.

Redundancy

This locomotive offers full head-end power inverter redundancy to ensure that heating and cooling systems, lighting and door systems remain in service should one inverter fail. This sophisticated feature keeps passengers safe and comfortable.

Features and Benefits

- Sleek and attractive appearance
- Better air quality and lowest emissions in its class result from new engine aftertreatment system
- Optimal ergonomics for operators' console
- Advanced monitoring and diagnostics systems, with remote capabilities
- Large operators cab design for greater freedom of movement
- Better fuel burning for increased efficiency
- Standardized platform locomotive, offering high degree of commonality between existing variants
- Lightweight design to achieve revenue service speeds of 125 mph, and reduce impact on infrastructure
- Simplified maintenance for lower life cycle cost
- Strong focus on systems and components standardization, improving reliability
- Safety cage and crash energy management (CEM) system provides better crew and passenger safety

Performance on the Move

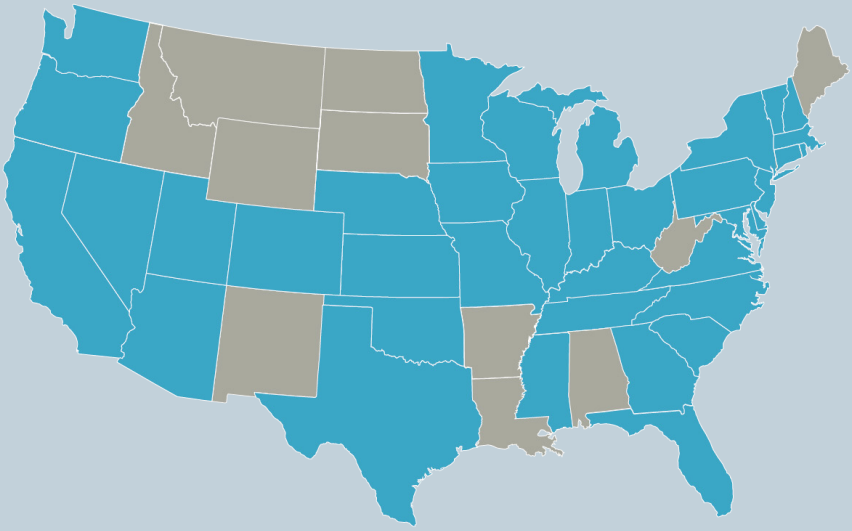
Offering tailored service

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 Customer Services develop maintenance programs that 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.

Also, through a unique and comprehensive training program, Siemens trains new and existing personnel with the skills needed to operate and maintain the new locomotives safely and reliably.

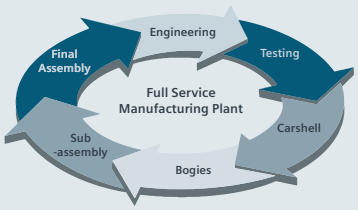
Manufacturing in North America



Supporting a comprehensive domestic supply chain

With an industry-leading U.S. supply chain and dependable delivery, Siemens offers environmentally friendly, efficient and reliable rail vehicles.

With 201 Siemens approved sub-suppliers with open orders in more than 34 states, the locomotive will support a comprehensive supply chain that spans across the entire country.



Siemens has expertise in the areas of urban, commuter and long-distance transportation. The Sacramento full-service manufacturing plant builds rolling stock from start to finish optimizing project management and quality.

Drawing skilled employees from a multitude of cultures and backgrounds, with over 1,500 employees and over 26 languages spoken at the Sacramento manufacturing plant.

SERVICES to Support THE LIFE of Your Vehicle

From pre-installation to ongoing maintenance, Siemens Customer Services goes the extra mile to extend and enhance the service life of all rail vehicles.

The Charger Diesel-Electric Locomotive Fleet

More than 200 locomotives ordered since 2014

Caltrans

Washington State DOT

San Joaquin Regional Rail Commission

Illinois DOT *

VIA Rail Trainsets

Maryland Transit Administration

North County Transit District

Amtrak

Locomotive Performance and Capacity

Maximum Speed	125 mph
Rated Power	maximum 4,400 hp @ 1,800 rpm at AAR standard conditions
Heat End Power	600 kW / 1,000 kW
Tractive Effort (max.)	65,000 lbs / 290 kN
Fuel Tank Volume	1,800 / 2,200 gal

Dimensions and Weight

Weight	267,000 lbs 121,109 kg
Clearance	Amtrak D-05-1355

* Photo: Courtesy of Michigan Department of Transportation Photo Unit

Charger Locomotive Facts

- Best-selling Tier 4 locomotive – largest base fleet
- Service Proven in Tier 4 passenger service
- Lowest fuel consumption
- On time delivery
- Proven high quality product, more than 10 million miles
- Access to inhouse financing
- U.S.-based production (compliant with Buy America regulations)
- Lowest weight locomotive
- Lowest emissions and noise
- Established customer service
- Low life cycle cost
- High power 16 cylinder Cummins QSK95 Engine
- Ergonomic cab design

What Virgin Trains USA is saying - Charger locomotive including Venture Trainset

The future of rail shines bright in South Florida, where Virgin Trains USA (formerly Brightline) has introduced a unique brand of innovation and customer experience to inter-city travel in the U.S. From West Palm Beach to Ft. Lauderdale to Miami, delighted passengers are treated to the next generation of rail transportation aboard five new Venture trainsets manufactured and maintained by Siemens Mobility. Each integrated trainset features proven Charger locomotives and 85-foot-long coach cars, all specially designed to meet Virgin Trains' vision of the ultimate passenger experience.

"We paid for a performance machine and this is a performance machine. This is absolutely the top end of railroading. I would argue this is probably the finest fleet in the world."

Tom Rutkowski
VP of Engineering and Chief Mechanical Officer
Virgin Trains USA

Virgin Trains USA

Customers across the U.S. rely on Charger locomotives to power their clean, efficient and high-performance rail services.

Trainset Performance and Capacity

Maximum Operational Speed	125 mph / 201 km/h
Number of Seats per Coach	Economy Seats: 66-70 Business Seats: 50 (First) Cafe Seats: 28
Length of Trainset	Freely configuable up to 9 coaches

Coach Dimensions and Weight

Length	85 ft	25908 mm
Width	10 ft 6 in	3200 mm
Weight	56 tons (tare)	50802 kg
Height	14 ft	4267 mm
Floor Height	51 in	1295 mm
Side Door Width	34 in	863.6 mm
Aisle Width	32 in	812.8 mm
Distance Between Truck Centers	59 ft 6 in	18135 mm
Minimum Curve Radius	250 ft	76200 mm

Published by
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