

## Amtrak provides North America's long-distance and regional rail service

Amtrak, the National Railroad Passenger Corporation, provides cities in the United States and bordering cities in Canada with passenger rail service. The name Amtrak, a mix of "America" and "track," has become a well-known brand.

Amtrak was established in 1970 by the U.S. Congress and President Nixon in order to save the country's rapidly deteriorating passenger train service. Twenty privately owned railroad companies turned over their passenger trains to the hybrid public-private entity Amtrak and were relieved of their obligation to provide passenger service. The companies could then focus on the more lucrative freight transport business. Six railroad companies declined to join Amtrak and continued their own passenger service for a few years.

Amtrak continued prior passenger service, but eliminated around half of the previously operating 364 trains. The organization struggled with endless problems with its inherited train stations and trains, but also showed initial successes with new connections in California. Amtrak experienced a clear upswing at the end of 2000 when the new high-speed Acela train inaugurated service between Washington D.C. and New York along the Northeast Corridor. By 2002, Congress and the American authorities recognized that self-sufficient passenger service was not possible. After considering and rejecting a partial privatization of the system, the federal and state governments agreed to subsidize Amtrak's long-distance and regional service and support the expansion and modernization of passenger transport in the United States.

### Long-distance and corridor trains

Amtrak operates a wide-meshed long-distance network that connects the Northeast United States with the West and Southeast. In addition, and particularly in the

eastern third and western region of the country, Amtrak provides so-called “corridor services” that – similar to regional rail transport in Germany – are organized and financed by the participating states. Mass transit and regional trains operate in the Northeast Corridor (Washington D.C., Boston, New York), Empire Corridor (New York, Albany, Canada), Keystone Corridor (New York, Harrisburg, Pittsburgh), South Corridor (New York, Charlotte, Miami), Northeast-Midwest Corridor (New York, Boston, Washington D.C., Chicago), Midwest Corridor (Greater Chicago, Missouri), Midwest-West Corridor (Chicago, Portland, Los Angeles, Kansas City) and the West Corridor (Los Angeles, Seattle, Oakland, Vancouver).

Amtrak’s rail network covers over 34,000 kilometers and serves some 500 train stations in 46 states, Washington D.C. and three Canadian provinces with more than 300 trains daily. In these operations, Amtrak primarily uses rail networks owned by the private freight transport companies. In fiscal 2016, ended on September 30, 2016, Amtrak posted ticket revenue of USD2.14 billion and carried 31.3 million passengers.

### **New electric locomotives**

In order to expand its service in the heavily traveled Northeast Corridor and replace aging locomotives, Amtrak ordered 70 electric locomotives worth EUR338 million (USD466 million) in October 2010. This order marked Siemens’ entry into the important American locomotive market.

The Amtrak Cities Sprinter ACS-64 is built in the Siemens plant in Sacramento, California. The components come from Siemens and around 60 suppliers throughout the United States. The locomotive is based on the company’s European Europrinter and Vectron platforms, has a top speed of 201 km/h, an output of up to 6.4 MW (thus its designation ACS-64), and can be operated with three overhead line voltages: 12 kV/25 Hz AC, 12.5 kV/60 Hz AC and 25 kV/60 Hz AC. Braking energy is recuperated and fed back into the overhead line, increasing the locomotive’s efficiency. The first locomotives have been in service with passenger trains with up to 18 coaches on the Northeast Corridor between New York, Boston and Washington D.C. since February 2014. The last locomotives for the order were delivered in 2016.

In September 2014, Siemens received an order to take over maintenance of the ACS-64 locomotives for a period of 15 years. Technicians from Siemens working at four locations (Boston, New York, Wilmington/Delaware and Washington D.C.) ensure the reliability and highest availability of the 70 electric locomotives.

### **New diesel-electric locomotives**

For Amtrak's regional passenger service in a number of rail corridors in the United States, the Departments of Transportation in Illinois, Michigan, Missouri, California and Washington as well as the Maryland Transit Administration ordered a total of 92 high-performance Charger SC-44 diesel-electric locomotives from Siemens in 2014 and 2015. They are replacing aging locomotives and provide new capacity for expanding commuter and intercity express service.

The diesel-electric locomotives have a top speed of 201 km/h, meet the stringent requirements of the Environmental Protection Agency (EPA) with very low emissions and are thus certified as "Tier 4." The Charger is currently the most environmentally friendly passenger diesel-electric locomotive operating in the United States. The Charger is built at the Siemens plant in Sacramento.

### **Expanding the traction power supply**

In 2014, Siemens won an order from Amtrak to build a new Sitras SFC Plus static frequency converter for the traction power feed-in station in the Metuchen district of Edison, New Jersey. The order includes two 30-megawatt converter blocks and the integration of modular multilevel converter technology into the existing 25-Hz traction power supply. The main components of the system are a power converter that converts the three-phase AC supply directly into a single-phase AC supply at the required frequency, as well as an input and output transformer. The modular multilevel converter technology implemented in Sitras SFC Plus static frequency converters has the advantage that in many applications there is no need for a traction transformer when feeding electricity into the traction power line. The converter station at Metuchen is currently being commissioned, with an expected completion date of mid 2017.

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