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The rail market in the U.S. and Canada – Signals set for the future

Once upon a time, the railroad in North America was the proud and progressive means for conquering and settling the Wild West. For many decades, the railroad went through a golden era as the unchallenged leader in transportation, then experienced an decline in popularity as automobiles took over. Railroad's fate as a passenger mode seemed sealed, but in recent decades there's been a remarkable revival of rail in the U.S. and Canada – highlighted by a growing number of success stories. Riding trains in North America is “in” again, particularly in the megacities and large metropolitan areas. Year after year, the volume of passengers is rising, the number of rail routes and networks is growing, rolling stock and infrastructure is being modernized, and politicians are rediscovering the advantages of passenger rail. For the rail industry, the North American market is once again full of attractive potential and perspectives.

Thousands of new rail vehicles

The renaissance in rail is underscored by impressive figures: Over the past four decades, mass transit by rail, in particular, has surged. Statistics show that public demand has doubled in the U.S. for light rail systems as well as for metro systems and commuter rail. According to a study published by the U.S. Department of Commerce in 2016, the number of vehicles in this segment has climbed by nearly 20 percent to over 20,000 trainsets, locomotives and coaches since 2000.

Developments are similar in the northern neighbor of Canada: The country's network of light rail lines is expected to double to over 500 kilometers by 2023 as diverse new projects are completed. In the public transit systems in cities, which also include buses along with rail, official statistics show that the number of passengers has grown by 48 percent to two billion per year since the turn of the millennium.

Double-digit growth in the light rail segment

The dramatic development in the light rail segment can be seen in the latest numbers from the American Public Transportation Association (APTA) for the past year. In the first nine months of 2016, the number of light rail passengers in 14 U.S. cities grew by an average of 4.3 percent, whereby Seattle, Houston, Baltimore, New Orleans and Phoenix showed clear double-digit growth. In 2013, public mass transit in the U.S. exceeded the mark of ten billion passengers a year for the first time; nearly half of them used rail transport and the remainder rode in greatly expanded bus systems.

The ten-billion mark shows, however, that the U.S. continues to be an automobile paradise: The volume of mass transit passengers there is no bigger than in Germany, a country with only one-third the population. Rail mass transit in North America is limited to urban centers, but is truly indispensable there, just as it is in German cities. New York's skyscraper heart of Manhattan is a prime example: Around 60 percent of the people there – in particular the daily commuters – travel by rail.

New attractiveness for city centers

The reasons for this development in North America are no different than in Europe. Major North American cities are also rapidly growing as a result of the rural exodus being seen worldwide. Growing problems with traffic congestion as well as with parking capacities have led many city administrations and parliaments to rediscover the advantages of mass transit. As a result, there are cities that are specifically seeking to make the neighborhoods around railroad stations more attractive. And others that are making less crowded city districts more attractive by providing completely new rail lines.

Among the pioneers of this development is the city of Portland in the state of Oregon, on the Pacific coast. Back in the 1980s, one observed an increasing deterioration of the city's downtown area. Since then, a major urban development program has successfully revived the area by providing a steadily expanding mass transit network with five light rail lines as the backbone of the system. The residents of the Greater Portland area have gratefully embraced the concept: They prefer to live in quiet and green suburbs, leave their cars in free park & ride parking lots at the edge of the city, and take the trains easily and quickly downtown, now the heart of

an attractive urban life with promenades, shopping streets and a lively scene of cultural offerings, restaurants and bars. Siemens has been a partner of this project since its inception, and recently delivered 18 light rail trains for the newest stretch, the Orange Line.

52 projects for Toronto's "Big Move"

Another example of the development of attractive light rail systems is the Greater Toronto area in Canada. In 2006, the government of Ontario founded the Metrolinx Agency to modernize and expand public transportation in the region in and around Toronto to the north and west of Lake Ontario. In 2009, the organization was merged with the regional rapid transit operator GO Transit. The first major project was the construction of an airport line running from the Union Station in downtown Toronto out to the city's international airport. In the meantime, the focus downtown is on realizing a mass transit plan with no fewer than 52 projects. The plan is called the "Big Move" and is overseeing the speedy development and expansion of the region's rail and bus network. Siemens Canada is participating in this project with the delivery and installation of modern instrumentation, control and safety systems. While the light rail projects in recent decades were primarily focused on solving inner-city traffic problems, more recent projects are now increasingly emphasizing aspects like improving the quality of life and providing climate protection through electromobility. One example is Canada's capital Ottawa, which expects its population to grow around 30 percent by 2031. Ottawa is currently constructing the Confederation Line, planned to be a reliable, environmentally friendly, 12.5-kilometer long light rail system, including a 2.5-kilometer long tunnel, designed to relieve traffic congestion in the inner city. Siemens is delivering nine substations for the line's power supply. A large section of the line will be completed in the summer of 2017, in time for celebrating Canada's 150th anniversary. Upon completion of the full line, it is estimated that around 10,000 passengers an hour will use the line in each direction, and that it will lead to a reduction of 94,000 tons of harmful emissions a year by 2031.

Walking to the next train station

Another example is Surrey, the second largest city in the Canadian Province of British Columbia. Surrey has a population of 500,000 and is part of the greater

metropolitan area of Vancouver. With its favorable cost of living, the city is one of the fastest-growing communities in Canada and it is estimated that within the next 30 years, Surrey expects to attract an additional 300,000 residents, thus overtaking neighboring Vancouver.

How can the mobility of the city's residents be secured? In 2014, Surrey decided to build a light rail system. Two lines with a total length of 27 kilometers and 19 train stations will provide ground-level, reliable and environmentally friendly rapid transit service for the residents. The system in Portland is being discussed as a possible model. The routes of the two lines are being planned so that nearly 200,000 residents can reach local train stations by foot. When the two lines are completed, the city expects to serve eleven million passengers a year and achieve a significant reduction of traffic congestion – and a reduction of harmful emissions by around 15,000 tons per year.

Intercity rail transport in the U.S. is also showing growing numbers of passengers. The state-operated railway company Amtrak has increased its passenger volume by 50 percent over the last two decades to roughly 30 million a year, and achieved a new record of 31 million customers in 2016. Roughly one-third of the passengers travel in the long-distance trains running along the North East Corridor (NEC) between Washington D.C., New York and Boston. Nearly 15 million passengers use commuter and intercity trains operating in heavily populated regions of the states, and around five million customers choose comfortable long-distance trains for multiple-day trips across the North American continent. The network operated by Amtrak covers around 34,000 kilometers, and is roughly the same size as Germany's rail system. Amtrak serves more than 500 railway stations in 46 states, and operates around 300 trains a day. These trains run only in part on Amtrak's own rail network: most of the tracks used belong to the large freight rail companies in the states.

Amtrak – the railroad for the U.S.

Amtrak was established in 1970 by the U.S. government with the Rail Passenger Service Act, following the bankruptcy of Penn Central, the last major privately owned passenger railroad in the country. After decades of steadily declining demand due to the growing dominance of automobiles and airplanes, Amtrak was founded as the

National Railroad Passenger Corporation (NRPC) in order to take over operation of the country's remaining passenger service as of May 1971 and develop it. This move ushered in a new era of rail in the U.S. The train fleets were gradually modernized with state investments and rail routes were restored. In 2008, the U.S. government passed the Passenger Rail Investment and Improvement Act that confirmed its responsibility to maintain and further develop railroads in the country. Amtrak's showcase rail network is the North East Corridor (NEC) on the east coast, where rail service has been continually improved and expanded since the 1970s. The 700-kilometer NEC stretches from Washington D.C. to Boston, has been completely electrified since 2000, and can be operated at speeds of up to 200 km/h in certain sections. According to Amtrak, the company carries three times as many passengers between Washington D.C. and New York as all airlines combined; the trip takes just under three hours.

Course set for rejuvenation

The further success story of Amtrak depends on whether the government will continue to invest in the future of the railroad in the U.S. In a hearing before the U.S. Senate, Amtrak's President and CEO Wick Moorman made it clear that there is growing demand for the service. Some 45 years after Amtrak was established, the company's fleet for mass transit and mainline transport as well as the country's rail infrastructure – from engineering structures to control and safety systems – have to be sustainably rejuvenated. In particular, Moorman pointed to the heavy stress and loads on the NEC network, where up to 2,200 express trains, regional trains and freight trains operate daily on 100-year-old rail lines. With the Amtrak Cities Sprinter as an electric locomotive for the NEC and the diesel-electric variant "Charger," Siemens has already made a decisive contribution to renewing the NEC fleet with advanced, energy-efficient and climate-friendly locomotives. Amtrak is also an interesting customer for European competitors Alstom and Bombardier, who delivered trainsets for the NEC.

VIA Rail – Saving passenger service in Canada

The Canadian government has also been engaged in providing passenger rail service since the 1970s and founded VIA Rail Canada for that specific purpose. The background behind this move: The two privately owned Canadian railroads

Canadian Pacific and Canadian National had increasingly concentrated on the lucrative freight business since the 1960s and neglected their passenger service. When they announced plans to completely terminate passenger service, the Federal government stepped in and took over the service following the example of Amtrak in the U.S.

Since then, VIA Rail has been operating a modest service with fewer than 500 trains per week on a 12,000-kilometer network that is 98-percent owned by freight railroads. The main passenger business is the intercity service in the southeastern part of the country with cross-border connections to the U.S. There is also some regional service in a few areas that are difficult to reach by road in the country's extreme winter months. A touristic highlight in Canada is the transcontinental "Canadian" that crosses the country from Toronto to Vancouver, covering the 4,500 kilometers in four nights and three days.

Freight train priority stops intercity trains

The relative unimportance of passenger rail service in Canada is illustrated by two numbers: Only 77 million passengers a year use commuter trains run by regional operators, and just four million customers a year take longer trips between cities with VIA Rail. Canadian rail authorities believe the reason for this low usage of trains lies in a special problem of the country's railroad system. On the nation's long rail routes, freight transport – which comprises 95 percent of the total transport volume – always takes priority over passenger service.

Particularly in the heavily populated eastern parts of the country, there isn't sufficient capacity for offering regular hourly passenger service that would motivate far more customers to switch to rail. To remedy this situation, discussions are focusing on the High Frequency Rail Project that proposes building a dedicated passenger line from Toronto via Ottawa to Montreal. An approximately 550-kilometer long electrified rail line exclusively reserved for passenger service would sustainably reduce the negative environmental impact from automobiles. This stretch would serve as the basis for a rail network that would be further extended to the west and east. As VIA Rail notes in its annual report, the project could be implemented within four years and herald a new future for rail in Canada – and require an investment totaling around three billion euros.

High-speed rail development

High-speed rail projects in the U.S. also involve enormous sums and critical assessments. A groundbreaking ceremony was held for the high-speed project in California two years ago. And near the city of Fresno in the Central Valley roughly half way between San Francisco and Los Angeles, the first bridges have already been completed for the new line to San Jose and San Francisco in the north. Yet further to the south, even the route of the proposed line hasn't been finalized. The project was promoted and given financial support during President Obama's presidency.

However, this support ran into resistance from the Republicans in Congress. The Committee on Transportation and Infrastructure in the House of Representatives has expressed reservations against the new high-speed lines for financial reasons and would prefer to improve the nation's rail infrastructure on a broad front with intercity connections. Supporters of the high-speed projects now hope President Trump will deliver on a campaign promise to focus on improving and developing infrastructure in the states. However, in a paper prepared by a circle of White House advisors listing 50 projects, California High Speed Rail was not among them.

Visions for the North East Corridor

Ambitious visions for the coming decades include a completely new rail line to supplement the NEC: the line would run 700 kilometers through the countryside and megacities. With the necessary complex routing and construction, speeds of up to 225 km/h could be permitted and the travel time between Washington D.C. and Boston would be shortened to three-and-a-half hours. There are also major plans for constructing a 450-kilometer high-speed line between Chicago and St. Louis. The present rail line would first be improved so that modern rolling stock could operate at 180 km/h rather than the 130 km/h possible today. In the more distant future, a new line capable of handling speeds up to 350 km/h would be built for Illinois High Speed Rail. There is certainly plenty of potential for attractive rail transport here: Studies indicate that 35 million trips are taken between the two cities every year. At present, 99 percent of the travelers drive or fly.

Unlimited growth in rail freight transport

Freight transport is a heavyweight in the North American rail market. Other than in Europe, rail freight holds a dominant position in the freight market.

Within the last 50 years, freight volume has tripled. With the triumph of container shipping, freight volume by rail in the U.S., Canada and Mexico in this segment alone has doubled in the last 25 years. Kilometer-long trains with teams of locomotives transport double-decked containers, the primarily single-track lines are built to handle the heaviest axle loads, the rolling stock is equipped with automatic couplings, and operations are controlled with advanced signal and safety systems from just a few operating centers.

According to studies conducted by the U.S. Department of Commerce, U.S. freight operators invested over 600 billion dollars between 1980 and 2015 in maintaining and expanding their train fleets and improving their rail infrastructure. In 2015 alone, investments of 30.3 billion dollars were made here. In the period from 2000 to 2015, the fleet of locomotives nationwide grew by 25 percent to more than 26,000 machines. And the business is continuing to boom. By the year 2040, it's predicted that rail-borne freight will increase by another 45 percent. Obviously, it's a rail system market of virtually unlimited dimensions.

This press release and additional information on Siemens' exhibits at the UITP 2017 are available at: www.siemens.com/press/uitp2017

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