

Master plan for Bangkok and the role of Siemens

Bangkok takes a leading role among the booming megacities of the Far East. The Thai capital has become a major business location in the Asia-Pacific region. The metropolitan region is the attractive urban center of the country, has a population of almost 20 million and is still growing. This development has been accompanied by a steady rise in the volume of road traffic and its related impact on the environment. Bangkok's urban and traffic planners devised an ambitious master plan – the Bangkok Mass Transit Development Plan – back in 1994, calling for more than a dozen new metro and rapid transit lines to ease the traffic burden, especially along the heavily congested Sukhumvit and Silom Road. While the plan has undergone many changes, its main structure has been retained. In this context, Siemens has partnered with the metropolis in many ways. The Mobility Division designed and implemented the first three high-performance mass transit systems in the city. These now form the basis for the further development of the transportation infrastructure.

The first project was the Skytrain. Siemens has been active in Thailand for 112 years – no longer as a contractor but meanwhile as a partner with more than 1,200 employees, 400 alone for the assembly and maintenance of trains in Bangkok. The company was also awarded the order for the “Blue Line”, the city's first metro line. In cooperation with a Thai construction company, Siemens completed the metro in only 28 months by 2004, which is now being used by 210,000 passengers every day. The line runs in a semicircle along one of the main – and most congested – routes in the city. Construction was not easy, given the fact that the city is located in a low-lying area along the Chao Phraya River. The construction engineers

needed to make sure that no water could get into the tunnels – especially during the rainy season.

In 2010, Siemens also delivered the Airport Rail Link. Its air-conditioned cars carry 45,000 passengers every day from downtown to Suvarnabhumi International Airport 28 kilometers away.

All three lines intersect at number of stations in order to permit quick transfers from one system to another. This mass transit projects help the booming city of Bangkok to match its infrastructure to its strong growth.

Average travel speed in the city almost doubled

Thanks to the three modern mass transit systems, a first goal has been reached in Bangkok: Traveling within the city is much faster today than 15 years ago. Today's average travel speed in the city is 18 km/h, nearly double that from the days before the advent of the mass transit projects. However, like all megacities, Bangkok keeps on growing. According to a forecast by the World Bank, about 60 percent of Thailand's population will live in the urban region around the capital by the middle of the century – possibly ten million people more than today. Mobility and climate protection, quality of life and economic power are hardly conceivable without fast, reliable and energy-efficient rail systems. The goal is to increase the use of public transportation services from 40 percent today to 60 percent by 2021. This requires consistent expansion with a whole bundle of new, additional mass transit lines.

Ambitious plans for a dense rapid transit network

Therefore, great strides are being made to expand the rapid transit network. Another eight billion euros are expected to be invested over the next four years. The route network is to be more than doubled with up to ten rail lines. The current master plan calls for the construction of 18 new mass transit lines in two phases in order to connect the city center with the outlying areas and form a ring around the inner city. The first phase entails the core construction of the mass transit network by 2019, while the second phase calls for extensions into the surrounding areas in another ten-year plan by

2029. Step by step, the rapid transit network in the Greater Bangkok region will grow to a total of at least 500 route kilometers.

Under the current ten-year plan, construction of the first sections of five new lines has already begun. The Purple Line is expected to be commissioned as early as next year, while the years after that will see the creation of the first sections of additional new metro systems, i.e. the Light Red, Dark Green, Light Green, Blue and Purple Lines. By the time these lines enter service at the end of the decade, the rapid transit network will total about 160 route kilometers and be twice its present size. Intensive planning is currently focusing on 90 additional route kilometers to ensure smooth progress in the expansion of the network. Experts expect that this merging of the network of routes will enhance the attractiveness of rapid transit service and thus lead to sudden increases in ridership – even on the existing lines. For example, the Skytrain management at BTS expects that the completion of the new mass transit connections alone, which have the highest priority, will boost ridership on the elevated railway to a daily average of 1.2 million in the next six years.

Siemens will continue to be available as a partner for the monorail and metro projects called for in the master plans – and offering not only its own rail vehicles, but also signaling and operations control systems, drives, power supply systems or even turnkey rail systems.

Jochen Eickholt, CEO of the Siemens Mobility Division: “With the three turnkey mass transit projects in Bangkok, we have managed to underpin our competency and quality as global market leader for turnkey systems no less than three times in succession. We have demonstrated that we can put complete mass transit systems on the rail punctually and reliably, even in the face of tight project deadlines. And, after years of operation, it can also be said that the high availability of the systems, their attractiveness to the customers, as well as their high operational and energy efficiency speak for themselves. We are therefore confident that the upcoming order awards will give us the chance to continue to contribute to the expansion of Bangkok’s

mass transit network.”

Customized vehicles and metro systems

Siemens has developed a vehicle that is tailored to meet the diverse requirements of public transportation in the cities of tomorrow: Inspiro – the new metro from Siemens. The Inspiro excels through its high transport capacity and low operating costs. Energy efficiency and environmental friendliness from its manufacture and daily operation to its almost complete recyclability can be taken for granted. Key aspects for cost efficiency include, for example, the lightweight aluminum car body construction, the new demand-based air conditioning system, and running gear optimized for less weight and reduced energy consumption. The most striking exterior features include the brand-new vehicle design developed by the internationally recognized Siemens partner DesignworksUSA, a subsidiary of BMW Group. Large entrances enable passengers to board the Inspiro with ease, while a well-thought out interior design combines with wide aisles to convey a sense of spaciousness. The innovative interior lighting with selectively placed islands of light creates a very pleasant ambience. The wide doors – which can be optionally designed as exterior sliding doors or swing plug doors – facilitate the boarding and exiting process, thus shortening the dwell time at stations. The Inspiro can be configured on the basis of its modular design principle to meet all requirements of the operator.

Possible Inspiro train configurations can have three to eight cars with different degrees of motorization and furnishing versions. The interior can be optionally fitted with longitudinal seating, transverse seating, or combinations of the two. The possibility of driverless operation, which is also unique in combination with conventional driver operation, ensures highest possible energy efficiency through sophisticated control of deceleration and acceleration operations in the overall system – regenerated braking energy can be immediately reused by vehicles that accelerate at the same time.

Siemens has equipped about 250 route kilometers worldwide with signaling systems for driverless operation, making it the market leader in this field. The company believes that this could be an option, especially for mass transit in Bangkok with its

high passenger demand: Driverless operation can increase the capacity of a metro line by up to 50 percent because the trains can run at shorter headways in a safe and reliable manner. For example, on a Paris Metro line that was retrofitted by Siemens for fully automatic operation, a train runs every 85 seconds during peak hours, whereas the shortest headway in Bangkok is 120 seconds using today's systems. Another benefit of driverless operation is that automatic, energy-optimized control reduces the energy consumption of the trains by as much as 15 percent.

Contact for journalists:

Peter Gottal, Tel.: +49 (89) 636-20611

E-mail: peter.gottal@siemens.com

Follow us on Twitter at: www.twitter.com/rollingonrails