Case Study - Thailand

CITYFLO - BTS SKYTRAIN
Shorter journey times across Bangkok

The BTS Skytrain is a rapid transit system that provides quick and convenient transportation for over 650,000 passengers per day across Bangkok.

The advanced BOMBARDIER* CITYFLO* 450 Communications-Based Train Control (CBTC) solution was chosen to equip the existing 24 km of line (comprised of the 17 km Sukhumvit Line and 7 km Silom Line) at the time of the contract award. In addition, three new extensions are now operating with the system.

Bombardier won the contract due to its global CBTC expertise and experience in delivering seamless upgrades without disruption to existing services. Delivery scope for the re-signalling and the three extensions, comprised 36 km of elevated, double track, 34 stations and equipping 52 EMU trains of three types.

As of 2016, Bombardier is also equipping a further two Line extensions with its CBTC as well as expanding its role to provide full systems integration for the projects. Initially carrying approximately 200,000 passengers a day, the BTS Skytrain now records a daily average ridership of over 650,000 with further plans to expand. Residents and visitors can travel within Bangkok, benefiting from shorter journey times and a comfortable passenger experience.

Opening in 1999, Bangkok’s elevated mass transit system, known as the BTS Skytrain, was the city’s first rail link to connect residential, business and tourist districts.

The system comprises the Sukhumvit and Silom Lines, known collectively as the Green Lines, which connect the capital’s north and east. The two lines are integrated with the city’s transportation network, including the international airport link and other Mass Rapid Transit (MRT) rail lines.

Bombardier was awarded the contract in 2007 to provide an advanced rail control upgrade to the system operator, Bangkok Mass Transit System Public Co. Ltd (BTS). The re-signalling was required to increase capacity and shorten passenger journey times on the very popular network.

Rail Control Solutions
CITYFLO - BTS SKYTRAIN

Delivering safety and speed

The CITYFLO 450 solution uses virtual block technology to support semi-automatic operation. The system supports reduced headways and increased train frequency, leading to a higher number of passengers transported.

The radio-based system now operating on the Skytrain can support speeds of up to 80 km/hr and is designed for headways as low as 90 seconds. The onboard Automatic Train Protection (ATP) system ensures that vehicles do not exceed permitted speeds or pass beyond the end of a movement authority.

Providing cost and efficiency benefits, the system does not require track circuits, instead using balises for position referencing and precision stopping. Bombardier’s CBTC also enables full system integration, including with Supervisory Control and Data Acquisition (SCADA), Passenger Screen Door (PSD) and Passenger Information Display Systems (PIDS).

Exceeding operator expectations

Following the initial upgrade, CITYFLO 450 was chosen for the three new route extensions. In 2009, a 2 km extension was added to the Silom Line across the Chao Praya river (Saphan Taksin-Wongwian Yai). A further 5 km (Wongwian Yai-Bangwa) was added in 2013. These projects involved the re-signalling of two existing and two new stations.

In 2011, a 5 km extension on the Sukhumvit Line opened (On Nut-Bearing), connecting to further suburbs and the Bangkok International Trade and Exhibition Centre. This project involved the signalling of five new stations. These extensions brought the length of line equipped by Bombardier to 14 km on the Silom Line and 22 km for the Sukhumvit Line.

Building a long-term partnership

In addition to these projects, Bombardier has continued to provide new and expanded solutions to support the BTS Skytrain’s continuing development. In 2014, the contract for the signalling interface for new PSDs at nine of the network’s largest stations was completed. The project included equipping 20 platforms and 47 screen doors. Also, 17 four-car EMU trains have been equipped with the BOMBARDIER* MITRAC* propulsion and control equipment.

In 2016, Bombardier began delivery of the full wayside Electrical and Mechanical (E&M) system integration for the latest BTS Green Line Extensions, which will add a further 30 km of line to the network. Phase 1 of the project was successfully delivered in April 2017, with a one station extension to the Sukhumvit Line.

Investing in Thailand

Work on these projects is managed from Bombardier’s Asia Pacific hub in Thailand, located in Bangkok for over 20 years. The highly-skilled local team of over 520 employees covers Bombardier’s full range of complete transit systems, rolling stock and rail control solutions. The BTS Skytrain continues to remain an iconic feature of Bangkok, and a vital means of public transportation, with the city growing, new lines and extensions are planned to further improve the city’s transport network. Bombardier remains a committed local partner to BTS to further enhance operations in the future.