In order to meet the public transport needs of a rapidly expanding population, Siemens is providing to Barcelona its driverless Unattended Train Operation (UTO) train control system named Trainguard MT CBTC.

With a length of 46 km, the new lines 9 and 10 will become the backbone of Barcelona’s metro network. The lines owes its attractiveness to the fact that it serves a large number of strategic points. Its route layout offers numerous connections with the existing six metro lines and several railway stations. To the South West, the line includes a service to the new airport terminal and the freeport zone. To the North, it serves the densely populated Can Zam area.

Won over by the performance of the driverless train control and operating systems which make Paris metro’s line 14 a safe and available transport solution without any staff on-board, GISA (Generalidat de Catalunya) awarded Siemens Mobility and its consortium with the task of automating lines 9 and 10 of the Barcelona metro system.

The driverless automatic train control system of line 9 and 10 is the outcome of unique know-how in the field of CBTC (Communications-Based Train Control) with moving blocks, associated with avant-garde radio communication technologies. The transmission of information between the train-borne and wayside equipment is based on Airlink, Siemens’s free-propagation radio system, which has become a key element of Siemens CBTC.

It is in revenue service on the Canarsie Line in New York City where it demonstrated its high robustness: enduring no perturbation from WiFi users.

The spread spectrum radio offers high immunity to interferences and a great quality of service in the metro environment. Moreover, it guarantees protection against intrusion. The wireless radio system enables a reduction of installation and maintenance costs as due to the absence of equipment on the guideway.
In its UTO driverless version, Trainguard MT CBTC provides the operating company with:

◊ Flexible operation thanks to an instantaneous adaptation of the transport offer to demand and the support of mixed fleet operation.
◊ An optimised transport offer through Moving Block technology.
◊ Reduced life-cycle costs by optimising train power consumption, simplifying maintenance operations and reducing wayside equipment, the result of the use of moving block and Airlink.

For passengers travelling the line daily, the UTO driverless Trainguard MT CBTC is synonymous with:

◊ High speed thanks to a commercial speed higher than on conventional driver-operated lines.
◊ High capacity. With a train running every 60 seconds, line 9 will carry up to 250 000 passengers per day.
◊ Safety through platform screen doors which prevent people from falling on to the track.
◊ Punctuality and availability thanks to platform screen doors which avoid perturbations in stations caused by objects on the track.

Key features of the line

◊ Length of the line: 46 km
◊ Number of stations: 51
◊ Minimal achievable headway: 60 s
◊ Operational speed: 33 km/h
◊ Number of steel-wheeled trains equipped with driverless CBTC: 50

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