São Paulo Metro’s driverless Line 4-Yellow

Line 4-Yellow – the latest and most innovative extension of São Paulo’s metro network – relies on Siemens technologies. Nearly 13 kilometers long, Line 4-Yellow is South America’s only driverless subway line.

- The new Line 4-Yellow driverless subway line carries about 700,000 passengers a day. Siemens has supplied the line’s fully automated system and control technology and installed its energy management, communications, air-circulation, and security infrastructure.
- Line 4-Yellow subway began operations in May 2010 with the opening of the Paulista and Faria Lima stations by the government of the State of São Paulo, in partnership with ViaQuatro. The first phase of the line is already completed, with six stations in operation: Butantã Pinheiros, Paulista, Faria Lima, República, and Luz.
- In the second phase of the project, five more stations will go into operation starting in 2014: Higienópolis-Mackenzie, Oscar Freire, Fradique Coutinho, São Paulo-Morumbi, and Vila Sônia.
- When completed, the line will be 12.8 kilometers long with 11 stations and will link the region Luz, in the center of São Paulo, to the district of Vila Sônia in the southwest. The line is expected to be completed by 2014.
- Line 4-Yellow is South America’s only system-operated subway. The use of fully automated driverless technology from Siemens has made it possible to reduce the intervals between trains on São Paulo Metro’s Line 4-Yellow without compromising safety.
- The driverless system allows users to travel a distance that usually takes 20 minutes in just over three minutes, and the wait time for the trains accounts for approximately 75 seconds.
- Another new technological innovation is the system’s controlled rectifier, which regulates the energy used to drive the trains. The solution prevents waste by precisely matching energy supply to energy requirements.
The new line’s track, trains, and control center are managed by a Trainguard® MT CBTC automated train-control system from Siemens. The Trainguard system, which enables fully automatic train operation, allows the real-time monitoring of trains, ventilation, energy consumption, auxiliary and signaling systems, and visual communication with users.

Line 4-Yellow is operated by ViaQuatro, a private company that won the contract to operate the line for 30 years, with an option to renew the contract for another 30 years. The line's operation will be monitored by Companhia do Metropolitano de São Paulo.

Line 4-Yellow is Brazil’s first public-private partnership for subway services.

The consortium ViaQuatro has invested US$450 million in the systems, equipment, and trains.

There are 14 trains (84 cars) already in use in the first phase of the project (with six stations already in operation) and 15 additional trains (90 cars) planned for the second phase.

Over the 30 years of operation, ViaQuatro will have invested more than US$2 billion on the line.

Sustainable Mobility

São Paulo energy matrix is mainly from Hydropower. The main villain of green house gas (GHG) emission of the city comes from transportation. 50% of Sao Paulo city energy consumption comes from Mobility Sector.

Therefore, the subway transportation system uses clean technology and allows substituting other transportation systems moved by fossil source, and contributes to reduce the GHG, traffic jam time spending. This megacity has 20 million inhabitants and 7 million cars.

With Siemens driverless technology, the newest Metro service from SP, Line 4-Yellow is already responsible for preventing the emissions of thousands of tons of CO2 into the atmosphere since 2011, considering the thousands of passengers that travels with the metro instead of individual transport systems (cars) or collective powered by fossil fuels (buses).

The results demonstrate that a cleaner solution as the metro might contribute reducing the pollution in approximately 50%, depending on the meteorological conditions.
• Comparing the different means of transportation, metros emit nearly 30 times less GHG than cars and 12.5 times less than buses in São Paulo. (http://www.metro.sp.gov.br/metro/sustentabilidade/menos-emissao-gases.aspx)

• 1st PPP implemented successfully and recognized by 89% of users and considered one of the Top Innovative Urban Mobility Infrastructure 100 World Cities Edition

• Moreover, modern and innovative technologies from Siemens used in Metro Line 4 are at least 20% more efficient on average, from the point of view of energy consumption, than traditional metro systems.

Contact for journalists:
Siemens Ltda, Media Relations
Jose Pereira Neto, Tel.: +55 11 3908-2471
E-mail: jose.neto@siemens.com

Siemens AG, Media Relations
Alexander Becker, Tel.: +49 89 636-36558
E-mail: becker.alexander@siemens.com

For further information on Via Quatro (in Portuguese), please see
http://www.viaquatro.com.br/linha-4-amarela
http://www.viaquatro.com.br/a-via-quatro

For further information on São Paulo Metro System (in English), please see

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