Texelis

A Success Story Built on Rubber-Tyred Metro History from Renault to Texelis

It all started in 1951 with Michelin (the world leader in tyre manufacturing) making the offer to Paris Metro network operator RATP to equip its metro trainsets with tyres.

This unprecedented technical solution would allow for much more efficient acceleration and braking than steel wheels would.
In addition, the use of tyres reduced noise levels and increased comfort by making the trains quieter and reducing vibrations. In order to allow the trains to run on both conventional rails and tyre tracks, each train would be equipped with tyre wheels mounted side by side with the steel wheels.

A prototype was built by a French consortium for a trial on a small section of the metro network. It was named MP51 (M for Metro and P for 'Pneu' which is tyre in French).

The experiment was a success.

In 1954, RATP therefore decided to place an order for 71 units of MP55-type cars with two companies: one of them was Renault, an audacious choice. Renault had manufactured many railcars before the war, as well as a few models of shunters and small track inspection vehicles; however, it was only involved in the production of a small number of railcars after 1945.

The MP55 created momentum as soon as it was commissioned, with astounding performance for its time: the new equipment very quickly reached speeds of 65 and even 70km/h, whereas the old Sprague-Thomson trains only reached 45km/h! It was a first success for a rubber-tyred metro and for Renault through its subsidiary SAVIEM.

SAVIEM subsequently merged with Berliet to create Renault Industrial Vehicles and developed its Limoges factory in this industry. In 2008, Texelis was created and became an independent company in 2009.

Since then, rubber-tyred metros have been used for all the new metro lines built in France, whether it be the new Lyon or Marseille networks in 1977 and 1978, the VAL

systems, or in 1998, the recently fully automated Paris line, Line 14, the first line to receive the latest generation of rubber-tyred metros (MP14). Using rubber-tyred metros also remained a showcase for RATP in the construction of networks outside France with pneumatic rolling stock used in Montréal (Canada), Mexico City (Mexico) and Santiago (Chile)... and they are all equipped with Texelis differential axles recognised for their reliability and their performance on modern metro fleets throughout the world.

The latest generation is the rubber-tyred metro model MP14 for which Texelis is supplying Alstom and Paris metro for 94 trainsets.

All the World's Rubber-Tyred Metros Feature Texelis Components

Texelis is the worldwide leader in tyre metros and equips the metros of French cities such as Paris, Lille, Lyon and Marseille, as well as those around the world such as Lausanne (Switzerland), Taipei (Taiwan), Mexico City (Mexico), Santiago (Chile) and Montréal (Canada).

Here are some examples below:

Montréal

The Montréal Metro is a public transport network that serves the island of Montréal as well as the Quebec cities of Laval and Longueuil, Canada. This rubber-tyred metro runs entirely underground and is managed by the Société de transport de Montréal (STM).

Paris

The first rubber-tyred metro technology was developed in Paris by Michelin and the Régie Autonome des Transports Parisiens (RATP) in the 1950s.

The latest train model ordered by RATP is the MP14 train and the first train was inaugurated on 12 October 2020 on Line 14.

Mexico City

Mexico City is the city in the world with the most rubber-tyred metros.

The network has 12 lines and carries more than five million passengers per day.

Santiago

The Santiago Metro is an urban transport system serving Santiago, the capital of Chile, as well as its metropolitan area.

Commissioned in 1975 and gradually extended, the network today comprises 136 stations and seven lines for a total length of 140km, making it the second-most extensive in Latin America after those in Mexico City.

Why Use a Rubber-Tyred Metro on a Network?

Rubber-tyred technology has been used since the 1950s.

It has been mainly developed as a solution to increase train frequency on overloaded line sections, and to lower noise levels in the vehicles for the passengers and outside for the environment in case of open-air installations as well. This has been the most cost-effective means of achieving the desired requirements of modern mobility in big cities.

This target is reached thanks to the main advantages of the rubber-tyred metro:

- The higher friction coefficient of the rubber tyres on runway compared to the conventional steel wheel on steel rail tracks allows quicker acceleration and shorter braking distances.
  This enables trains to run closer to each other and is a significant gain in terms of train frequency, especially when distances between stations are small.
  The higher friction coefficient makes it possible for the

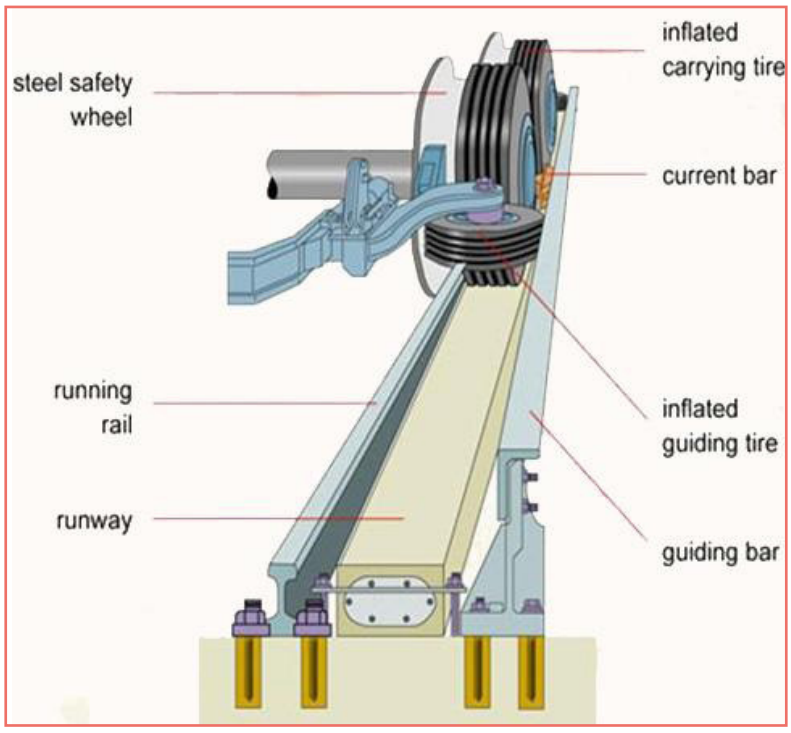
vehicles to climb and descend steeper slopes (up to 13%) without any additional track equipment (rack, in case of rolling steel/steel). Investments in the infrastructure (rails) are lower and the high friction coefficient makes it easy to automate trains using CBTC: almost all movers are rubber-tyre equipped.

- Rubber tyres enable quiet rolling in open-air installations. Reduced noise levels are a must for open-air line sections and for the comfort of the passengers.
  A less noisy train also means fewer vibrations for the bogies for which the design can then be more lightweight.
  Thus, rail wear is lowered, as are maintenance costs.

Train on tyres (MP 73) of Line 6 of the Paris metro

The rubber-tyred technology, which presents these advantages, is a system that uses a mix of road and rail technology and which, in comparison to conventional steel on steel, splits the traction and guidance functions:

- Vehicles have wheels with rubber tyres running on rolling pads inside guide bars for traction
- Traditional railway steel wheels with deep flanges on steel tracks for guidance through conventional switches (as well as guidance in case of tyre failure).



Example of rubber-tyred traction and guidance concept

To summarise, rubber-tyred metros are a particularly relevant technology for lines with a high rate of services and short distance between stations; they are also of note for lines with steep slopes and with open-air sections that are sensitive to noise emissions.

Paris, Montréal, Mexico, Santiago, Taipei, etc. are partially or totally equipped with rubber-tyred technology for their metro networks.