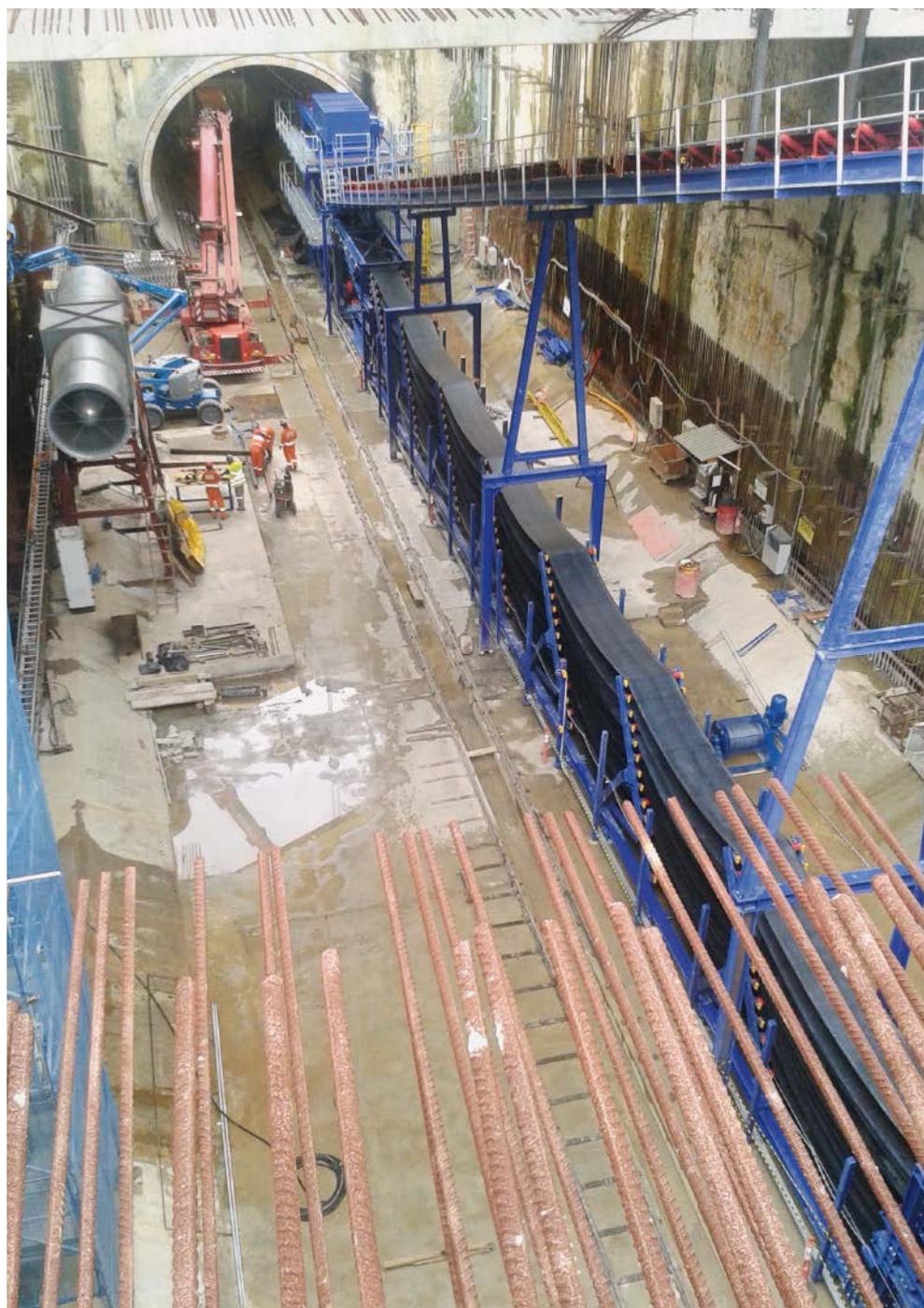


## Marti Tunnel Conveyor with two Boosters keeps the “Metrô São Paulo” in Brazil on the Move

# Tunnel conveyor with two boosters for use in loose rock



Brazil is investing in the expansion of its infrastructure. One project involves the “Metrô São Paulo”, the city’s underground rail network which opened in 1974. In 2002, Line 5 became the newest route to open. Until today though, this line is not connected to the rest of the network as the work began from the edge of the city. Since 2013, Section 7 has been under construction as a single-tube tunnel with a diameter of 10.21 m through loose rock. The tunnel will be 5.7 km long. For the removal of excavated material we supplied a tunnel conveyor with two boosters, a 74 m long ascending conveyor and a 45 m long discharge conveyor.

### Overview

Client: Consórcio Metropolitano 5  
Total value of order: 3.5 million USD  
Created: 2013 – 2015



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### Installation

Tunnel conveyor: belt width 1000 mm with two boosters  
 Ascending conveyor 74 m  
 Discharge conveyor 45 m  
 This meets the technical prerequisites for use in loose rock



The 5.7 km length of the tunnel may not break any records, but the section has its share of technical challenges. For one, there are several curves to be overcome. Also, owing to the loose rock present, the machine operates with an Earth Pressure Balance Shield (EPB). This means that the machine supports the advance face with the pressure of the spoil in the excavation space. To maintain this pressure constantly at the required intensity, the spoil is partially liquefied and treated with chemical additives. The liquefaction and the use of additives make the material to be removed stick together. As a result, this viscous material is difficult to transport on the ascending conveyor. During planning and construction we had to consider these circumstances and create an installation which could work without problems despite the difficulty of the task.

### The customer could also count on us for importation

The most challenging part of the project was not building the installation, but the delivery and importation. Brazil monitors the importation of building components very closely, as these can in fact also be manufactured in the country. To obtain the required permits, we had

to document each individual component both technically and visually. For some components the authorities demanded evidence with justification why these had to be manufactured in Switzerland rather than Brazil. Meticulous preparation and close cooperation with the customer were key for the successful importation of all system parts.

### When power and equipment are missing ...

... you need employees who can find self-contained solutions from what's available. For example, we wound the conveyor belts on by hand as the intended winch was defective. Power cuts regularly caused unwelcome breaks. To keep within the timelines despite all this, the project leaders developed a work plan which contained scenarios for every incident. The installation could be put into operation on time and has served the customer to the desired quality ever since.



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