

FACT SHEET

Maddalena Chiomonte Project

Preparation of Exploratory Tunnel ahead of
Turin-Lyon Base Tunnel Work
Chiomonte (Turin), Piemonte

CONSORTIUM: CSC Costruzioni SA (Webuild Group) and Webuild, 40% of contract

CLIENT: TELT (Tunnel Euralpin Lyon Turin). Contract Awarded in 2020

ROBOT DEVELOPER: CIM 4.0 – Italian Competence Center

RIEF PROJECT DESCRIPTION

The tunnel of “la Maddalena”, located in Chiomonte (Turin), is the main construction site on the Italian side of the Turin-Lyon rail project. It started as an exploratory, or diagnostic, tunnel to provide geological information needed to proceed with the excavation of the base tunnel on the Italian side of the TELT.

TELT is a binational public entity responsible for the development and management of a High-Speed/High-Capacity railway to be built under the Alps between Turin and Lyon. It is a major component of the Trans-European Transport Network (TEN-T), the ambitious European Union initiative of sustainable mobility to connect the railway networks of the continent and increase the transport of people and goods by rail rather than by road.

A modification to the project will have the excavation of the base tunnel on the Italian side begin at the Chiomonte - rather than the Susa - site. It is for this reason that Webuild is to excavate 22 niches along the tunnel so it can become a passageway for trucks and other machinery.

The niches, given the small size of the tunnel, will be 30 to 65 meters long and approximately 4.50 meters deep in order to allow vehicles to pass each other in safety. The niches will be excavated by traditional method during a period of 20 months. They will be used for service access for vehicles and other machinery that will be used for the construction of the base tunnel.

ROBOT

In order to explore the last three kilometres of the tunnel and then equip the tunnel with the necessary lighting, ventilation and other devices to allow people to work in safety, Webuild with CIM (Competence Industry Manufacturing 4.0, one of the main technological centres in Italy), developed Axel. It is the first robot to be used on a construction site to replace humans in tunnel exploration. In this way, Axel allows for all the activities performed in preparation of a tunnel excavation to be done remotely in order to safeguard worker safety.

BACKGROUND

The entire TELT Tunnel Euralpin Lyon Turin project will extend for 65 kilometers between Susa in Piedmont, and Saint-Jean-de-Maurienne in Savoie, France. Of the total route, 57.5 kilometers will be excavated underground and of these about 10 kilometres have already been built.

The TELT is an important part of the Mediterranean corridor of the TEN-T that will connect south-western Europe with the countries of central and eastern Europe. By 2030, the Turin-Lyon railway will reduce wheel traffic from the roads, contributing to the reduction of the equivalent of three million tons of CO2 every year.

Completed in February 2017, the Maddalena was excavated by a TBM to investigate better the geological structure of the mountain through which two parallel base tunnels are to be built in the coming 10 years.

Webuild is involved on other lots of the TELT project. In July 2021, the Group and its partners were awarded a contract worth €1.43 billion for the excavation of a section of the base tunnel. It concerns Lot 2, which involves the construction sites of La Praz and Saint-Martin-de-la-Porte. It will comprise 46 kilometres of tunnels including the two parallel tunnels for the railway. It also includes a network of auxiliary tunnels between Saint-Martin-de-la-Porte and La Praz on the French side of the border.

Lot 2 is the second contract won by Webuild on the project. In 2020, the Group and its consortium partners were awarded a contract for Lot 5A. It foresees the preparatory work for the construction of a safety site in Modane and four ventilation shafts for the future base tunnel.

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