

# France



**Name:** French Tunnelling and Underground Space Association (AFTES)

**Type of Structure:** Non-profit, open association

**Number of Members:** 1049 members (including 127 corporate members and 138 young members and students)

## ASSOCIATION ACTIVITIES DURING 2021 AND TO DATE

### Tunnels and Underground Space Magazine

Four quarterly issues and a special issue on Grand Paris projects:

- Surface and subsurface land rights
- Operating equipment
- Special issue on Grand Paris projects
- Small diameter tunnels
- Maintenance and auscultation

### Technical Committee

17 active Working Groups. Four recommendations published:

- GT3: Vibrations generated by mine fires: guide for the determination of vibration limits during pre-project studies (French version).
- GT30: Radial rock bolting in tunnels – Design and sizing guide.
- GT4: State of the art concerning developments in the tunnelling machines and their capacities from 2000 to 2019 (French version).
- GT24: Geological, hydrogeological and geotechnical reconnaissance required for underground design (French version).

### News

- Launch of new Working Group on numerical modelling
- Organization of webinars for the presentation of the latest technical recommendations

### Materials, Equipment and Products Committee

Actions for the promotion of manufacturers and innovative products

- Consolidation of the committee steering board.
- Creation of a technical showcase for manufacturers and suppliers.
- Preparation of a collective booth at WTC 2022 in Copenhagen

**Preparation of two technical days in Chambéry in October 2022 (Conferences and Exhibition): Lyon-Turin: Major Underground Projects & Innovation**

### 'Materials, Equipment, Products'. UNDERGROUND SPACE COMMITTEE.

- Organization of a special session during the 2021 AFTES congress.
- National research project Ville10D; Synthesis of the various contributions.
- Consolidation of the committee with the involvement of young architects/ engineers.

### Education Committee

- Master's degree in Tunnels and Underground Works - TOS - Class 10 (October 2021 - September 2022) - 16 students.
- Joint continuing education sessions at the TOS Specialist Master's degree.
- Creation of a sustainable animation group able to define and carry out a programme of actions around the themes of training and research in the field of underground.

### Youth Members Committee

- Visit of the LHC – CERN project

- Organization of a training session during the 2021 AFTES congress
- Involvement in the international young professionals' network (ITAYm, EUTFym).

### Congress AFTES 2021 Paris

- Organization of the international AFTES congress «Underground, a space for innovation» from 6 to 8 September 2021: 3061 registered participants, 26 countries represented, 165 exhibitors, 180 articles, 72 oral communications, 108 e-posters.

### EUTF – European Underground and Tunnel Forum

- Consolidation of the new EUTF Forum and discussions around the common issues
- Joint contributions to the ITA issues (international strategy, organization of the WTC, working groups,..)
- Specific actions regarding BIM, refurbishment, and standardization
- Contribution to the AFTES congress in Paris and to the AETOS congress in Madrid (November)

### Involvement in AITES/ITA

- Participation of AFTES members in ITA Working Groups and Committees.
- Participation in governance (GA, specific meetings, etc.) as well as events (ITA Week, ITA Awards, etc.).
- Participation in the organization of ITACET training programs.
- Organization with ITACET of a training session during 2021 AFTES congress.

## CURRENT AND FUTURE TUNNELLING ACTIVITIES Grans Paris Express and Line 14



## Grans Paris Express and Line 14

Since the beginning of the underground works, 24 tunnel boring machines have been launched. At the beginning of 2022, six of them were still active on Lines 16, 17 and 18 and a tunnel boring machine is being built for Line 16.

Lines	Sections	Horizon
Line 14 nord	Mairie de Saint-Ouen à Saint-Denis Pleyel	2024
Line 14 sud	Olympiades à Aéroport d'Orly	2024
Line 15 sud	Pont de Sèvres à Noisy - Champs	2025
Line 15 ouest	Pont de Sèvres à Saint-Denis Pleyel	2030
Line 15 est	Saint-Denis Pleyel à Champigny Centre	2030
Line 16	Saint-Denis Pleyel à Clichy - Montfermeil	2nd Semestre 2026
Line 16	Clichy - Montfermeil à Noisy - Champs	2028
Line 17	Saint-Denis Pleyel au Bourget - Aéroport	2nd Semestre 2026
Line 17	Le Bourget - Aéroport au Triangle de Gonesse	2028
Line 17	Triangle de Gonesse au Mesnil-Amelot	2030
Line 18	Massy-Palaiseau à CEA Saint-Aubin	2026
Line 18	Aéroport d'Orly à Massy-Palaiseau	2027
Line 18	CEA Saint-Aubin à Versailles-Chantiers	2030
Line 18	Versailles-Chantiers à Nanterre-La Folie	After 2030

## CRER line EOLE - Paris

Metro line E Eole: TBM 'Virginie' continued excavation of the 8km stretch between la Défense and Gare Saint-Lazare. The

crossing of the Porte Maillot station was one of the major challenges in 2021. Arrival at Saint Lazare station occurred in February 2022. The work continues for a project

commissioning before the Olympic Games in 2024.

## Lyon

Metro line B: TBM 'Coline' travelled 2.4km, laid 1,250 rings and excavated approximately 400,000 tonnes of materials, including approximately 30,000 tonnes recycled directly on site. The stations are currently being built. In this very complex geotechnical setting, mixshield TBM technology has proved its usefulness .

## Toulouse

3rd Metro Line: 27km long with 21 stations – the design process for this new metro line is on course with the objective of a tender phase in 2022

## TELT

Tunnel Euralpin Lyon Turin  
In 2021, the tender phase for the construction of the main international tunnel (57km, two tubes) led to the selection of the contractors for the French stretch of the tunnel. Nearly €3bn of work were awarded in July 2021. Another €1bn will be awarded in 2022 for the Italian stretch