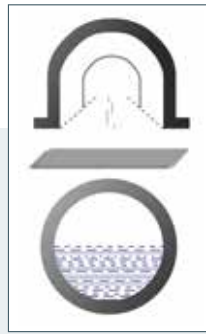


Greece

Name: Greek Tunnelling Society

Type of Structure: non-profit association with membership

Number of Members: 250 members, 14 corporate members



ASSOCIATION ACTIVITIES DURING 2019 AND TO DATE

The Council Board executed monthly meetings for the organization of GTS activities. Currently GTS sponsors include "ATHENS METRO S.A.", TERNA S.A., PPC S.A., INTRAKAT S.A., NAM S.A., SIKA, MAPEI, AKTOR S.A., HILTI, GRECIAN MAGNESITE, ELTERGA, EDAFOS Engineering Consultants S.A, GR8 GEO.

A half-day conference was organized on the 16th-1-2019 titled "Licensing - Monitoring/Surveillance Methods - Experiences from the Operation of the Greek Tunnels Motorways". The lectures were delivered by representatives of the main motorway concessionaires as well as by a representative of EGNATIA ODOS S.A.

Between 6 – 8 November 2019 the Hellenic Conference on Geotechnical Engineering was held which included a special session on tunnelling.

On the 6th of December 2019 the GTS celebrated St Barbara's day with a technical visit to the new Piraeus METRO station. More than 60 members attended the site visit and the lectures for the presentation of the project at the construction site.

Three issues of the electronic magazine of the Greek Tunnelling Society were published. The Young Members Group promoted tunnelling news, research results, new projects etc, both in Greece and abroad via social networks (facebook page).

During 2019 the GTS created a scientific group of national and international tunnelling and underground space experts and submitted on 10-1-2020 a bid to host - for the first time in Greece - the World Tunnel Congress in 2023. The proposed host city for WTC2023 is Athens (<https://athenswtc2023.gr/>)

CURRENT TUNNELLING ACTIVITIES

ATTIKO METRO (Athens METRO)

Since March 2012, the METRO Line 3 extension to Piraeus has been under construction and approaches completion.

The 7.6km long new Metro line 3 will consist of 6 modern Metro Stations. 6.5km of the tunnels were constructed using TBM. The Metro Extension to Piraeus will serve approximately 132,000 passengers on a daily basis. Tunnelling excavation works are complete, and works are currently under way for the construction of the stations.

Thessaloniki METRO

The first Metro Line of the second largest city of Greece, Thessaloniki, is under implementation. The project includes 18 underground stations, ~14.4km of tunnelling and a 50,000m² depot in Pylea area. Approximately 80% of the total tunnels' length were constructed using two EPBMs. The excavation and final lining installation of the twin single-track tunnels has been completed. State of the art construction methods, driverless trains and modern operation systems were specified and implemented. The Project focuses on minimizing the impact on the highly congested streets of the Thessaloniki City Centre and on providing safe transportation services to the densely populated urban areas. The Metro line alignment was designed at significant depths in order to minimize the possibility of interventions with

archaeological findings which were expected to be encountered within the historical centre of Thessaloniki.

Central Athens railway Station – Three bridges area.

The €66M project, assigned to INTRAKAT – SIDIRODROMIKA ERGA JV, involves the construction of a 2.36km long four-track rail corridor, 60% of which will be fully underground.

Xanthi – Echinus – Greek/Bulgarian borders road axis (Vertical axis 70 of Egnatia Highway)

The construction of two tunnels, approximately 120m long, along the new highway connecting Xanthi – Sminthi – Echinus - Greek-Bulgarian borders is near completion in the area of the Dimario-Greek/Boulgarian borders, while two others (475m and 170m) will be constructed to mitigate severe landslide areas.

Athens – Patras railway: Psathopyrgos – Patras (Bozaitika area) section

The project involves the construction of the new 10.5km double-track railway line. It includes works Installation of the track bed of the new railway line, approx. 10.5km long, as well as construction of structures, the most important of which are 2 Cover & Cuts, one in Ag. Vassileios area, 625.97m long, and one in Rio area, 392.20m long; 9 Railway Bridges and approx. 33 Overpasses of the intersecting road network, and 3 Road Bridges for the side road network

Athens – Patras railway: Rododafni – Psathopirgos section

The project involves the construction of the infrastructure for the new double



railway line, 21.5km long, between ch. 91+500 to ch.113+000. It includes the Panagopoula twin tunnels (each approximately 4.800m long).

Central Greece Motorway (E65) – Lamia – Xyniada Section

The project concerns the construction of the south section of the Central Greece Motorway. It includes a twin tunnel with a total length of approximately 3km.

Halkidiki mining project

The north-eastern side of Halkidiki, in northern Greece, has a long history of mining activity. Currently three exploitation areas exist namely Olympiada, Skouries and Straton. The overall development of Kassandra mines is considered as a mega-project with numerous challenging civil works (surface and underground) and earthworks. In underground infrastructure, the most notable works completed or currently under construction include the Kokkinolakkas stream diversion tunnel, 1,140m long, the Olympias main access tunnel, ~9km long, the Skouries spiral decline, ~5.5km long and the Skouries access shaft, ~700m deep.

FUTURE TUNNELLING ACTIVITIES New Athens Metro Line 4 - Section A "ALSOS VEIKOY – GOUDI"

The €1.6bn budgeted Design and Built Contract concerns a new Metro Line in the city of Athens. The 13km long, fully automated new METRO line 4, will consist of 15 stations. The project includes tunnelling works, underground stations, station fit-out, mechanical and electrical systems, rail Infrastructure and rail systems.

The U-shaped Line 4 consists of two radial branches to Galatsi and Maroussi municipalities, as well as of one central section that runs through Athens City Centre. Tender award of the first phase of Line 4 is currently ongoing (from Alsos Veikou to Goudi). The scope of the project is to cover the foreseen ridership of 8,000 passengers at peak hours in the section with the highest passenger load per direction in 2030, as well as the ridership of 13,000 passengers/peak hour/direction in the longer run.

Underwater road link connecting Salamina - Perama in Attica region – Estimated cost ~ €400M.

A competitive dialogue process is underway between the preferred three interested parties. The project concerns



the design, construction, financing, operation, maintenance and exploitation of an approximately 15km long highway which includes a 1.2km long immersed tunnel and three tunnels with a total length of 2km.

Northern Road Axis of Crete island (NRAC)

A concession project concerning the design, construction, financing, operation, maintenance and exploitation of an approximately 200km long motorway which includes a significant number of tunnels (total length ~ 30km single tube). The project is split in 2 separate competitions: i) a concession agreement for the section between Chania and Hersonissos, and ii) a PPP project for the Hersonissos-Neapolis section. The cost has been estimated at around €1.1bn for the concession project and €359.6M for the PPP project. The tendering process involves a Competitive Dialogue. Currently the Contracting Authority (the Ministry of Infrastructure and Transport) is examining the technical skills of the interested parties.

Immersed road tunnel connecting Lefkada island – Aetoloakarnania region

A project which is currently in the planning stage and concerns the design, construction, financing, operation, maintenance and exploitation of an approximately 4km long high-way that

will connect Lefkada island of the Ionian Sea with the Greek mainland. It will include a 0.8km long immersed tunnel as well as 0.5km long entrance and exit, partially Cut & Cover, works are in an environmentally sensitive and seismic active area.

Motorway Tunnels along the new Elefsina – Thiva – Yliki Road Section

The new motorway, which is currently in the planning stage, includes the construction of three (3) new tunnels with a total length of 5km.

Urban tunnels in the Metropolitan area of Athens

The implementation of the Athens Metropolitan area Master Plan requires some new road tunnels, which include: i) The 3km long Ilioupolis urban tunnel ii) The 2km long motorway tunnel that will connect Attiki Odos (highway) and Rafina port and iii) The 2.2km long double tube Kimis Urban tunnel that will connect Attiki Odos (highway) with Athens – Thessaloniki highway.

STATISTICS

- 1. Length or volume excavated - % mechanized/% conventional during 2019**
0%
- 2. Amount (USD or EUR) of tunnelling/ underground space facilities awarded in 2018**
No available data
- 3. List of tunnels under construction**
Athens METRO extension to Piraeus, Thessaloniki METRO, Othris mountain twin tunnels (E65 motorway), tunnels along the Dimario-Greek/Bulgarian borders road section, tunnels along the Rododafni - Patra (Bozaitika area) new railway section and some other hydraulic and railway tunnels in the Attika region.

EDUCATION ON TUNNELLING IN THE COUNTRY

National Technical university of Athens

Postgraduate Course
Design and Construction of Underground Works
Schools: Mining and Metallurgical Engineering Civil Engineering (more info: <http://tunnelling.ntua.gr/>)