

Korea (South)



Name: Korean Tunnelling and Underground Space Association

Type of Structure: Non profit open association

Number of Members: 3357 members, 74 corporate members

ASSOCIATION ACTIVITIES DURING 2022 AND TO DATE

Established in 1992 as a non-profit incorporated association, KTA is the tunnel-oriented national organization to comply with the international aims of ITA. Most of the KTA members are tunnel engineers, but not limited to the civil engineering field and recent expansion into the field of fire, disaster prevention and ventilation within tunnels, among others, are noteworthy.

KTA held a president election on March 23rd, 2022. Dr. Nag Young Kim was inaugurated as a 15th President until April 2024.

In addition, KTA hosted several domestic conferences and forums. The short list is as follows:

- 2022 KTA General Assembly and Annual Spring Conference, 2022.04.14, Seoul (290 domestic participants)
- 2022 KTA Tunnel Construction Policy Forum & Seminar on Underground Safety, 2022.11.09, Seoul (130 domestic participants)
- The KTA Short Course on tunnelling with Tunnel Boring Machines, 2022.02.22-02.24, Seoul (58 domestic participants)

STATISTICS

1. List of tunnels completed

Boryung-Taeon Subsea Road Tunnel
Daegok-Sosa Railway Tunnel
Yulchon Thermoelectric Power Plant Tunnel

2. List of tunnels under construction

Kimpo-Paju 2nd Seoul Outer-ring-road Project
GTX A (Ilsan - Dongtan) Project
GTX B (Songdo - Cheongnyangni) Project
GTX C (Uiyeongbu - Geumjeong) Project
Pyeongtaek-Osong four-tracked railway Project
Gangneung-Jejin single-tracked railway Project
Gimcheon-Geoje single-tracked railway Project
ChunCheon-SokCho single-tracked railway Project

- Tunnel Face Mapping Short Course on NATM tunnelling for Korea National Railway, 2022.08.29-08.31, Seoul (310 domestic participants)
- The KTA 30th Anniversary Ceremony, 2022.11.25, Seoul (180 domestic participants)

KTA hosted 12 education and training courses during the last year

- See 'Education on Tunnelling in the Country'

There are a total of 18 Working Groups in KTA

- KTA-Annual WG Activity Reports: 18 WG activity reports, 7 WG technical reports

Publications

- 30th Anniversary KTA History White Paper
- 2021~2022 KTA Continuing Education and

Training Course Book

- Domestic technical journal "Journal of Korean Tunnelling and Underground Space Association" (6 issues with 46 papers in 2022)
- Quarterly magazine "Nature, Tunnel and Underground Space"

CURRENT TUNNELLING ACTIVITIES

Daegok-Sosa railway tunnel construction

- TBM + NATM hybrid construction
- Dia. 8.1m twin shield TBM tunnel crossing the Han River
- Total length of 18.36km (2.85km in the Han River)

Kimpo-Paju 2nd Seoul outer-ring-road project (passing the Han River section)

- Connecting the 2nd Seoul outer-ring-road
- Total length of 25.3km (Han River section is 4km)
- Project cost will be about \$1.3bn

FUTURE TUNNELLING ACTIVITIES

Youngdong Main Street Underground underground complex development project

- Mega-underground space in Seoul Metropolitan
- Total underground space of 0.41Mm²
- Project cost will be about \$1.5bn

EDUCATION ON TUNNELLING IN THE COUNTRY

KTA Continuing Education and Training Course

2022.06.09, Seoul: The optimal TBM equipment and main design consideration for utility tunnel in the composite ground conditions - Air Lock operating technology and safety measures in the utility tunnel - TBM disc cutter monitoring technology in utility tunnel

2022.06.28, Seoul: Strategies for the underground complex development

2022.07.08, Seoul: Steel materials for construction in KS standards

2022.08.19, Seoul: Revisions of Korean design standards and Korean construction specifications related with Tunnelling Works

2022.09.01, Seoul: Latest technology trends in excavation and supports in NATM - Improvement of large diameter vertical shaft construction method - Connection of pipe umbrella support

2022.09.15, Pusan: Development of underground buried exploration technology using non-destructive exploration technique (GPR, electric field interpretation)

2022.09.30, Sejong: Development of road tunnel disaster prevention and ventilation facility installation and management guidelines

2022.10.07, Seoul: Overseas rock bolt technology/market trend - Technical innovation, performance evaluation, green technology certification case history for tunnel support materials

2022.10.12, Seoul: Smart construction on supply chain, processes and logistics : Ground settlement prediction during TBM excavation using the Two Phases LSTM model

2022.10.21, Seoul: Technical changes in the shield tunnel and excavation technology (focused on branch shields) : Disk cutter wear measurement technology to secure the safety of power equipment operators

2022.10.28, Seoul: Field trip to the Kimpo-Paju 2nd Seoul outer-ring-road project

2022.12.09, Chuncheon: TBM R&D status - Latest technologies related with TBM - Large-sized TBM preparation before launching

Honam-Jeju subsea tunnel project

- Connecting the Korean Peninsula and Jeju Island
- Total length of 167km (undersea section of 73km)
- Project cost will be about \$15bn

Youngjong Island 3rd connection way project

- Connecting Incheon hub airport and the Seoul metropolitan area
- The 3rd connection after two long-span marine bridges

Gangneung-Jejin single line railway construction project

- Railway along the east coast of Korea

- Total length of 111.7km (Undersea section of 50.9km)
- Project cost will be about \$2.5bn

Great Train eXpress higher-speed commuter rail network Project

- In the densely-populated Seoul capital region
- GTX-A 83.1km with 11 stations, GTX-B, GTX-C, GTX-D will be continued.
- Speeds of up to 180km/h in tunnels built 40m below ground, bypassing existing infrastructure, and reducing commute times significantly
- Project cost will be about \$61bn