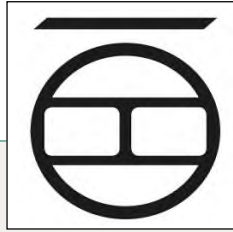


Denmark



Name: Danish Society for Tunnels and Underground Works

Type of structure: Non-profit, open association, NGO

Number of members: 35 corporate members, 230 individual participants

ASSOCIATION ACTIVITIES DURING 2017 AND TO DATE

In 2017 the Danish Society for Tunnels and Underground Works worked actively to promote the use and awareness of tunnelling and underground construction both towards the industry and society as a whole. This has included participation in the ITA Committees and Working Groups on the international level and on the national and regional scene including arranging events and member meetings. In September 2017 the Danish Society for Tunnels and Underground Works arranged a trip to Gothenburg, Sweden to visit the many ongoing infrastructure project in our neighbouring country at the moment.

The Danish Tunnelling Society's Young Members group promoted 2 presentations and technical visits to construction sites. Furthermore they co-arranged and participated with more than 10 young members in the 1st ITA Young Members Regional Event in the Hagerbach Galleries in Switzerland.

CURRENT TUNNELLING ACTIVITIES

Tunnelling and underground space activities in Denmark during the past five years include tunnels for road, rails, metros, utilities and for storm water and flood control. The following is a selection of major projects:

- Copenhagen Metro Cityring; 30km TBM bored tunnels and 17 underground stations.
- Copenhagen Metro Extension to the Northern Harbour; 4km bored tunnels and 2 stations
- Copenhagen Nordhavnsvej Road Tunnel; 1km of Cut & Cover tunnel below an existing railway.
- Damhusåen Reservoir Tunnels, 2 x 3km of pipe jacked tunnels

FUTURE TUNNELLING ACTIVITIES

Expected projects in the coming 5 years

The tunnelling activities in the coming years will increase with many new projects on the horizon. Some of the major projects that will



start construction within the next 5 years are:

- **The Fehmarn Belt Fixed Link** – an 18km immersed tunnel for road and rail connecting Denmark and Germany. The works have been contracted. Actual start of work is awaiting Authority approval in Germany. The tunnel will by far be the world's longest immersed tube.
- **Copenhagen Metro Extension Southern Harbour** – The Copenhagen Circle metro, which is due to open its 17 underground station for operation in 2019, will be extended by 8km of TBM tunnels and 5 underground stations to include the southern harbour residential area into the network of the Copenhagen metro. The Civil works contract was awarded in February 2018 and construction will start later in 2018.
- **Road tunnel below the Northern Harbour in Copenhagen** – 1.5km of immersed or cut & cover tunnel under the

northern harbour of Copenhagen is in the planning process. It will contain 2x2 road lanes and be a continuation of the Nordhavnsvej tunnel opened for traffic in December 2017.

- **Storm water tunnels** – several projects with > 15km of TBM tunnels for flood control due to heavy rain. The Svanemøllen stormwater project in Copenhagen consist of 8km of tunnels with internal diameter of up 4.3m and 9 shafts with diameters up to 25m and 30m depths. A number of other storm water control projects is expected also to start within the next 5 years.

Expected projects in coming 5 - 10 years

The following projects are in the feasibility and planning phases with an expected start within the next 5-10 years:

- Copenhagen Eastern Ring Road including 12km twin tunnels
- Metro tunnels and stations in Copenhagen, > 15km tunnels with underground stations

- Metro tunnel to Malmö, Sweden - 20km twin tunnels
- Flood control tunnels
- Railway Subsea Tunnel at Vejle

STATISTICS

1. Length or volume excavated - % mechanized/% conventional during 2017: Not released
2. Amount (USD or EUR) of tunnelling/ underground space facilities awarded in 2017: Not released
3. List of tunnels completed:
 - Copenhagen Metro Circle line (2x15km TBM Tunnel)
 - Copenhagen Metro Extension to Northern Harbour (2x 2km TBM tunnel)
 - Damhusåen Reservoir Tunnels (2 x 3km pipe jacking)
4. List of tunnels under construction: Above