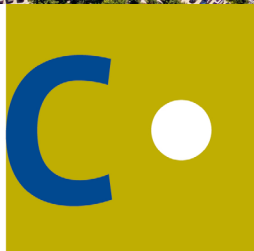




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Tunnel Engineering Consultants



*“TEC is the international specialist
in immersed tunnelling”*



Tunnel Engineering Consultants (TEC) is specialised in soft ground tunnelling and a world leading expert in immersed tunnel design, engineering and consultancy. Since 1988, TEC has delivered solutions to the world's most challenging and innovative tunnelling projects.

About TEC

TEC is a permanent joint venture between the leading international engineering consultants Royal HaskoningDHV and Witteveen+Bos. The permanent partnership guarantees continuity and comprehensive and specialised knowledge and expertise about tunnel design and construction. This enables TEC to solve complicated underground mobility challenges through an integral, innovative and sustainable project approach.

TEC's track record extends to over 30 years and includes involvement in major projects such as the Øresund Link between Denmark and Sweden, the Busan Geoje Link in South Korea, the North/South Metro Line in Amsterdam, the Hong Kong - Zhuhai - Macao Fixed Link in China, the Fehmarnbelt Link between Denmark and Germany, the Sharq Crossing in Qatar and the Oosterweel Link in Antwerp.

Expertise

With such a strong partnership TEC draws on the expertise of both Royal HaskoningDHV and Witteveen+Bos to provide a wide range of engineering skills required for small and large infrastructural underground projects. This means all relevant technical knowledge for design, construction, operation and management of tunnels for road and rail traffic and for utilities is combined in a single organisation, allowing an integrated approach to project implementation.

TEC uses specialist knowledge of tunnel design and construction to solve complicated underground mobility challenges. TEC provides key expertise in the field of:

- Civil Design
 - Immersed tunnels
 - Bored tunnels
 - Cut&Cover tunnels
 - Special tunnel techniques
 - Artificial islands and land reclamations
 - Submerged floating tunnels
- Mechanical and Electrical Design
 - Technical systems
 - Safety
- Operation, management and maintenance
- Refurbishment and renovation
- Condition assessment (structural health)

Added value

TEC is specialist in soft ground tunnelling. For 30 years TEC was involved in numerous immersed tunnel projects, including major sea crossings, and has fulfilled roles from client consultant to detailed design engineer for a contractor. These roles are essential for covering all individual project phases and enables TEC to remain the preferred consultant and engineer for every customer. Through

involvement in a broad variety of challenging tunnel projects, TEC has gained the knowledge and experience to select the best tunnel option for your project, adding value to every underground project TEC undertakes. Ongoing involvement in major tunnel projects guarantees TEC's prominent position in international tunnelling.

Services

Providing expertise at all stages of tunnel projects – from conception and initiation, to design, delivery and operation, TEC uses integral, innovative and sustainable approach to deliver a multidisciplinary range of consultancy services.

These include:

- Feasibility studies
- All design stages from conceptual to detailed design
- Design reviews and independent design checks
- Tender documentation and tender evaluation
- Project and contract management
- Construction supervision and monitoring
- Cost engineering
- Risk management and value engineering
- Safety analyses and QRA and scenario analyses
- Operation and maintenance strategies
- Refurbishment and renovation



*“Involvement in all major
immersed sea crossings”*

Key Projects

- Busan Geoje, South Korea
- North/South Metro Line Amsterdam, Amsterdam
- Hong Kong Zhuhai Macau Link, China
- Söderström tunnel, Stockholm, Sweden
- Tuen Mun Chep Lap Kok Road Tunnel, Hong Kong
- Fehmarnbelt Fixed Link, Denmark
- Sluiskiltunnel, The Netherlands
- Sharq Crossing, Doha, Qatar
- Santos-Guaruá Crossing, São Paulo State, Brazil
- Red Line Metro, Tel Aviv, Israel
- Marieholm tunnel, Gothenburg, Sweden
- Oosterweel Link, Antwerp, Belgium
- Renovation 1st Heinenoordtunnel, Rotterdam
- Blankenburg Link, Rotterdam
- Amsterdam Tunnel Renovation Program, Amsterdam
- Submerged Floating Tunnel Research Program, China



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Contact & information:

Laan 1914 no 35
3818 EX Amersfoort
P.O. box 28013
3828 ZG Amersfoort
The Netherlands
+31 (0)88 348 2540
info@TEC-tunnel.com
www.TEC-tunnel.com



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