

26, 28 y 30  
Septiembre  
2022

## Túneles convencionales y mecanizados en suelo y roca

Tres días de sesiones de entrenamiento en línea

*Conventional & Mechanized tunneling in soil and rock*

*Online three day training sessions*



Fotografía: Soletanche Bachy / Cedric Helsly

El objetivo de esta sesión formativa es presentar los métodos constructivos y sus campos de aplicación en la excavación de túneles en suelo y roca. Los criterios principales para seleccionar un método se presentarán e ilustrarán a través de estudios de casos. El curso destacará las mejoras recientes que conducen a una expansión de estos campos de aplicación.

*The objective of this training session is to present the construction methods and their fields of application in soil and rock tunnelling.*

*The main criteria to select a method will be presented and illustrated through cases studies. The course will highlight the recent improvements leading to an expansion of these fields of application.*

### Inscripciones • *Inscriptions*

|  | Cuotas<br>(\$ MXN (+IVA)) | Fees<br>(\$ USD (+tax)) |
|--|---------------------------|-------------------------|
| No socio   <i>Non-member</i>   | <b>\$2,850</b>            | <b>\$142</b>            |
| Socio*   <i>Member*</i>  | <b>\$1,850</b>            | <b>\$92</b>             |
| Estudiantes internacionales, además de GIJ AMITOS y Capítulos Estudiantiles SMIG   <i>Students</i> | <b>\$500</b>              | <b>\$25</b>             |

\* Asociados de AMITOS, SMIG, ITA, ISSMGE y de asociaciones internacionales con quienes se tienen convenios de cooperación.

\* *Members of AMITOS, SMIG, ITA, ISSMGE and international associations with whom AMITOS and SMIG have cooperation agreements.*

### Patrocinio • *Sponsor*

**\$11,000.00 MXN** (+IVA)

**\$550 USD** (+tax)

• 3 inscripciones | *3 registrations*

• Logo en los boletines digitales del Simposio  
*Logo in the digital newsletters of the Symposium*

• Video de menos de 3min para presentarlo en los descansos, coffee break, durante los 3 días del evento  
*Video of less than 3 min to present it in the breaks, coffee break, during the 3 days of the event*

## Programa técnico • Technical schedule

The objective of this training session is to present the construction methods and their fields of application in soil and rock tunnelling. The main criteria to select a method will be presented and illustrated through cases studies.

The course will highlight the recent improvements leading to an expansion of these fields of application.

### 26<sup>th</sup> September | Day 1

#### Opening and session 1: 8.45-13:00 CDT time (15:45-20:00 CEST time)

|               |   |
|---------------|---|
| 08:45 - 09:00 | Opening of the training event   |
| 09:00 - 10:45 | Chap 1: General overview of the tunnelling methods in soil and rock   |
| 09:00 - 10:30 | General overview of the different excavation techniques and main criteria for choice (Félix Amberg)   |
| <b>P1</b>     | <ul style="list-style-type: none"><li>• Key geotechnical parameters (soil/rock distinction, in-place stress/shear strength ratio, etc.)</li><li>• Key geometric parameters (length, cross-section, etc.)</li><li>• Environmental parameters (neighbouring construction, available surface...)</li></ul> |
| 10:30 - 10:45 | Questions & Answers   |
| 10:45 - 11:15 | Coffee Break  |
| 11:15 - 13:00 | Chap 2: Conventional tunnelling – part 1  |
| 11:15 - 12:00 | Description of the "conventional" method tunnel in soil and rock (Nicolas Berthoz)  |
| <b>P2</b>     | <ul style="list-style-type: none"><li>• Tunnel excavation (Drill&amp;blast, BRH, road header...)</li><li>• Support (Bolts, arch steels, shotcrete,...)</li><li>• Selection criteria and illustration through examples</li></ul>   |
| 12:00 - 12:45 | Specific techniques in shallow tunnels in soft ground (Eivind Grov)   |
| <b>P3</b>     | <ul style="list-style-type: none"><li>• Umbrella vault</li><li>• Face bolts</li><li>• Ground treatments</li><li>• Freezing</li><li>• Selection criteria and illustration with examples</li></ul>  |
| 12:45 - 13:00 | Questions & Answers   |

### 28<sup>th</sup> September | Day 2:

#### Session 2: 9h00-13h00 CDT time (16:00- 20:00 CEST time)

|               |   |
|---------------|---|
| 09:00 -10:45  | Chap 3: Conventional tunnelling – Part 2  |
| 9:00 - 10:30  | Special techniques in deep tunnels in rock (Gerard Seingre)   |
| P4            | <ul style="list-style-type: none"><li>• Sliding arches,</li><li>• Divided section tunneling,</li><li>• Ground treatments,</li><li>• Treatment of high hydrostatic pressures,</li><li>• Selection criteria and illustration using examples</li><li>• Intersections between galleries, Interfaces with stations</li><li>• Specific excavation / support techniques,</li><li>• Phasing of works,</li><li>• Selection criteria and examples</li></ul> |
| 10:30 - 10:45 | Questions & Answers   |
| 10:45 - 11:15 | Coffee Break  |
| 11:15 - 13:00 | Chap 4: Mechanized tunnelling Part 1  |
| 11:15 - 12:45 | Different types of pressurized TBM for tunnelling in soft grounds (Magali Schivre)  |
| P5            | <ul style="list-style-type: none"><li>• EPBS</li><li>• Slurry</li><li>• Multi-mode / variable density TBMs,</li><li>• Selection criteria and illustration with examples</li></ul>   |
| 12:45 - 13:00 | Questions & Answers   |

### 30<sup>th</sup> September | Day 3:

#### Session 3: 9h00-13h00 CDT time (16:00- 20:00 CEST time)

|               |   |
|---------------|---|
| 09:00 -10:45  | Chap 5: Mechanized tunnelling – Part 2  |
| 9:00 - 10:30  | Different types of tunnel boring machines for rocks (Robert Galler)   |
| P6            | <ul style="list-style-type: none"><li>• Single shield open tunnel boring machine,</li><li>• Double shield open tunnel boring machine,</li><li>• Hard rocks TBM,</li><li>• Selection criteria and illustration with examples</li></ul> |
| 10:30 - 10:45 | Questions & Answers   |
| 10:45 - 11:15 | Coffee Break  |
| 11:15 - 13:00 | Chap 6: Cross-cutting topics  |
| 11:15 - 12:00 | Worksite organization and logistics for the excavated material (Francois Renault de Vinci)  |
| 12:00 - 12:45 | Health & Safety requirements in both methods (Donald Lamont)  |
| P8            |   |
| 12:45 - 13:00 | Questions & Answers   |
| 13:00         | Conclusion and closure  |

## Temas • Topics

- General overview of the tunnelling methods in soil and rock
- Conventional tunnelling
- Mechanized tunnelling
- Cross-cutting topics
- Conclusion and closure

Inscripciones  
Inscriptions



<https://www.itacet.org/session/conventional-and-mechanized-tunnelling-soil-and-rock-0>  
Más información • more information: [amitos@amitos.org](mailto:amitos@amitos.org)



La Plataforma será Zoom y el idioma será inglés con traducción simultánea inglés-español-inglés.  
The platform will be Zoom and the language will be English with simultaneous English-Spanish-English translation.

