10.30-11.00  Opening of the Exhibition & Coffee Break

Lunch

Coffee Break

15.00-15.20  Designing a sustainable railway infrastructure: Envision protocol and the carbon footprint
M. Antonas

15.20-15.40  Special design considerations for undergrounding systems of existing structures due to tunnelling
Y.C. Tan, W.S. Teh & C.Y. Sue

15.40-16.00  Tunnel excavation material - waste or valuable mineral resource? European research results on resource efficient tunneling
A. Gallet

16.00-16.20  Management of the muck produced by EPB TBM tunnel excavation: Tunnel excavation material - waste or valuable mineral resource? European research results on resource efficient tunneling
G. Dal Negro, A. Boscaro, A. Picchio & E. Barbero

16.20-16.40  Effects of spoil management on landscape
M. Filippone & G. Mininni

16.40-17.00  Environmental risk assessment of conditioned soil: some Italian case studies
S. Padalou, F. Maronli, A. Scioti, D.F. Putzu, M. Poligone & G. Mininni

17.00-17.20  Online identification of the excavation materials on the Saint Martin La Porte site
A. Barroli & G. Baldi

17.20-17.40  Influence of the fibreglass reinforcement stiffness on the mechanical response of deep tunnel fronts in cohesive soils under undrained conditions
C. di Prisco, L. Flessati, G. Cassani & R. Pelo

18.00-18.20  Testing of an Enertun segment prototype in Turin metro line 1
J.A. Zoppo

18.20-18.40  The Naples Line 5 underground metro system works: from the feasibility study to the construction
G. Carbone & G. Molisso & S. Riccio

18.40-19.00  Stockholm bypass: environmental sustainability in the excavation of the Lovön rock tunnels (L. Mancini & S. Pacifici)

19.00-19.20  Ground freezing and excavation of the Museum Island metro station under a river in central Berlin - challenges and experiences
J. Classon, P. Hopper & J. Seegers

19.20-19.40  Designing and tunnel adits
J.A. Sopko

19.40-20.00  Tunnel Boring Machine selection and safety standards for excavating in presence of methane
N. Meistro, F. Poma, U. Russo, F. Ruggiero & C. D'Auria

20.00-20.20  Pavoncelli Bis water tunnel: Tunnel Boring Machine selection and safety standards for excavating in presence of methane
Y. Sawamura, K. Konishi, K. Kishida & M. Kimura

20.20-20.40  Design of ground freezing for cross passages and tunnel adits
M. Secondulfo & F. Cichello

20.40-21.00  Design of ground freezing for cross passages and tunnel adits
N. Oshima & M. Watanabe

21.00-21.20  Designing a sustainable railway infrastructure: Envision protocol and the carbon footprint
M. Antonas
## Conference Program

### Long and Deep Tunnels

**Trans Alpine Tunnels**
- A. Pirzini (Italy), G. Seoliger (Switzerland)
- M. Pecora (Italy), J. Pacciotto (Brazil)
- M. Neuenschwander (Switzerland), R. Zurlo (Italy)
- M. van Gils (Netherlands), M. Pescara (Italy)
- A.R. Fava, M. Di Chiara, P. Falivene (Italy)
- A. di Luccio, M. Mele, G. Molisso (Italy)
- M. Concilia (Italy)

### Innovation in Underground Engineering, Materials and Equipment

**Innovation in Mechanized Tunnels**
- P. Fanti (Italy), M. Mitev-Czajkowska (Poland)
- R. De Cesare (Italy), L. Castaner (Italy)
- E. Pretell (France), L. Carratone (Italy)
- P. Grasso (Italy), W. Burger (Germany)
- E. Pinitto (France), L. Carratone (Italy)
- M. Neuenschwander (Switzerland), R. Zurlo (Italy)

### Risk Management, Contracts and Financial Aspects

**New FIDIC-ITA Contract**
- Risk allocation in the FIDIC Forms of Contract, and the Emerald Book’s place in the Rainbow Suite
- Contractual Time for Completion Adjustment in the FIDIC Emerald Book
- The role of the Engineer in the Emerald Book

### Safety in Underground Construction

**Operational Safety of Underground Transportation Facilities**
- Ventilation in road tunnels
- Ventilation in railway tunnels
- Safety in the Italian railway tunnels

### Urban Tunnels Design and Monitoring

**Mechanized Tunnelling**
- Soft ground tunnelling below a mixed foundation building
- Tunnel North Boundary Tunnel: Applied Lessons learned from the Anacostia River Tunnel Project
- TBM Selection for tunneling beneath urbanized areas at shallow depth
- The challenges of tunneling beneath urbanized areas at shallow depth

### Panel Discussion

**On Tunnels as Resilient Link Between Past and Future**
- Key Note Lecture: How to Refurbish a Tunnel: Shop Open or Closed?
- Panel Discussion: Monitoring excavation-related ground deformation in London, UK using SqueaSFM™
- Invited Lecture: Tunnel damage management system: an application for Italian railways tunnels
- Invited Lecture: Tunnel costs related to the quality of the rock mass

### Coffee Break

### Lunch

### Sessions

**Long and Deep Tunnels**
- Numerical back-analysis of the Feluyos road tunnel and its safety gallery
- Brenner Base Tunnel - Interaction between underground structures, complex challenges and strategies
- The Montebello tunnel: how to turn project environmental constraints into opportunities
- Brenner Base Tunnel, Italian Side: construction methods for a railway 22 km long tunnel

**Innovation in Underground Engineering, Materials and Equipment**
- Rietveld reconstruction using innovative solutions
- Tunnel widening and renewal using precast lining: the Swiss-Romanian railway construction method applied to tunnel Mital
- Tunnels damage management system: an application for Italian railways tunnels

**Risk Management, Contracts and Financial Aspects**
- Risk allocation in the FIDIC Forms of Contract, and the Emerald Book’s place in the Rainbow Suite
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**Safety in Underground Construction**
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**Coffee Break**

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**AAA & ITACUS Session**

**Palazzo Serra di Cassano**

**Palazzo Serra di Cassano Conference Program**

### May 7

**Key Note Lecture**
- Art and Public Transportation: A Continuing Journey in the Development of the Yellow Metro Line in Stockholm
- The outlet of the Albano and Fucine lakes and their influence from Roman times up to the birth of modern tunnel engineering

### Coffee Break

### BOURBON TUNNEL VISIT

Travel from Palazzo Serra di Cassano to Meeting points
**May 8**

### Long and Deep Tunnels

#### Conventional Tunnelling

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.30-10.30</td>
<td>Tunnelling of Angat Water Transmission Improvement Project (Philippines)</td>
</tr>
<tr>
<td>10.30-11.30</td>
<td>Soil abrasion and penetration test for the excavation of the Rome Metro C line</td>
</tr>
</tbody>
</table>

#### Mechanized Tunnelling

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>11.00-12.00</td>
<td>Soil improvement in tunnel face using foam reagents in EPB TBM</td>
</tr>
<tr>
<td>12.00-12.40</td>
<td>Challenges mixed face tunneling at India’s Sgrimahara Caterpillar Tunnel</td>
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</tbody>
</table>

#### Difficult Ground and Untrapped TBMs

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>11.00-12.00</td>
<td>Problems associated with an EPB-TBM in a complex geology with serpentinites and porphyrites in Turkey</td>
</tr>
<tr>
<td>12.00-12.40</td>
<td>Poissons Aditi - Getting unseal on EPB-TBM in squeezing rock</td>
</tr>
</tbody>
</table>

### Innovation in Underground Engineering, Materials and Equipment

#### Soil conditioning for EPB Tunnelling and Backfilling

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>09.00-10.00</td>
<td>Soil conditioning in mechanized tunneling with hard-rock TBM Example of the Saint-Martin-La-Porte TBM job-site on Lyon-Turin E. Del Negro, A. Roccaro, A. Pecchia, E. Martini, C. Arcangeli &amp; G. Combi</td>
</tr>
</tbody>
</table>

#### Geo-mechanical behaviour and monitoring in the Ceneri Base Tunnel

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>11.00-12.00</td>
<td>The management of the soil conditioning process and the evolution of the rock mass M. Pedemonte &amp; E. M. Pizzarotti</td>
</tr>
</tbody>
</table>

### Geological and Geotechnical Knowledge and Requirements for Project Implementation

#### General aspects

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.30-10.30</td>
<td>Soil abrasion and penetration test for the excavation of soft ground TBM's: excavation performance and cutter life D. Xu, H. Kang, F.J. Shih, J.H. Yu &amp; E. Ferrari</td>
</tr>
</tbody>
</table>

### Archaeology, Architecture and Art in Underground Construction

#### Palazzo Serra di Cassano

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</thead>
<tbody>
<tr>
<td>11.00-12.00</td>
<td>Tunnelling warfare in World War II: The underground battlefields of Vimy Ridge, France M. Di Stefano &amp; O. Ruchíno</td>
</tr>
</tbody>
</table>

### Key Note Lecture

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<tbody>
<tr>
<td>10.00-10.30</td>
<td>Key Note Lecture: Historical cross-alpine tunnels of Piemonte: from craftsmanship to industrialisation S. Pelizza</td>
</tr>
</tbody>
</table>

### Off-Site Session and Bourbon Tunnel Visit

#### Palazzo Serra di Cassano

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>10.30-10.50</td>
<td>The Art Stations F. Bresci</td>
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#### Bourbon Tunnel Visit

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>12.40-13.10</td>
<td>Travel from Palazzo Serra di Cassano to Mostra d’Oltremare</td>
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**NOTE:** The dates mentioned are placeholders and may differ from the actual schedule. Please check the official program for the most accurate information.
MAY 8

**PALACONGRESSI**

<table>
<thead>
<tr>
<th>EUROPA</th>
<th>ISCHIA</th>
<th>BOLOGNESE</th>
<th>ITACUS</th>
<th>EGAUK</th>
<th>STRATEGIC USE OF UNDERGROUND SPACE FOR RESILIENT CITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LONG AND DEEP TUNNELS</td>
<td>INNOVATION IN UNDERGROUND ENGINEERING, MATERIALS AND EQUIPMENT</td>
<td>ENGINEERING AND MATERIALS</td>
<td>INNOVATION IN UNDERGROUND ENGINEERING, MATERIALS AND EQUIPMENT &amp; SEGMENT LININGS &amp; SHOTCRETE</td>
<td>TEATRO MEDITERRANEO</td>
<td></td>
</tr>
<tr>
<td>A. Nicola (Italy), A. Elioff (USA)</td>
<td>P. Maczulak (Italy), J. Karlvosk (Australia)</td>
<td>S. Aversa (Italy), M. Bielemski (Russia)</td>
<td>A. Meda (Italy), K.G. Holter (Norway)</td>
<td>A. Cernario (Switzerland), D. Boldschi (Italy)</td>
<td></td>
</tr>
</tbody>
</table>

14.00-14.20
- Back-calculations model for instantaneous TBM cutter wear
  H.J. Fonnestad, A. Brinard, P. O. Jacobsen & F.U. Maccar
- BM implementation - Brenner Base Tunnel project
- Loading magnitude for rock tunnel during earthquakes evaluated by dynamic measurement at an actual tunnel
  A. Kusaka, S. Hara & R. Iwao
- Steel fibre reinforced concrete for segmental lining - crack mitigation measures at design phase
  G. Castrogiovanni, G. Busacchi, T. Leiber & G. Marian

14.00-14.40
- Innovative tunnel boring machine (TBM)-driven tunnel: a comparison between numerical results and monitoring data
  D. Merlini, F. Gianelli, G. Como, F. De Salvo, A. Paoli, F. Ricci & E. Calloni
- Design of shaking table tests on atrium-style subway station models under seismic excitations
  Z.M. Zhang, Y. Yuan, E. Bielza, H.Y. Xu & N.H. Zhao
- The design of a segmentally lined tunnel for a large sewer outlet - Lote 3
  E. Pizzico, S. Pelizza & R. Jardas-Pitha & R. Jardas-Pitha

14.20-14.40
- ROM model-based project management for optimizing project development. Insights into the practical application at the "Altenbruck tunnel" project
  M. Fonnestad & J. Utsi
- Geological and geotechnical main design aspects of two tunnels on Fortezza - Verona High Speed Line in Northern Italy
  A. Corta, A. Sieghardt, S. Winnertz & S. Rodzinka
- Durability of Precast Concrete Tunnel Segments
  M. Bajonni & P. Raineri

15.00-15.20
- IntelligentAttitude Control during Shield Tunneling in Soft Soils based on Big Data
  B. J. Wu, M. Hu, W. Xu, P. Dong, X. Bai
- Advanced constitutive modeling for the approach of real short-term performance in tunnels
  P.A. Sánchez & B.G. Sabido

15.20-15.40
- Characteristics of underground rock masses employing structure from motion: Application to a real case
  R. Aral-Jardas-Pitha & R. Jardas-Pitha
- Advanced constitutive modeling for the approach of real short-term performance in tunnels
  P.A. Sánchez & B.G. Sabido

15.40-16.00
- IntelligentAttitude Control during Shield Tunneling in Soft Soils based on Big Data
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- Advanced constitutive modeling for the approach of real short-term performance in tunnels
  P.A. Sánchez & B.G. Sabido

16.00-16.20
- Recent developments towards Autonomous Tunneling and Mining Machinery
  T. Perennou, H. Nauduhn, K. Kargl & J. Kury
- Loading magnitude for rock tunnel during earthquakes estimated by dynamic measurement at an actual tunnel
  A. Kusaka, S. Hara & R. Iwao
- Steel fibre reinforced concrete for segmental lining - crack mitigation measures at design phase
  G. Castrogiovanni, G. Busacchi, T. Leiber & G. Marian

16.20-16.40
- Building Information Modeling in Warsaw metro extension project
  L.J. Szczepaniak, P. Boci & R. Sorge
- The Load-bearing capacity of primary linings, considering time dependent parameters, of the Brenner Base Tunnel
  T. Cordes, K. Bergmeister, A. Dummer, M. Neuner & G. Hofstetter
- Real behavior of shotcrete primary lining in squeezing rock mass: the experience at the Brenner Base Tunnel
  L. Ziller & S. Fuoco

16.40-17.00
- The convergence of all communication and data requirements into a single IP backbone
  D. Kent & D. Edmonds
- Design of shaking table tests on abutment-style subway station models under seismic excitations
  Z.M. Zhang, Y. Yuan, E. Bielza, H.Y. Xu & N.H. Zhao
- The design of a segmentally lined tunnel for a large sewer outlet - Lote 3
  E. Pizzico, S. Pelizza & R. Jardas-Pitha & R. Jardas-Pitha

17.00-17.30
- A new underground laboratory for exploring the deep Universe: the design of a third generation of a Gravitational Waves Observatory
  L. Schiavonni, P. Maczulak, G. Geremia, G. Lunardi, M. Punto, A. Paleti, F. Ricci, E. Calloni, G. Oggiorno & M. Carpinelli
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18.00-20.00
- CLOSING CEREMONY

**ITACUS SPECIAL REPORT II**
- The National Actions Program Think Deep - reported on the national think depth groups
  A. Cernario & A. Adamez
- Resilient City: The case of Bilbao Diversion Tunnel
  E. Lurad, G. Cassani, M. Gatti, B. Spigarelli & A.C. Cezin

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- Sheffield: A project from the Underground Urbanism Forum - Realising the potential of underground space
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**OFF-SITE SESSION AND BOURBON TUNNEL VISIT**
- Travel from Mostra d’Oltremare to the Palazzo Serra di Cassano
- Travel from Palazzo Serra di Cassano to Meeting points

**ARCHAEOLOGY, ARCHITECTURE AND ART IN UNDERGROUND CONSTRUCTION/STRATEGIC USE OF UNDERGROUND SPACE FOR RESILIENT CITIES**

**AAA & ITACUS SESSION**

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