Circular n°3
Updated
September 27, 2011

UNDERGROUND SPACES for tomorrow

FRENCH TUNNELLING AND UNDERGROUND SPACE ASSOCIATION
15, rue de la Fontaine au Roi - 75011 Paris - FRANCE
Building tomorrow’s underground spaces will call for feats of structural creativity that only the allied forces of engineers and architects can achieve. The invited presentations are designed to increase your awareness of new directions and design challenges. The following topics were chosen to address the interest in the societal use of underground spaces:

- The city of the future
- Underground spaces that are pleasant to be in
- The long life of underground works
- Technological developments
- Risks and cost control

A round table discussion will look at sustainable development policy and the role that tunnels and underground spaces can play in building Europe.

In all this, we will be examining our capacity to provide a new slant on urban development and architecture as well as on connections between major European metropolitan areas via a network of corridors that make intelligent use of underground space. We would like to share this and more with:

- The European Union, which is publishing the White Book on major transport corridors;
- Elected officials, who are involved in and a voice for the growing demand for the burial of multimodal stations and service areas;
- Demographers, urban planners and visionaries, architects and engineers, in order to contribute to the discussions on the future of our cities;
- Young engineers (geotechnical and environmental impact of underground works);
- Students, in order to introduce them to our fields and the option of capping their studies with a master’s degree in tunnel engineering;
- The Azerbaijani delegation, which is interested in know-how and good practices for its underground construction projects.

Our association is ‘40 years old already’! It was founded in Lyon to organise a first, one-day conference. So this 13th AFTES Congress is a bit of a milestone.

My thanks go to all of the contributors for their energetic efforts to make the conference a success and to all of our partners and sponsors for their support.

See you in Lyon, the city of light, cinema and good eating!

Alain BALAN
President, AFTES
1 General organisation

The Congress is organised by the Officers of the French Tunnelling and Underground Space Association (AFTES) with assistance from an international Committee chaired by Jacques Burdin with the following membership:

Conference Organising Committee
BAJARD Nicole, Congress Exhibition Manager
BALAN Alain, President AFTES
BRUNET Alain, AFTES Treasurer
DULLIN Xavier, General Director Package Organisation
DYEN Michel, Financial auditor
GRASSO Piergiorgio, Vice-President SIG/STS
GUIILLAUD Maurice, Editor Journal TES
JABY Jean-François, Responsible technical visits
JOLIVET Catherine, Head of advertising
JOUVET Thibaut, Project Manager Package Organisation
KASTNER Richard, Vice-President Education
LABBE Monique, President Underground Space Committee
MERCUSOT Alain, AFTES General Secretary
MERINDOL Sophie, Press Officer
MICHAUD-FALCHEROT Thomas, Congress Center
NARDIN Jacques, Regional relations
OSTIAN Pierre, Animations-Communication Congress
PAREDEL Jean-Luc, SPÉCIFIQUE - AFTES Editor
PHILIPPE Jean, Regional relations
PIRAUD Jean, President Technical Committee
SIOHIER Carole, Secretary
VALIN François, Exhibition relations

Partner Associations represented by their chairperson
Switzerland - FGU/GTS - BOSSHARD Martin
Italy - SIG/STS - ARINI Enrico
Spain - AETOS - ARNAIZ RONDA Manuel
Portugal - CPT - PINTO DA CUNHA António
Belgium - ABTUS-BVOTS - THIMUS Jean-François

AFTES (French Tunnelling and Underground Space Association)
15, rue de la Fontaine au Roi
75011 Paris - FRANCE

The French Tunnelling and Underground Space Association (AFTES), created in 1972, aims at promoting progress in underground engineering technologies including scientific, technical, ecologic, legal, administrative, economic and social aspects with a view to reducing costs and completion times and thus fostering the development of underground applications. The AFTES includes 765 members (620 individual members and 145 collective members).
In 2010, a new evolution is on its way to better guarantee the adequacy to the new ways it operates. AFTES opens up to politicians, becomes more international, upholds French-speaking and confirms its ambitious goals such as its Master’s degree and an active communication strategy.

As of today, 22 working groups, of which 4 are new, are operational (> 300 members). 85 recommendations in French and 40 in English, issued by the Technical Committee, are available. On the website http://www.aftes.asso.fr, 53 recommendations in French and 32 in English can be downloaded free. This Committee holds regular meetings with other associations or committees (geology, rock mechanics, soil mechanics, etc.); it has also been involved in the final publication of the new Official Manual F69 related to underground structures and, recently, on request from the French Civil Works Federation (FNTP), in the Working Group 25 on the new various contractual modes.

On the underground space subject, AFTES aims at setting up some theoretical bases for the underground domain so as to inform the decision-makers, the elected members and all representatives involved in city planning and development of large transportation infrastructures, such as the “Grand Paris Express project”. AFTES has also recently launched a new national research project called “10D-City, City of Ideas” (meaning in French: various sizes for a sustainable and advisable urban development within an up-and-under process).

Regarding the 2011 Congress in Lyon, AFTES, caring about improving technical exchanges between the various actors on the professional stage, Owners, Engineers, Designers, Contractors and Suppliers, will offer some innovations: 2 conference rooms allowing simultaneous presentation of two different topics, a large exhibition hall, an exchange stage in the middle of the exhibition, a specialized seminar, an opening to Regions and an approach to professions.

In 2010, AFTES also opened up to other associations in countries such as Croatia, Romania, Poland, Azerbaijan, Algeria, Russia.

The AFTES diffuse, since the inception of the association, the magazine TES (Tunnels and Underground Space) and also continuously informs the profession via its website www.aftes.asso.fr.

The last point refers to the new location of the AFTES headquarters; in March 2011, AFTES will be at : Maison des Ponts et Chaussées, 15, rue de la Fontaine au Roi – 75011 PARIS. (aftes@aftes.fr).

AETOS (Spanish Tunnelling and Underground Space Association)
Almagro, 42
28010 Madrid - SPAIN

AETOS brings together institutional members (organisations and companies) and regular members, all of whom make up the core of the Association. Membership stands at 301 with 81 institutional members. The objectives of AETOS are as follows:

• Within the Association’s scope of possibilities, promote the study, research and other activities aimed at developing the issue and application of technical and administrative standards related to the design, construction and operation of tunnels and non-mining underground structures and to the study of problems related to legal, informational aspects and to the optimal use of subsoil by the community, especially in urban environments.

• To work in partnership with other organisations similar to AETOS and aiming at the same goals, by liaising with them and with public or private bodies and individuals, in Spain or abroad, for mutual support and the exchange of knowledge and experiences. For example, AETOS is a full member of the International Tunnelling Association (ITA).
ABTUS brings together all circles interested not only in the design, the construction, the use and the management of underground achievements but also in the underground urbanism in its broadest sense, including the ground principles of urban underground life and all disciplines concerning the use of the underground, including the environmental aspects (“underground space”) and the safety (construction and operation).

The number of ABTUS members is 90 of which 50 collective members and 45 individual members. ABTUS organises activities for its members both national and international with sister-associations: studydays, conferences, site visits and congresses. ABTUS is indirectly represented in the Road Tunnels Management Committee of the World Road Association (PIARC), in the multidisplinary group of experts on safety in tunnels of the economic commission for Europe of the United Nations and in the expert group on safety in road tunnels of the European Commission.

The Swiss Tunnelling Society (STS) provides its members – all participants in underground works – the promotion of their common interest in their relationship with Owners, Engineers, Construction managers, Contractors, specialized suppliers and scientific bodies. Thanks to the non-stop support of STS, the experience acquired by tunnelling specialists will ensure the best help for future challenges, including the international ones. STS deals with all subjects related to underground works (geology, civil engineering, mechanical & electrical engineering and safety) both at planning and construction stages. Statutorily, STS works on the following subjects:

- Promotion of knowledge in underground works by encouraging research and organising studydays and site visits
- Circulation and promotion of progresses in the field of underground works
- Circulation of technical information related to tunnel construction
- Cooperation for setting up standards in underground works
- Exchange of information with foreigners.

Currently, STS counts 600 members, 120 of which are collective. Its website www.swisstunnel.ch provides extensive information on the activity of the STS and, more generally, on the underground in Switzerland.

STS is delighted to welcome anyone interested from near or far to the underground space at the Swiss Tunnel Congress, held annually in June in Lucerne and in particular at the World Tunnel Congress 2013 in Geneva.

The SIG is an open, non-profit-making, cultural, technical and scientific association. The governing and administrative bodies of the SIG consist of a General Meeting of the Members, the Management Council, a Board of Auditors and the President.
At present it has around 700 members, 22 of which are foreign members. They represent public and private engineering firms, universities and polytechnic schools, and specialist contractors operating in the sector.

The SIG/ITS promotes, co-ordinates and diffuses study and research in the art of the construction of tunnels and major underground works. To achieve this it also organises cultural meetings, technical visits and training courses, prints and distributes publications and co-ordinates participation in technical and scientific conventions.

It also seeks to establish links in Italy and abroad with cultural associations, study centres, research laboratories, public and private sector bodies and authorities, design offices, and with all individuals who study, design, construct and operate underground works; it also acts as a fiduciary body. In this respect the SIG/ITS acts as the national representative and correspondent for international companies and scientific institutions and associations whose activities are linked to similar social objectives. The SIG/ITS publishes a quarterly technical and scientific magazine »Gallerie e Grandi Opere Sotterranee».

CPT (Portuguese Committee on Tunnels and Underground Space)
c/o Laboratório Nacional de Engenharia Civil (LNEC)
Av. do Brasil, 101
PT-1700-066 Lisboa, PORTUGAL

The Portuguese Committee on Tunnels and Underground Space CPT is an autonomous structure within the Portuguese Geotechnical Society, and is the Portuguese chapter of ITA. With a membership of 142, 16 of which are institutional members, and first formed in 2005, CPT has already hosted the June 2006 ITA Executive Council meeting in Lisbon, linked with the organisation of an International Seminar on Tunnels and Underground Structures. Other national and international events have also been organised by CPT in furtherance of its leading objectives, which are:

• encouraging and stimulating Portuguese technical resources associated with the underground engineering theme,
• contributing to promoting the acquisition of knowledge in the many related fields (technical, scientific, standards, industrial, economic, legal, administrative and social),
• close cooperation with ITA and its national committees, including partnership organisations, and,
• forging contacts with public and private bodies (consulting engineers, universities; research laboratories, contractors) for exchanging information concerning underground structures.

ITA-AITES (International Tunnelling and Underground Space Association - Association Internationale des Tunnels et de l’Espace Souterrain) c/o EPFL
Bât. GC - Station 18
1015 Lausanne - SWITZERLAND

Founded in 1974, the ITA is based in Lausanne, Switzerland and counts more than 60 Member Nations amongst its membership as well as 320 corporate or individual affiliate members, forming a network of 20,000 experts. The association aims to further the use of underground space within the context of societal needs, environmental concerns, sustainable development and climate change.

World Tunnel Congresses
The World Tunnel Congress is organized annually by one of the Member Nations of ITA. In 2012 the congress will be hosted by Bangkok, Thailand and in 2013 by Geneva, Switzerland.
ITA’s concerns
Since its origin, ITA, in order to improve training of technical experts and engineers and arrange international exchanges, has set up Working Groups on different topics such as Research, Contractual practices, Health & Safety, Immersed tunnels, mechanized or conventional tunnelling… (see list on the web).

Recently, ITA and its members have identified three major concerns regarding the future of underground space use and tunnelling. The first concerns the need for underground operational safety. Only through maintaining the highest safety standards can the use of underground space be possible. Secondly there is a growing concern regarding the availability of educated professionals. Thirdly ITA is concerned about the lack of awareness regarding the benefits of underground space use and also the lack in developing a local vision on using underground space and planning the use. To address all three concerns, committees have been installed by ITA: the ITA Committee on Operational Safety of Underground Facilities (ITA-COSUF), the ITA Committee on Education (ITA-CET) and the ITA Committee on Underground Space (ITA-CUS).

2 Student outreach

AFTES has decided to make the 2011 International Congress a student-friendly event that can provide a meeting ground for field practitioners and students of civil engineering, regional development and urban planning.

Universities and schools of engineering have been invited to organise groups of students to participate in conference activities during the day of their choice (17, 18 or 19 October 2011). Admission to the presentations and exhibit hall will be free, and there will be a special, student-oriented presentation at the start of each day. The exhibit hall, with its more than 150 exhibitors, will give students an opportunity to get to know the main players in the world of underground works and spaces.

Contact: richard.kastner@insa-lyon.fr
3 Conference location

Centre de Congrès de Lyon
Cité Internationale
50, quai Charles de Gaulle
69463 Lyon cedex 06
France
Tél. : +33 (0)4 72 82 26 26
Fax : +33 (0)4 72 82 26 27

Lyon Public Transport (TCL) map - www.tcl.fr
## Summary programme

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Detailed time schedule

The details supplied below are subject to alteration in the final programme which will be supplied to participants, particularly regarding the order of speakers within each session. Information is constantly updated on the Congress website.

NB: Speakers’ country of origin is specified only for speakers from outside France.

A question-and-answer session will be held at the end of each session.

General Reports

Some 115 written submissions have been received by the Congress administration. These have been grouped into six topics, each of which will be the subject of a general report. Approximately half of these communications will be the subject of talks during the Congress: these will take place in parallel in two separate venues. The rapporteurs-general are:

- Theme A - Underground space, a crucial solution for a sustainable city: Willy De Lathauwer (ABTUS-BVOTS, Belgium)
- Theme B1 - Technical innovations in urban tunneling: Anne Bouvard (Tractebel Eng.)
- Theme B2 - Technical innovations in mountain tunneling: Piergiorgio Grasso (Geodata, Italy)
- Theme C - The long life of underground construction: Didier Lacroix (CETU)
- Theme D - Making underground space more attractive: Monique Labbé, architecte
- Theme E - Project financing and contracts: Alain Chabert (LTF)

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Monday, October 17th, morning

8:30am Delegate reception - Accueil Bellecour
9:15am Congress Welcome, J. Burdin, chair of the organising committee, P. Ostian,
9:30am Special talks

- IN MO LEE, Président AITES: Séismes et tunnels
- Patrice RAULIN, Président LTF et SFTRF: Le projet LYON-TURIN et la galerie de sécurité du tunnel routier du Fréjus
- Peter TEUSCHER, PT Consulting: Tunnel de base du Loetschberg, les premières années d’exploitation
- Pierre-Denis COUX, RFF: Le projet EOLE 2
- Shaik K. EFNENDI YEV, Président Sté. Du Métro de BAKOU: projet d'extension du réseau

11:30am Opening speeches, Exhibition opening ceremony: A. Balan, Président AFTES

- Thierry MARIANI, Ministre chargé des Transports
- Jean Jack QUEYRANNE, Président de la Région Rhône Alpes
- Gérard COLLOMB, Président du Grand LYON

12:15pm Exhibition opening ceremony

Monday, October 17th, afternoon

1:15pm-2:15pm Inaugural Masters Class

- André ASSIS, AITES
- Richard KASTNER, Vice Président de l’AFTES Education

2:30pm-4:30pm - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme A, session A1: Underground space and sustainable development

- Chairman: Jean-Claude Daumarie (Inexia) > General report: Willy De Lathauwer (ABTUS/BVOTS, Belgium)
- R. Sterling (Louisiana Tech Univ., USA), H. Admingraal (Enprodes, Netherlands), J.P. Godard – Contributions of Underground Space Use to Sustainability
• Huanqing Li, A. Parriaux (EPFL, Switzerland) – Urban sustainable underground resources management: the DEEP CITY concept
• N. Bobylev (Russian Acad. of Sciences, Russia) – Urban Underground Infrastructure: Global Change and Sustainable Development
• M. Deffayet, L. d’Aloïa-Schwartzentruber (CETU) – Taking into account issues related to sustainable development in the design and operations of tunnels and underground openings

2:30pm-4:30pm - Amphi Prestige
Lectures on theme B1, session B11: Latest innovations in TBM technology
› Chairman: Patrick Ramond (Razel) > General report: Anne Bouvard (Tractebel Eng, France)
› M. Herrenknecht, K. Bäppler (Herrenknecht, Germany) – Demand for mechanized tunneling technology for the realization of infrastructure systems in complex conditions
› S. Rubrecht, M. de Broissia, JN Derycke, B. Combe (Bouygues TP) – TELEMACH Project: immersed robots for tele-operated maintenance of TBM cutterheads
› F. Vallon (Bouygues), J.M. Sabatie (CSM Bessac), E. Baranger (Dragages, Hong-Kong) – Tunnel Dismantling Machine
› D. Lesueur, D. Puiatti, F. Verhelst (Lhoist, Belgium), Cl. Joly (Balthasard & Cotte), J. Burdin (Consulting Engineer) – Use of special hydrated lime in the design of grouting mortars

4:45pm-6:20pm - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme A, session A2: Quality of underground infrastructures
› Chairman: Ray Sterling (Tech. Univ. Louisiana, USA)
› A.C.M. Uffink, J.B.M. Admiraal (CARUS, Netherlands) – Underground transport of goods: a sustainable alternative
› B. Barroca, D. Serre, Y. Diab and S. Bethelot (Univ. Paris-Est Marne-la-Vallée) – How to evaluate the urban quality of underground linear infrastructures?
› T. Barres (RFF), F. Bolzonello and M. Schivre (Inexia) – Interconnecting high speed lines in southern Paris area; a new challenge to create a railway link in a highly urbanized area, using the underground space
› JP. Palisse, G. Zunino (IAURIF) - Qualité urbaine et espaces souterrains

19:00pm - Welcome cocktail at Lyon City Hall
Tuesday, October 18th, morning

8:30am-10:30am - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme D, session D1: Toward lower impact tunnels

- Chairman: André Broto (Cofiroute)  
  General report: Monique Labbé (Cabinet d’Architecture M. Labbé)
- A. Chabert (LTF), L. Chantron (BG Ing. Conseils), C. Ognibene (Tecnimont, Italie) – Lyon-Turin international section: new preliminary design
- R. Rodriguez, M.B. Diaz (Oviedo School of Mines, Spain) - Environmental impact due to tunnels excavation: a key aspect for its success; experiences in Asturias (Northern Spain)
- J.M. Watelet (INERIS), G. Favre (Chaine Thermale du Soleil) – Valorization of an old underground quarry: the troglodytic thermal spa of Jonzac, Charente-Maritime
- N. Mongereau, J. Villien, J. Coudert (Greater Lyon) – Toward a Plan for programming the use of underground space in the Greater Lyon

8:30am-10:30am - Amphi Prestige
Lectures on theme B1, session B13: Conventional urban tunneling

- Chairman: A. Pinto da Cunha (LNEC, Portugal)
- N. Dupriez, H. Thiebaut (Setec), V. Perraud (Soletanche Bachy Tunnel), A. Bourgine (Soldata) – Toulon south tunnel: Adaptation of tunnel supporting methods according to surface settlements
- Ph. Autuori, S. Minec (Bouygues TP), A. Bernardet (Arcadis), L. Berend (Setec TPI) – South tube of Toulon tunnel: calculation of temporary support and lining
- B. Bizon (Bec), Ch. Blouet (Xelis), V. Doré (Soletanche), S. Leroux (Urbaine de Travaux) – Paris metro line 4; dealing with settlements during the crossing below Paris ring road, using the precutting method
- M.F. Menezes da Conceição, C.J. Oliveira Baiao (Cenor Consulting Eng., Portugal), R. Prado (Zagope, Portugal) – Lisbon metro Red Line; design and construction of alternative solutions for the Moscavide and Encarnação stations’ underground galleries
- J. Bilé Serra, L. Miranda (LNEC, Portugal) – The influence of the ground variability on the settlements caused by tunnel excavation

10:30am-10:50am - Coffee break

10:50am-12:30pm - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme D, session D2: Toward new underground spaces in the city

- Chairman: Jean-Claude Boucherat (CESER Île-de-France)
- M. Labbé (Architect) – Introducing the French national research project: “Ville 10 D, ville d’idées” (Ten-dimensionnal Town)
- T. Guillemain, R. Feredj, L. Sancho de Coulhac (RATP) – OSMOSE stations, three urban and transport projects?
- V. Geburtig (RATP) – Rehabilitation of the Châtelet-Les-Halles metro stations complex at Paris

10:50am-12:30pm - Amphi Prestige
Lectures on theme B2, session B21: Tunneling in difficult rock conditions

- Chairman: Jean-François Leugé (Bouygues)  
  General report: Piergiorgio Grasso (Geodata, Turin)
- T. Bonnet-Eymard, F. Thiriat (Effage), M. Piedevache, J. Provot (Solexperts), L. Richard-Panot, G. Armand (Andra), R. Laviguerie (Antea), F. Martin (BG Ing. Conseils) – Flexible support for excavation of the Bure underground research laboratory
- M. Ramoni, G. Anagnostou (ETH, Switzerland), N. Lavdas (Rothpletz, Lienhard, Switzerland) – Segmental linings under squeezing pressure
- X. Mourrat (EDF/CIH) – Nam Theun 2, Laos, Hydroelectric Project: excavation of a 600 m long tunnel in karstic formations

See “Detailed time schedule” on the Website
Tuesday, October 18th, afternoon

1:30pm-3:30pm - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme E: Project financing and contractualization
  • Chairman: Bruno Flourens (RFF Lyon) > General report: Alain Chabert (LTF)
    - G.W. Bianchi (SEA, Italy), J. Piraud (Antea Group), A. Robert (CETU), E. Egal (BRGM) – AFTES Working Group
      GT32: Characterization of uncertainties and risks in underground projects
    - R. Munier (SYTRAL), P. Tissier, M. Cremer and S. Ghozayel (Egis Rail) – Extension of the Lyon metro line B from Gerland to Oullins; originality of the mode of establishing the contract
    - A. Bourget (Egis Tunnels) – Cost estimating to finance underground structures
    - A. Cuccaroni (RFF), P.L. Veyron (SETEC), A. Lacroix (Spie-Batignolles), M. Russo (BG Ingenieurs Conseils)

2nd Part of Paris-Strasbourg TGV Line: lot 47 and Saverne Tunnel underground projects

1:30pm-3:30pm - Amphi Prestige
Lectures on theme B, session B22: Conventional tunneling at medium depth
  • Chairman: Enrico Arini (Metropolitana Milano)
    - F. Bultel, H. Tournery (Egis Tunnels), JJ. Lacaze, X. Richer de Forges (ASF) – Three tunnels on construction of the A89 East Highway: a work of exceptionally magnitude in a sensitive environment
    - A. Martinotto (Dodin Campenon Bernard), L. Thevenot (Eiffage) – Constructing the A89 Highway between Loire and Rhône: the Violy tunnel
    - M. Solntsev (Russia) – Presentation of the highway and railway lines in construction for the accessing the area of the 2014 Olympic Winter Games at Sochi, Russia
    - S. Maccan, S. Stefanizzi, F. Bontempi, M. Palomba (Geodata, Italy) – Access tunnels to the Sochi Olympic Area: an example of a coupled mechanized and conventional approach of excavation
    - R. Justa Camara, F. Vidal strainage, L.M. Pinillos Lorenzana (Acciona, Spain) – Conventional or mechanized tunneling decision making: a case study of Camarillas tunnel

3:30pm-3:45pm - Coffee break

3:45pm-3:45pm - Round Table, Pierre Ostian, journalist
  • Underground spaces to build Europe

20:00 - Gala Evening - Salle de la Corbeille, Palais de la Bourse

Wednesday, October 19th, morning

8:30am-10:30am - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme C, session C1: Maintenance strategy for tunnels
  • Chairman: Pierre Kohler (BG Ing. conseils, Suisse) > General report: Didier Lacroix (CETU)
    - M. Deffayet, J.C. Martin, C. Larive, F. Spataro (CETU) – Once the road tunnels safety has been upgraded, what is the most appropriate asset management approach?
    - D. Llanca, P. Breul, A. Talon, C. Bacconnet (Univ. Clermont), Y. Haddani (Sol Solution), P. Goirand, L. Leuliet
(RATP) – Characterization of the components of an underground structure in operation for evaluating of its functionality
• J. L. Mahuet (Egis Rail) – Presentation of the AFTES Recommendations concerning the interior coating treatments of underground works
• Ch. Löwe, B. Fischer, H. Kramer, Ch. Walder (EMPA, Switzerland) – Waterproofing systems for tunnels; chemical resistance after 10 years exposure

8:30am-10:30am - Amphi Prestige
Lectures on theme B2, session B23: TBM tunneling at greet depth
› Chairman: Loïc Thevenot (Eiffage)
   • A. Damiano, G. Venturini, M. Alzate, G. Mancari, A. Dematteis (SEA, Italy), L. Soldo, M. Ventramini (Geodata, Italy) – The geological reference model for the “Corredor Bioceanico Aconcagua” project
   • P.A. Scherwey (Robbins, USA) – TBM excavation of deep base tunnels
   • Th. Jesel (Amberg, Switzerland), S. Pedrazzini (Lombardi, Switzerland), O. Böckli (Implenia Bau, Switzerland) – 60 km of tunneling beneath the Alps: TBM excavation of Gotthard basis tunnel South
   • F. Laigle (EDF/CIH) – Progress report of the AFTES Working Group GT30 : Design and calculations of support by bolting
   • D. Simonnet, N. Miche (SFTRF), E. Mathieu, D. Di Lorenzi (Razel), F. Chille, M. Schivre (Inexia), M. Thone (I3S) – Safety gallery of the Frejus highway tunnel : retro-analysis of the conventional construction of the highway tunnel, in order to choose a mechanized method in high deformable environment

10:30am-10:50am - Coffee break

10:50am-12:30pm - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme C, session C2 : Heavy renovation of urban tunnels
› Chairman: Michel Deffayet (CETU)
   • L. Arth, V. Roucou-David (Dir. des Routes, Île-de-France), N. Boyer, J. Lecointre, M. Russo (BG Ing. Conseils) – Safety improvement of the A14-A86 underground highway crossing near Paris; design and build contract
   • G. Labrit, M. Chatard (Greater Lyon), F. Walet, J. Dupont (Egis Tunnels) – Rehabilitation of the Croix-Rousse road tunnel at Lyons ; from the works specifications to the design-and-build contract
   • E. Clayton, B. Soter (Setec), J. Voiron (Terrasol) – Rehabilitation of the Croix-Rousse road tunnel at Lyons; specific points of the detailed design
   • A. Pinto, J. Guimaraes, J. Saraiva, S. Lopes, P. Olivença (JetSJ Geotecnia Lda., Portugal) – Rehabilitation of the Montemor tunnel under traffic

10:50am-12:30pm - Amphi Prestige
Lectures on theme B2, session B24: TBM tunneling at medium depth
› Chairman: J.F. Thimus (ABTUS/BVOTS, Belgique)
   • F. Dudouit, R. Sturk (Skanska-Vinci HB, Sweden) – Hallandsås Project; treatment of a fault zone by a major freezing exercise to secure the TBM excavation
   • Th. Camus, G. Fontanille, J.L. Champeaux (NFM), J. Margareto (FCC, Spain), F. Fajardo (Acciona, Spain) – Single shield TBM performance in carboniferous rock : the case study of Pajares-Sotiello tunnel, Northern Spain
   • G. Seingre (AF-Consult, Switzerland) – The Nant-de-Drance pumped storage plant: a large underground hydro-power project in the Alps
   • P. Jarrin, G. Deveze, J. Moreau (EDF), F. Renault, L. Suquet (Vinci CGP) – Offshore underground works for the Flamanville 3 nuclear power plant
Wednesday, October 19th, afternoon

2:00pm-3:45pm - Amphi Gratte-Ciel 1, 2, 3
Lectures on theme C, session C3: Heavy renovation of international axis
  ▶ Chairman: Eric Leca (Systra)
  • A. Valente, F. Bezzi, S. Papale (ANAS, Italia), D. Lacroix (CETU) – The new Col-de-Tende road tunnel: a project for improving traffic safety. From excavation works to operation
  • B. Kohlböck (IGT Geotechnik und Tunnelbau, Austria), R. Schnabl (Asfinag BMG, Austria) – The refurbishment of the 1st tube of the Tauern tunnel; special solutions and the chance to upgrade functionality and maintainability
  • X. Baumgard, L. Brino (LTG) – Comparison of solutions and safety costs for the design of long railways tunnels
  • C. Jassionnesse (GEOS), S. Godard (Ingerop), Ch. Montantème (INEXIA) – Hydrogeological conditions and environmental impact of the French section of the CEVA project (Geneva-Annemasse)

3:45pm-4:00pm - Coffee break

4:00pm-5:00pm - Amphi Gratte-Ciel 1, 2, 3
General and closure addresses
  ▶ Chairman: Jacques Burdin (AFTES)
  • J. Piraud (Antea Group / Chairman of AFTES Technical Committee) – Looking toward the future of the AFTES Recommendations
  • P. Garnier (IGOTA Tunnels), – Presentation of the new « Fascicule 69 du CCTG Travaux » (French general technical specifications for public projects - Underground works)
  • A. Balan (AFTES, president) – Closing speeches

2:00pm-5:30pm - Amphi Prestige
Special training Seminar: « Geotechnical and environmental impact of urban underground works »
  ▶ Chairman: Richard Kastner (Prof. emeritus, INSA/Lyon, Chairman of the TC28 of ITA)
  1. Special conditions of urban projects, and influence on design and execution methods: B. Lions (Egis Rail)
  2. Geotechnical and hydrogeological conditions: J.F. Thimus (Univ. Louvain, Belgium)
  3. Characterization and vulnerability of existing buildings: D. Mérakeb (RATP)

3:45pm-4:00pm - Coffee break

5. Monitoring of tunnel and buildings during tunnel advance: N. Dupriez (Setec TPI)
6. Environmental impact of works and management of local inhabitants: E. Chiriotti (Systra)
7. Risk management and responsibility of all parties: J. Robert (Arcadis)
General discussion and conclusions by R. Kastner

6 Session proceedings
Simultaneous French-English and English-French translation will be provided throughout all sessions on all three days, except for the specialised training seminar.
At the start of the first session for each topic, the rapporteur-general will present the key features of the communications to be published in the Proceedings of the Congress, particularly those which will not be included in the oral presentations.
At the end of each session, delegates may put their questions to the session’s speakers.

7 Publications
Delegates will be supplied with the Proceedings of the Congress (summary and digital media) on arrival. These will include all the communications selected, whether or not they have been presented in sessions.
8  Technical tours

Attendees may take one of three tours, scheduled for Monday afternoon, 17 October, Tuesday morning, 18 October, and Wednesday morning, 19 October. Be sure to sign up soon, as tour capacity is limited.

- **Monday, 17 October, 2:00 pm - 5:00 pm:** Worksite of the second tube for the Croix-Rousse Tunnel (Lyon, 4ème arrondissement) - Organiser and guide: J-F. Jaby
- **Tuesday, 18 October, 9:00 am - 12:00 pm:** Lyon Parc Auto (Lyon Car Park) - Organiser and guide: M. Guillaud
- **Wednesday, 19 October, 9:00 am - 12:00 pm:** Worksite of the tunnel under the Rhône River for the Gerland-Oullins extension of Lyon Metro Line B - Organiser and guide: J-F. Jaby

9  Programme for accompanying persons

An accompanying person is a person who accompanies an attendee but does not participate in the actual conference (the sessions and technical tours). The excursions described below constitute the programme for accompanying persons. These excursions may be modified or cancelled if too few bookings are received. Payment will be refunded in the event of cancellation.

- **Monday, 17 October: Tour of Old Lyon**
  Travel back in time to the Lyon of Antiquity and the Renaissance
  Your adventure begins high above the city with a tour of the Basilica of Notre Dame de Fourvière. Next, discover Roman ‘Lugdunum’, with a visit to the Grand Theatre and the Odeon. Then explore Renaissance Lyon, known for its traboules, secret courtyards and tall houses. The excursion ends with a narrated cruise along the Saône River that will acquaint you with the charm of the city and its quays as well as picturesque Ile Barbe Island. *Bus leaves from the conference centre at 1:00 pm and returns around 5:00 pm* - *Price: €55 per person* - *40-person minimum.*

- **Tuesday, 18 October: The Lyon Silk Industry**
  Discover the Croix-Rousse, known in Lyon as “the hill that works”, a unique district that still bears strong traces of its past as a centre of the silk industry.
  First stop: the Atelier des Canuts, to learn about the process of hand-loomed silk. Next, you’ll visit Lyon’s famous traboules – covered passageways between buildings that allowed weavers to come and go with their silk without getting it wet. Then it’s on to the Terreaux district, where you’ll visit the Atelier de Soierie for a demonstration of silk screen printing, the last step in the long silk manufacturing process. *Bus leaves the conference centre at 1:30 pm and returns around 5:30 pm.* - *Price: €55 per person, including museum admission* - *20-person minimum.*

10  Post-Congress Tour / Thursday, 20 October

- **Tunnels under construction**
  Visit of the Violay (6,000m long), Bussières and Chalosset road tunnels, near Tarare. Lunch and then a tour of the cellars at Chateau de la Chaize in Beaujolais.

- **Safety gallery for the Fréjus road tunnel**
  Tour of the French entrance in Modane. Lunch at Fort Marie Christine and then a tour of the Esseillon forts.

- **Excursion in Beaujolais**

  *Leave the conference centre in a coach at 8:30 am. Return around 6:00 pm. Cost: €120/person, lunch included – minimum 20 people.*
11 Receptions

The following events have been scheduled:

- Welcome cocktail at Lyon City Hall, Monday 17 October, 7:00pm.
- Gala soirée in the Corbeille Room of the Palais de la Bourse, Tuesday, 18 October, 8:00pm.

Spend an unforgettable evening. AFTES invites you to immerse yourself in the atmosphere of the Corbeille Room. Ideally located, the Palais de la Bourse has been emblematic of the Lyon economy since its construction in 1856 and today houses the Chamber of Commerce and Industry. Capacity is limited, so sign up soon.

12 Hotel reservations

Reservations may be booked now through Package Organisation (see hotel reservation form):

Package Organisation - Service Réceptif
10, quai Charles de Gaulle
69463 Lyon cedex 06
Tél. : +33 (0)4 78 176 276
Fax : +33 (0)4 78 176 277
aftes2011@gl-events.com

AFTES CONGRESS

<table>
<thead>
<tr>
<th>Map</th>
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Rates are per room, per night and include hotel tax and breakfast.
Preferential fares for transportation to the AFTES Congress (air or train) are granted to participants.

**Airline**

Event: AFTES
Valid for travel from 12/10/2011 to 24/10/2011
Event location: Lyon Cedex 06, France

Discounts are applied to a wide range of airfares on all Air France and KLM flights
-10% on a range of published unrestricted public fares and -5% discount on a large fares.
Discounts up to -47%* are offered on domestic flights in Metropolitan France.

Use the website of this event or visit www.airfranceklm-globalmeetings.com to
• access the preferential fares granted for this event,
• make your booking,
• issue your electronic ticket**,
• select your seat*,
• and print your boarding card*.

If you buy your ticket via AIR FRANCE & KLM Global Meetings website, your electronic ticket will carry a special mention which justifies the application of the preferential fares.
Should you prefer to process your reservations and ticket-purchase directly with an Air France and KLM sales outlet, you must keep this current document which serves to justify the application of the preferential airfares.
Keep the document to justify the special fares with you as you may be asked for it at any point of your journey.
To locate your nearest Air France and KLM sales point, visit: www.airfrance.com or www.klm.com.
You will need to quote the reference given above which is registered in AIR FRANCE KLM data into GDS Amadeus: GGairafeventnego or GGairafglobalmeetings

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**Train**

You will be mailed an SNCF discount coupon ("Fichet") giving you a 20 percent discount on the purchase of a round-trip ticket.

Terms of use:
Present your “Fichet” in a train station or approved travel agency to obtain a round-trip ticket at the SNCF conference rate.
This rate applies to first class or standard travel on all SNCF-rate lines and gives you a 20 percent discount on:
• The full price of a TGV ticket, including all charges.
• The full price of a ticket on other trains, less any additional charges (e.g. reservation fees, surcharges)

Your ticket is valid for 15 days, which must include at least one day of the event.
The discount is available for:
- TGV trains (night TGV trains excluded), Corail Téoz trains and night Corail trains, subject to the availability of conference rate seating
- All seating in Corail and TER trains
Your ticket is valid only on the TGV train you have booked. The “Fichet” and the ticket must be presented together for cancellation and inspection.

3-day TCL pass
To help you get around and for eco-friendly transport, the conference organizers are pleased to include with your registration (upon request) a 3-day pass for unlimited access to the entire Transports en Communs Lyonnais (TCL) network. You may pick up the pass when you arrive at the conference reception area.

14 Registering for the convention
Use the form included in this final programme to register. The registration fee for participants is €650 through 31 July 2011 and €750 thereafter.

• For attendees, the registration fee includes:
  - Conference sessions (three days)
  - Monday’s receptions
  - Simultaneous interpretation
  - Scheduled coffee breaks
  - Free admission to the exhibit hall
  - A three-day public transport pass (Pass TCL) on request
  - The conference packet
  - A technical tour (transport included)

• For accompanying persons, the registration fee includes:
  - Monday’s receptions
  - Free access to the exhibit hall
  - A three-day public transport pass (Pass TCL) on request

• Also use your registration form:
  - To select a technical tour
  - To book tickets for the gala soirée (extra)
  - To register an accompanying person and make his or her programme selections
  - To book lunch reservations for the three days (extra)
  - To request additional information about the Thursday tours
  - To obtain the three-day public transport pass (Pass TCL) on request

Return your registration form to:
Reservations may be booked now through Package Organisation (see hotel reservation form):

Package Organisation - Service Réceptif
Cité Internationale - 10, quai Charles de Gaulle - 69463 Lyon cedex 06
Tél. : +33 (0)4 78 176 199 - Fax : +33 (0)4 78 176 277 - aftes2011@gl-events.com
REGISTRATION FORM

Please print in capital letters.

Reservations required - Conference registration and hotel reservations made be booked online at www.aftes.asso.fr

Last name . . . . . . . . . . . . . . . . . . . . . . . . . . . First name . . . . . . . . . . . . . . . . . . . . . . . . . . .

Occupation/Title . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Company/Organisation

Field of activity

Address

Postal Code City Country

Tel. : Mobile : Fax :

1. Attendees
   - Registration before 31 July €650.00 incl. VAT
   - Registration after 31 July €750.00 incl. VAT
   - Registration for attendees under 35 €400.00 incl. VAT
   - Registration only “Specialised training seminar” €200.00 incl. VAT

2. Accompanying person(s)

Name(s) Fee x Number

€75.00 incl. VAT x = € . . . incl. VAT

3. Lunch at the convention - I would like to make reservations for:

- Lunch on 18 October €32.00 incl. VAT x = € . . . incl. VAT
- Lunch on 19 October €32.00 incl. VAT x = € . . . incl. VAT

4. Technical tour for attendees (Monday, Tuesday or Wednesday)

First choice Second choice

5. Receptions - I would like to make reservations for:

1. Monday, 17 October, 7:00 pm - Cocktail at Lyon City Hall - Number of persons attending:

Tuesday, 18 October, 5:00 pm - Palais de Bourse Gala Evening €125.00 incl. VAT x = € . . . incl. VAT

6. Tours for accompanying persons ($10)

- Old Lyon, Monday, 17 October €55.00 incl. VAT x = € . . . incl. VAT
- Lyon Silk Industry, Tuesday, 18 October €55.00 incl. VAT x = € . . . incl. VAT

7. Transport (Please tick your preference)

SNCF “Voucher”: □ YES - Number : . . . . . . . . . . □ NO

Three-day public transport pass (Pass TCL): □ YES - Number of passes: . . . . . . . . . . . . □ NO

8. Post-Congress excursions - I would like to make reservations for:

- A89, Thursday, 20 October €120.00 incl. VAT x = € . . . incl. VAT
- Fréjus €120.00 incl. VAT x = € . . . incl. VAT
- Tour of the Beaujolais country €120.00 incl. VAT x = € . . . incl. VAT

Total registration amount (1 to 8) € . . . incl. VAT

This amount includes 19.6 percent VAT for registrations. The invoice mailed with your acknowledgement of receipt will indicate the VAT rate.
Terms of reservation and cancellation

Registrations must be booked through Package Organisation. To cancel, please contact Package Organisation by email, post or fax at:

Package Organisation - Service Réceptif
10 Quai Charles de Gaulle
69463 Lyon Cedex 06
Fax: +33 (0)4 78 176 277
aftes2011@gl-events.com

Cancellation before 21 September 2011: Refund of total paid less €80.00 (processing fee)
Cancellation after 21 September 2011: No refund

Method of payment

• By euro cheque payable to Package Organisation
• By euro bank transfer to Package Organisation (Please send a copy of the transfer order.)

IBAN: FR 76 1046 8023 5312 5385 00200 48 - BIC: RAL PFR 2G

• By euro bank card

Cardholder’s name: .................................................................
Own card □ Company card □
Visa □ Eurocard □ MasterCard □ AmEx □
Number .................................................................
Expiration date (MM/YY) .......... / ..........
Security code □□□□ (Last three digits on the back of the card)

I authorise the above amount to be debited immediately.

Date ........ / ........ / ........ Signature
HOTEL RESERVATION FORM

Please print in capital letters.
Reservations required - Conference registration and hotel reservations made be booked online at www.aftes.asso.fr

Last name ................................ First name ................................
Occupation/Title ................................ ......................................
Company/Organisation ................................ ...................................
Field of activity ................................ ..............................................
Address ................................ ......................................................
Postal Code ................................ City ................................ Country .......
Tel. ................................ Mobile ................................ Fax ................................
Email ................................ ...............................................................

See full list of participating hotels (§12).

Rates are per room per night and include hotel tax and breakfast. A deposit equal to two nights’ stay is required. On check-out, any additional nights will be payable directly to the hotel, which will issue you a receipt showing VAT.

Please indicate three (3) hotels in order of preference. In view of high demand, we may offer you a different hotel if your requested hotels are full.

First choice: ................................ ............................................. single □ double □
Second choice: ................................ .......................................... single □ double □
Third choice: ................................ .............................................. single □ double □

Date of arrival: .................. Departure date (morning of departure): ................ i-e ...... nights

Price per night per room ........................................ incl. VAT
2 nights deposit .................................................. x ................. incl. VAT
Reservation fee ............................................... + .............. 12 incl. VAT

Amount due .................................................... incl. VAT

Hotel reservations will not be confirmed until payment is received. Your reservation will not be accepted unless you are registering at least one person for the AFTES Congress.

Please return this form to:
Package Organisation - Service Réceptif - Cité Internationale
10 quai Charles de Gaulle, 69463 Lyon Cedex 06, France
Fax : +33 (0)4 78 176 277
Terms of reservation and cancellation

- Hotel reservations may be booked through Package Organisation until 21 September 2011.
- Reservations will be confirmed only on receipt of the two-night deposit.
- Cancellation up to and including 26 September 2011: Refund of deposit less €30.00 for full or partial cancellations. No additional charge for name changes.
- Cancellation on or after 27 September 2011: No refund. No additional charge for name changes.
- For groups, contact Package Organisation: aftes2011@gl-events.com
- In the event of non-arrival, the deposit is non-refundable. The hotel will hold your room only for the nights covered by the deposit. The hotel is required to issue you a receipt for your deposit.
- In the event of late arrival or early departure, you will pay the full amount of your reserved stay, less hotel tax and breakfast, unless the room can be resold directly by the hotel or through Package Organisation.
- Reservations received without acceptance of the general terms and conditions of sale will not be processed.
- Rooms are available after 3:00 pm. Please provide notice of late arrival. Check-out is 11:00 am.
- All extras are payable to the hotel on check-out.

Terms and methods of payment

- By euro cheque payable to Package Organisation
- By euro bank transfer to Package Organisation (Please send a copy of the transfer order.)
  IBAN: FR 76 1046 8023 5312 5385 00200 48 - BIC: RAL PFR 2G
- By euro bank card
  Cardholder’s name: ..........................................................
  Own card □ CompanyCard □
  Visa □ Eurocard □ MasterCard □ AmEx □
  Number: ..........................................................
  Expiration date (MM/YY) ....... / ........
  Security code: _______ (Last three digits on the back of the card)

I authorise the above amount to be debited immediately.

Date: ....... / ....... / .......  Signature
General information

The conference centre (Centre de Congrès) is located just over the Rhône River on the northeast edge of Lyon, between the Parc de la Tête d’Or and Quai Charles de Gaulle, which runs along the Rhône.

- **By plane**: Lyon-Saint Exupéry International Airport serves many national and international destinations. The Rhonexpress rail connection to Part-Dieu Station takes less than 30 minutes.

- **By train**: Lyon’s two main train stations, Lyon Part-Dieu and Lyon Perrache, have public transport connections. The convention centre is about 15 minutes from Part-Dieu Station by C1 trolleybus in the direction of “Cuire par Cité Internationale”. Perrache Station is 30 minutes from the conference centre (take Metro Line A to Foch, where you can catch bus number 4 for Cité Internationale).

- **By car**: From Paris (A46) or Geneva (A42), take exit 1b Tête d’Or-Le Tonkin and follow signs for Part-Dieu-Tête d’Or. Take Boulevard Laurent Bonnevay to the Poincaré roundabout, exit toward Cité Internationale and continue along Quai Charles de Gaulle.

  If travelling via the toll ring road “périmphérique nord (TEO)”, enter at Porte de Croix-Luizet and exit and Porte de Saint-Clair.

  From Chambéry-Grenoble (A43), Saint-Etienne (A47) or Marseille (A7), take Boulevard Laurent Bonnevay.

- **Parking**: The Cité Internationale has three car parks with a total capacity of 3,350 spaces. P2 is the closest to the conference centre.

- **Public transport**: Buses stop at the conference centre and provide connections to Metro Lines A, B, C and D and Tramway Lines T1, T2 and T3. For further details go to www.tcl.fr.

  Map available at the conference welcome desk.

- **Taxi service**:  
  - Taxi Lyonnais: +33 (0)4 78 26 81 81  
  - Radio Taxi: +33 (0)4 72 10 86 70  
  - Allo Taxi: +33 (0)4 78 28 23 23
Exposition - Liste des exposants au 6 mai 2011

L’exposition des techniques, services et matériels pour travaux souterrains est organisée dans les Forums 4, 5 & 6 / The exhibition of underground works techniques, services and plant will be housed in the Forums 4, 5 & 6.

Les sociétés désirant participer à cette exposition doivent se mettre rapidement en contact avec / Companies wishing to exhibit should contact without delay :

- Nicole Bajard - CETU - AFTES
  Tél. : +33 (0)4 72 14 34 44 - Fax : +33 (0)4 72 14 34 90
  email : nicole.bajard@developpement-durable.gouv.fr

- Pascale Pouyet - Package Organisation
  Tél. : +33 (0)4 78 176 248
  Fax : +33 (0)4 78 176 257
  email : pascale.pouyet@gl-events.com

Les stands non colorés sont encore disponibles / Plain booths are still available :
www.aftes.asso.fr/lyon2011

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