

ABOUT THE ITACET FOUNDATION: In an industry where technological progress is quickly advancing and where information and training are always required, the ITA-CET Foundation has been set in 2009 by the International Tunnelling and Underground Space Association ITA-AITES as a body for education and training actions. The Foundation is associated with the ITA-AITES Committee of Education and Training. One of the objectives of the ITA-CET Committee is to prepare the programmes and choose the lecturers for training sessions and short courses organized by the ITACET Foundation. The training sessions and short courses organized by the Foundation are available for ITA member nations and other interested organizations and companies. Courses' Portfolio and more information are available on www.itacet.org

SUMMARY

President's Address, Eng. Abdullah Al-Mogbel

Editorial: Tarcisio B. Celestino, ITA-AITES President

Interview: Michel Deffayet, Director of the French Tunnels Study Center (CETU), Lyon

ITACET Foundation AWARDS 2016

Training session coming Soon

Next events in preparation

Events Report: Training session at the WTC 2016, San Francisco

News from some of our Sponsored Master Students

President's Address



Since its creation, in September 2009, the ITACET Foundation organized successfully more than 50 Training actions for professional education; these actions gathered more than 5500 participants and the feedback forms filled up by the participants clearly shown that the actions of the Foundation are welcomed by the professionals in Tunnelling.

The Foundation also developed the sponsoring of students from developing countries for their attendance to the Postgraduate master Courses organized in Lausanne, Lyon, Madrid, Torino, Warwick and soon in other places. The Foundation is also well recognized through the Social networks and permanent contacts were established with the major companies involved in Tunnelling.

The Foundation considered it is now time to update its Strategy and to become more ambitious.

The Foundation decided to develop its efforts to achieve the sustainable financial model in being closer to Industry and to the developed countries, especially those organizing Master Courses in Tunnelling. On the other hand the Foundation will help the emerging countries by the reduction of the organizational costs of their Training actions.

Additional actions will be started like training the future Trainers worldwide and financing Doctorates in the Universities.

I am convinced that this updated strategy will help the Foundation to reach its Mission Statement: "to be developed into a Centre of Excellence for Education and Training on Tunnelling and Underground Space Use"

Eng. Abdullah Al-Mogbel
President of the ITACET Foundation

Editorial: Tarcisio B. Celestino, ITA-AITES President



The Executive Council of ITA elected in April in San Francisco is working on the new version of the Strategic Plan of the Association for the coming 3 years. The work has not been completed yet, but the general guidelines which have been discussed so far indicate that knowledge sharing will go on as one of the goals to be reached.

The previous Strategic Plan included "Encourage of further knowledge sharing through Education and Training" as one of the goals. Much has already been achieved by means of actions promoted by the ITACET Foundation and the ITACET Committee. However, as time goes by, we find out that more and more is needed with respect to training. In fact it can be considered as an endless objective.

The establishment of the ITACET Committee activity groups on Education and Training for Member Nations, Education and Training for Professionals and University Networks seems not to have been fully explored yet, except for the first one, the activities of which have already been underway since the establishment of the Committee.

Actions for development of the two other activity groups were discussed in a meeting last April in San Francisco and the new possibilities are promising.

We should also consider that training can and shall involve many areas, some of which have not been covered in most of the courses offered so far.

A good example of what has just happened in this direction is the topic of use of underground space. Fortunately that was the topic of one of the courses offered in San Francisco last April.

I am sure that the success of ITA depends largely on close and fruitful cooperation with both the ITACET Foundation and the ITACET Committee. I am here encouraging all parties to work hand in hand for the same objective.

Tarcisio B. Celestino
ITA-AITES President

Interview: Michel Deffayet, Director of French Tunnels Study Center (CETU), Lyon.

Michel Deffayet, you are the manager of the French Tunnels Study Centre (CETU) and Vice-Chairman of the ITA-CET Committee.



The Committee defines the content of training session programmes and develops all appropriate training tools, and the ITACET Foundation organizes the sessions in close relationship with the client who is generally a member nation of ITA.

Does this correctly sum up your respective roles?

Yes, this is a good description of the responsibilities and fields of action of both the Foundation and the Committee.

Very often, to fulfil the client's request for a tailor-made training programme, the Foundation and the Committee need to work in close co-operation.

This interaction is also necessary for the selection of the lecturers, as numerous aspects have to be taken into consideration from a very early stage, in order to avoid last minutes changes.

How does the Committee choose the topics to be developed in its training session programmes?

In the majority of cases, the Committee starts to work on a

topic following request from a member nation.

These topics are sometimes quite close to those covered in existing programmes in the ITACET training session "portfolio" and only need a slight adaptation or specific focus on locally sensitive issues.

For instance, the programme on "Mechanized Tunnelling" can be adjusted to cover hard rock, soft soil, urban tunnels or long tunnels, according to member nation needs.

New training session programmes can also be developed at the initiative of either the Foundation or the Committee, in order to focus on specific topics of growing interest or to promote new, innovative methods.

This is the case for the three latest programmes entitled "Numerical Simulation", "Calculation Methods" and "Sustainable Tunnelling" that aim to highlight recent developments in the design of tunnels.

What about ITA Working Group topics? Are they included in course content?

Yes they are, but not to a sufficient extent at the present time.

The WGs animators have been closely associated to the development of the existing portfolio. Once the course topic has been chosen and a draft programme has been drawn up, the Committee gets in touch with the concerned WG animator to ask him/her for advice, additional elements, and proposals for lecturers.

The process is the same if the topic is addressed by another

ITA committee.. However, it should be noted that this is not always possible as several topics are not yet covered by the WGs or Committees.

Our aim is to go further and we recently renewed our invitation to the WGs to define training modules along with the publication of new guidelines. These modules could then be implemented in our training programmes.

There is an unquestionable need to strengthen the relationship between ITACET and the ITA WGs. Training and education is a powerful means of communicating and disseminating the WGs' work.

What are the Committee's main expectations in relation to the Foundation?

Of course there would be no point in developing training programmes or educational tools within ITA if there is no means of organizing training sessions and maintaining contact with professionals all over the world.

ITA has clearly reaffirmed the role of training and education in its mission. Training sessions enable ITA to provide concrete support to its members and especially those with pressing needs and few resources.

The Foundation is a prerequisite for implementing such a training policy. It has a close relationship with the client, as it takes charge of the practical organization and the financial aspects of training sessions. It also ensures a large part of the coordination with the lecturers and facilitates their involvement.

Trust and responsiveness are key to the success of the Foundation and Committees' collaboration. Time is always

very short when organizing the training sessions and efficient coordination is essential.

It is important to ensure that the contributions of all those involved are provided on time, so as not to delay the whole process. The Foundation and Committee share a lot of information through their joint databases (lecturers, session topics,...) and efficient coordination between the two organizations is vital, in order to avoid duplication of time-consuming processes.

And finally what do you think about the current functioning?

This close relationship is efficient, thanks to constant exchanges. The CETU is responsible for the administrative and technical secretariat of the Committee, and there are continuous exchanges with the executive director and the secretariat of the Foundation. It is easy to underestimate the time that all this activity requires.

Fortunately, the efficiency of this system is highlighted by the increasing number of training sessions organized all over the world, and through the communication media of the two bodies.

The Committee newsletter and website provide information that is complementary to the information in the Foundation newsletter or on the Foundation website. We are conscious of the importance of the role that each plays.

The presence of ITA's President and the ITA-CET Steering Board (Chairman and Vice-Chairman) in each of the Foundation Council meetings is also a major determinant for the good coordination of the two bodies, which I hope is set to continue for many years.

TACET Foundation AWARDS 2016

In 2014, the ITACET Foundation decided to grant annual Awards to an institution, company or person in recognition of its involvement in the ITACET Foundation activities. During the 2016 ITA-AITES General Assembly held in San Francisco, two awards were presented.



In 2016 our Award recognized the fruitful collaboration between the ITA-AITES member nation of Mexico, represented by the "asociación mexicana de ingeniería de túneles y obras subterráneas, a.c." AMITOS, and the ITACET Foundation.

The Award was presented by Felix Amberg, treasurer and council member of the Foundation to AMITOS representatives.



Dr. Harald Wagner was presented with the yearly ITACET Foundation Award recognizing the significant contribution of a person to the activities of the Foundation.

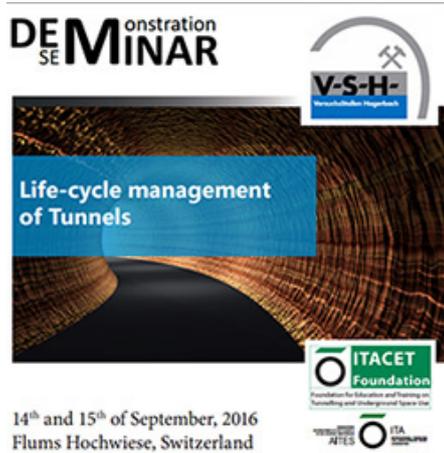
Since the foundation was established in 2009, Dr. Harald Wagner has been deeply involved in its activities, as a surveyor and a lecturer.

During his frequent contribution at the training session organized by the Foundation Harald Wagner generously shared his knowledge and enthusiasm at great benefit for the attending young professionals.

Training session coming Soon

LIFE-CYCLE MANAGEMENT OF TUNNELS

14th and 15th of September, 2016
Flums Hochwiese, Switzerland



Modern tunnels are designed and built for a lifetime of 100 years or more in which no major repairs should need to be made to the structure of the tunnel.

The lifetime of the tunnel equipment could be significantly smaller than the lifetime of the structure, partly

due to technological developments.

This requires replacement or adaptation of the equipment in parts or whole systems. The sustainable and economical operation of tunnels is only possible if the life time and maintenance cycles of the different components are correctly synchronized.

Hagerbach Test Gallery Ltd. and ITA-CET* together present a two day DEMINAR about the Life-cycle management of tunnels.

Topics will be highlighted from different perspectives by experts in that field. Fundamental considerations should be made during the planning process and will be discussed by the experts.

The basic influences on the lifetime of the tunnel and the ongoing maintenance. Further presentations will focus on tunnel equipment and their influence on planning, installation, maintenance and operation. Case studies will be presented illustrating the experts long term experiences in the field.

Program and registration information available on the VSH website: www.hagerbach.ch

MECHANIZED TUNNELLING IN SOFT GROUND

12 September 2016
Buenos Aires – Argentina



AATES - Asociación Argentina de Túneles y Espacios Subterráneos and the ITACET Foundation will organize a one-day course

aiming to provide general information to young engineers and to update tunnelling professionals on topics related to Mechanized Tunnelling in soft soil

Tentative program available on www.itacet.org

RISK MANAGEMENT

29 September 2016
Kathmandu – Nepal



This course, co-organized by the Nepal Tunnelling Association and ITACET Foundation is to provide an introduction to risk management process with a general overview of the contractual practices.

Tentative program available on www.itacet.org

PLANNING & DESIGN IN CONVENTIONAL TUNNELLING

29 September 2016
Kathmandu – Nepal



The aim of the two-day training course is to provide planning, design and construction elements to young professionals related to the best practice of tunnel design.

Tentative program available on www.itacet.org

HEALTH & SAFETY & LOGISTIC IN TUNNEL CONSTRUCTION

15-16 November 2016
Santiago de Chile



This training aims to provide an introduction to Health and Safety, and Logistics in tunnel construction.

The seminar will provide a general overview to be followed by more in-depth sessions on the hazards and risk associated with specific tunnelling techniques, generic safety and health issues affecting tunnel construction.

Finally, logistics in tunnel construction will be presented focusing on long tunnels as well as tunnel in urban areas.

Tentative program available on www.itacet.org

Events in preparation

- Risk and Contracts 12-13 November 2016 - Malaysia
- Tunnelling in Soft Ground 17-18 November 2016 – Mexico
- Sustainable Tunnelling 11-12 December 2016 – Saudi Arabia

Event Report:



**Pre WTC training sessions for continuing education.
22-24 April 2016, San Francisco California.**

Monitoring and control in Tunnelling

Monitoring is of crucial importance to any underground project.

Whether in the preparatory phases or during excavation, proper monitoring, data collection and data analysis are essential to insure safety of the excavation work and of the existing structures close to it.

Proper monitoring and data analysis allow better risk management and mitigation. For mechanized tunnelling it improves the chance to achieve acceptable performance and is also an effective means to allow construction procedures to be adjusted during excavation.



The aim of the training course organized 22-24 April 2016, just before the opening of the WTC2016 in San Francisco, was to provide an understanding of what monitoring is, its field of application during

underground work and to present methods, examples and various monitoring instrumentation.

The course was intended for every party involved in the design, construction or decision making phase of the field.

The training was open with an elocution of Mr. Søren Degn Eskesen, President of ITA-AITES and a welcome word of Bill Hamshire, coordinator of the training session for UCA of SME, the host of the WTC 2016 congress.

The program proposed lectures who alternated academic presentation with real life examples and outline of cases histories.

ITA-AITES Committee for education and training (ITA-CET) in coordination with the congress organizer, UCA of SME, selected and delegated 15 high level lecturers to the training.

Delegates of leading companies in the field were also invited to lecture at the course to share their field experiences. The complete list and a short resume of the lecturers of the training session is available here >>

Topics covered all aspects of monitoring, planning, instrumentation (equipment and typical applications), interpretation of monitoring data, role of monitoring in risk management, contractual aspects and case histories.

65 Participants from four continents and 20 different countries attended the two-day course. The training was

concluded with lively discussion and at the satisfaction of all participants.

Underground Space Use

"The use of underground space is seen to be vital in a world where more than half of the population now lives in urban areas.

Further concentration in mega-cities is a trend which cannot be stopped.

The use of underground space can contribute to sustainable development, maintaining livability and preparing the world for the impact of climate change. Creating awareness on the use of underground space in this respect is vital." *abstract of ITACUS goal



Increasing awareness on the multiple benefits to go underground, especially in urban environment is one

of the main goal of the ITA Committee on Underground Space (ITACUS) and its sister organization, Associated research Centers for the Urban Underground Space (ACUUS).

The training session "Underground Space Use" was co-organized by the ITACET Foundation and the WTC2016, San Francisco.

The program has been developed by ITACUS and ITACET committee.

Prof. Ray Sterling, ACUUS co-founder and coordinator of the Training session.

Four lecturers were present, in the order of their intervention: Messrs Han Admiraal, Enprodes and chairman of the ITACUS committee, Prof. Ray Sterling, Louisiana Tech. University and co- founder of ACUUS, Antonia Cornaro, Amberg Group Ltd. and Monique Labbé, les ateliers Monique Labbé.

The aim of the course was to give information to engineers, architects, planners and public administrators on the advantages of underground space and structures in urban areas.

The training program was divided in four sessions:

- Introduction and Overview
- Cost and Risks Issues / Advantages and Disadvantages
- Architectural, planning and cost-benefit issues for broad-scale underground space use
- Guidance for planning and design of underground spaces

All along the training, several cases history were presented and their respective key issues highlighted.

Advantages and disadvantages of the solutions or methods used in these cases were discussed.

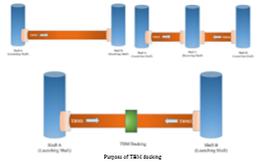
The presentation were of a very high level although still very comprehensive.

News from some of our Sponsored MAS Students

Senthilnath, G.T

Recipient of past ITACET foundation scholarship, Senthilnath is now Sr. Engineer at Geoconsult Asia Singapore.

Due to increased depth of shafts and to shorten the construction period, TBM from within the shaft (parallel parking) method was used for the TBM docking. This method established a safe working chamber for conducting construction works including the TBM dismantling, internal crane lifting etc. without the need for any intermediate TBM retrieval. Senthilnath is responsible for design and construction support of one such docking scheme in Singapore which happens to be the first of its kind in Singapore.



The presents the technical difficulties and practical complexities of this docking process in his paper [1]. Geotechnical Society of Singapore (GeoSS) has selected it as one of the 2 papers representing Singapore at The 8th Asian Young Geotechnical Engineering Conference in Astana, Kazakhstan to be held in August 2016.

Reference:
[1] Senthilnath, G.T., 2016. 368-mmm-d underground docking of tunnel boring machines in Singapore. In: The 8th Asian Young Geotechnical Engineering Conference, Astana, Kazakhstan. CRC Press. [Google Publishers \(Access on pay\)](#)

Recipient of past ITACET foundation scholarship, Senthilnath is now Sr. Engineer at Geoconsult Asia Singapore.

He is involved in Singapore's first mid-tunnel TBM docking of 2 TBMs (without retrieval/receiving shaft).

This challenging project inspired Senthilnath to write a paper titled "Mid-tunnel underground docking of tunnel boring machines in Singapore".

Geotechnical Society of Singapore (GeoSS) has selected it as one of the 2 papers representing Singapore at The 8th Asian Young Geotechnical Engineering Conference in Astana, Kazakhstan to be held in August 2016.

The link to a short abstract and a presentation of this work is available on www.itacet.org

Rodrigo Winderholler



Student of Tunnelling and Tunnelling Boring Machines MAS Course at Politecnico di Torino (2015/2016 edition), Rodrigo set up a student's blog describing, during the course of the weeks, the arguments treated at each lecture by each lecturer.

Highly Informative and very well realized, you can visit it here <http://tunnelling-tbmmaster.blogspot.it>
To know more about the MAS program, official web site: <https://didattica.polito.it/master/tunnelling/2016/introduction>

IMPRESSUM

Periodical publication edited by the ITACET Foundation.
Online version available on www.itacet.org

Editors : Claude Bérenguier, Alexandre Pilloud

ITACET Foundation - c/o EPFL - Station 18 - CH-1015
Lausanne Tel. + 41 (0)21 693 08 67 - Fax + 41 (0)21 693 41 53
www.itacet.org - secretariat@foundation.itacet.org