



ITA-CET
Committee on Education and Training

Newsletter

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Dear ITA friends,

This time last year, none of us could have imagined the events that were about to unfurl and impact every nation around the globe. The last twelve months have seen a profound change in our lives and we have all had to adapt the way that we work and exchange with one another. For the greater part of 2020, the COVID outbreak has prevented physical gatherings and forced us all to convert to a much more digital way of communicating.

Training sessions organized by the ITA-CET Committee and ITACET Foundation have traditionally been based on face-to-face gatherings organised in an ITA Member Nation at the request of the country's representative body. With the COVID crisis, both the Committee and Foundation have had to adapt their way of functioning in order to propose a new training offer in digital format.

This year, for example, the traditional WTC training session was held online for the first time and proved to be a success, with several hundred participants having connected either live or to view the recordings afterwards.

With the pandemic set to disrupt events for the major part of 2021, the Committee Steering Board has been working to adapt its overall training strategy and met online in

October to discuss the way forward over the next few months.

The coming year will see short monthly online training sessions proposed to a wide public, at little or no cost to participants. Please read our article on page 2 for more information.

Developing the ITA-CET university network continues to be an important part of the Committee's strategy and exchanges with universities offering Master courses in tunnelling and underground space use have continued. It is planned to hold a second meeting of ITA-CET university professors and PhD students at the end of 2021 and it is hoped that it will be possible to hold this event in a face-to-face format rather than online.

Training of all types of workers in the underground space industry is of concern for the ITA-CET Committee and ITACET Foundation. As already mentioned in our previous newsletter, the Committee is developing a course for TBM drivers, although the COVID crisis prevented a test-run of this course from being held in 2020 as initially planned. It is hoped that the course will be able to kick off in 2021. Indeed, specialized blue-collar workers in the tunnelling industry are becoming increasingly coveted as there is a clear shortage of such manpower at the present time. In this issue, we will take a look at how one of the universities of the ITA-CET network has been collaborating with industry to train this category of tunnellers.

We all hope that with the promise of a vaccine, the next year will see the end of the coronavirus pandemic and a gradual return to normal. Although this year's festive season will undoubtedly be different to usual for most of us, we hope that you manage nevertheless to enjoy the holiday season. A very happy and especially healthy 2021 to you all!

Robert Galler - ITACET Chairman

Michel Deffayet - Vice Chairman

ITA-CET goes digital!

A new series of short online courses will be on offer in 2021

Setting the roadmap for the coming months

The Committee Steering Board met in October to discuss its future strategy

Strong interest for the WTC training session

The online session on "Innovations in Tunnelling" proved a success

Save the date! A call to tunnelling academia

Following the success of last year's meeting of university professors and PhD students, a repeat event is planned for the end of 2021

A strong need for blue-collar workers

We look at how Austria is training this coveted category of tunnellers

FOR MORE INFORMATION

<http://www.ita-aites.org/en/wg-committees/committees/ita-cet>

ita-cet.secretariat@developpement-durable.gouv.fr

ITA-CET goes digital!



The COVID pandemic has had a profound impact on all sectors and education is no exception. With face-to-face teaching either impossible or very limited in terms of the authorized number of trainees, the last year has meant that the ITA-CET Committee has had to rethink its training format.

Training sessions have traditionally been organized face-to-face, over one or two full days, in a location chosen by the requesting ITA Member Nation. Until now, this format has been favoured by both organizers and participants as it facilitates interaction between the lecturers and the trainees and enables closer relations to be established between all parties (organizers, lecturers, trainees).

With the advent of the coronavirus pandemic, these traditional training sessions are no longer possible. The ITA-CET Committee and the ITACET Foundation (who work hand-in-hand to provide training for the ITA community) have therefore had to redesign their training offer and adapt it to an online format. At first sight this may appear simple, but there are many factors to be taken into account and firstly, the length of the sessions. The existing catalogue of ITA-CET training sessions was adapted to one or two-day events, as this duration was generally requested by Member Nations. Online learning tends to be more tiring for participants who remain in front of a screen. Whilst a full day of training is possible in an online format, it is not advisable, as the concentration of trainees is not optimal. The content of training sessions therefore needed to be considerably adapted to comply with recommendations for online learning. The ITA-CET Committee, which is in charge of choosing lecturers and developing course content, has had to rethink the topics and the pedagogical content of sessions offered.

Organizational aspects (dealt with by the ITACET Foundation) also have to be taken into account. With traditional face-to-face sessions, Member Nations are usually in charge of registering their participants and handle cost issues directly with the Foundation. The organization of online sessions complicates these matters and requires new procedures and systems to be set up to enable the ITACET Foundation to recover any organizational costs incurred. That said, this switch to online learning,

whilst posing a technical challenge for the organizers, has considerable financial advantages for beneficiaries. Without the need to hire a venue and cover the travel and accommodation costs of lecturers, digital training events can be offered at a lower cost, thereby potentially reaching a wider audience.

After intense discussions and planning between the ITA, the ITA-CET Committee and the ITACET Foundation, it has been decided to organize a "lunchtime lecture series" during 2021. This series of short online lectures will focus on more specific topics than those dealt with in traditional training sessions. The aim is to provide information on current issues and cutting edge technologies and methods within the underground space industry. These lectures will take place live, on the second Tuesday of every month (starting February 2021) from 13:00 hours to 14:00 hours Paris time. Each event will include key lectures, followed by a discussion and question and answer session.

Lecturers will be top professionals in the tunnelling and underground space community, notably from the ITA's Working Groups and Committees. Industry representatives and project owners will be asked to intervene on a regular basis, in order to give different viewpoints.

This online lecture series will be open to a wide public, not just to a given ITA Member Nation. Registration will be necessary and the first 3 sessions of the year will be free!

The detailed schedule of topics for the coming year is currently under discussion, but the ITA-CET Committee and ITACET Foundation are pleased to announce that the first session, entitled "New blasting technologies" will be held on Tuesday 9th February 2021. The programme will be available shortly on both the ITA-CET Committee and ITACET Foundation's web sites. Registration will be possible via the ITACET Foundation's site at <https://www.itacet.org/>.

It is hoped to make recordings of the lectures available for those not able to attend the event live. Please spread the word and join us on the 9th February!

Setting the roadmap for the coming months



The role of the ITA-CET Committee and ITACET Foundation is to be the driving force behind all education and training activities conducted by the ITA. This requires close coordination with the ITA Executive Board, the ITA Working Groups, the other ITA Committees and ITA Member Nation representatives. In order to discuss how to best ensure this coordination and fix future actions for the coming months and beyond, the ITA-CET Committee Steering Board met online on 21st October 2020.

As previously mentioned, the coronavirus has meant that a switch to online training has become a necessity and no longer an option. A series of short online live lectures has been organized for 2021, which should hopefully increase the outreach of ITA training, as these lectures will be available to a wide audience.

In addition to these online lunchtime lectures, other additional training sessions can be organized on specific topics at the request of ITA Member Nations or industry representatives. Interested parties are warmly invited to contact the ITA-CET Committee to discuss their eventual training requirements over the next year and beyond. Clearly, in the next few months at least, any event would most likely be organized online. Such events could be standalone events or organized within the scope of a larger event such as a national online conference organized by a Member Nation.

Developing new topics for training sessions, that stay abreast of the latest developments in the tunnelling industry, is of the utmost importance. For this reason, the Committee wishes to strengthen its relationship with the ITA Working Groups and increase their involvement in the development of training offers. The lunchtime lecture series in 2021 will notably be developed in collaboration with Working Group leaders and prominent WG members.

The ITA-CET Committee also wishes to strengthen its relationship with industry representatives. The Committee's mission is to foster and develop training for both blue and white collar workers in the tunnelling industry. Traditional face-to-face training sessions organized at the request of an ITA Member Nation are organized with white collar workers in mind. As for blue-collar training, given that the majority of major companies in the tunnelling industry already propose training programmes and facilities, the Committee's training activities aimed at these workers need to focus primarily on the development of certification schemes which would guarantee the quality of training received. An example of such a scheme being developed by the Committee is the TBM driver certification scheme (see the previous issue of our newsletter for more details).

The ITA-CET Committee's strategy includes nurturing and further developing its relationship with universities that plan to develop or currently offer high-quality Master or PhD courses in tunnelling and underground space use. The ITA-CET university network presently comprises professors from 28 different universities around the world. The aim of this network is to act as an exchange platform, enabling universities to :

- share ideas on course content and teaching methods
- develop collaborations on specific research activities
- organize exchanges between lecturers and students
- envisage ITA endorsement of well-established high quality Master's programmes.

In December 2021, the Committee will organize a second event to bring together university professors and PhD students (see our article on page 5 for details).

In addition to online training sessions, other online forms of training are included in the Committee's strategy. These include short ten minute video lessons, given by Working Group leaders or other prominent ITA members. It was initially planned to record a first series of video lessons in 2020, in collaboration with the Politecnico di Torino, Italy, but the coronavirus pandemic has unfortunately made this impossible. This project will resume as soon as possible.

The Committee's strategy outlined above will be declined through an action plan, to be developed shortly.

This strategy and other matters will be discussed during the annual ITA-CET Committee meeting, to be held (no doubt on-line) on 17th May 2021 (2pm-5pm CET). We invite all Committee members to save the date!

Strong interest for the WTC training session



The local organizers in Malaysia

The organizers of this year's World Tunnel Congress (WTC) certainly had their work cut out! After initially planning the event in Kuala Lumpur in May, the COVID epidemic got the upper hand and the congress had to be postponed to September and replaced by an online version. The traditional training session that takes place every year prior to the official opening of this congress had to adapt accordingly.

Despite the technical and organizational difficulties posed, the training session held on 11th September 2020 proved to be a success, with participants from nearly 20 different countries attending. The number of participants attending live throughout the day naturally varied as different time zones logged on and off.



Clockwise from top right: Arnold Dix (ITA vice-president), Robert Galler (ITA-CET Committee chair) and Kate Havard (Executive Secretary of the ITACET Foundation) online during the training session

The topic chosen for this year's congress was "Innovations in Tunnelling - Geotechnical Engineering and Project Management". The event was chaired by Kate Havard from the ITACET Foundation who introduced the session and together with the local organizers ensured the smooth transition between the following lectures.

- Overview of mega underground infrastructure development in Malaysia (Khoo Chee Min)
- Challenges Related to ground water in underground works (Ooi Lean Hock)
- Reducing Environmental Impacts (Wout Broere WG20)
- A Guide for Young Professionals - Navigating the legal professional landscape as a tunnelling professional in a big and diverse world (Arnold Dix – ITA vice President)
- The reuse of excavated materials – Challenges (Robert Galler ITA-CET committee chairman)
- Tunnelling health and safety – moving forward (Donald Lamont – WG5)
- Specific funding sources for underground structures (Harald Wagner)
- Innovations in conventional tunnelling (Nasri Munfah - WG19)



In the control centre, Kuala Lumpur, during the training session.

A recording of this training session was made available on the WTC website after the congress and information provided by our Malaysian colleagues indicates that in total the event has been viewed several hundred times! All in all, it can therefore be said that this WTC training session proved a great success. Many thanks to the lecturers, the local organizers (pictured top left) and the ITACET Foundation for making it possible.

Save the date!

A call to tunnelling academia

Following the success of the first ITA-CET meeting of tunnelling professors and PhD students in December 2019, the ITA-CET Committee has taken the decision to repeat this event in December 2021, when hopefully the COVID crisis will be behind us and face-to-face meetings will once again be possible.

The aim of this event is to strengthen collaboration within the ITA-CET university network, which comprises 28 universities from around the globe that provide Master and PhD level courses in tunnelling and underground space use.

For professors, it will provide a unique opportunity to exchange on course content, teaching methods and research projects. It will also be a chance for them to discuss possible student exchanges and opportunities to intervene as a lecturer in other universities, either on a periodic or one-off basis.

For PhD students, the event will be an opportunity to present their research work and meet up with other students in tunnelling from around the world.

The professors meeting will be an informal event that will take place over an evening dinner on Thursday 2nd December 2021, in a relaxed and friendly atmosphere that will hopefully foster networking. A parallel evening event will be organized for PhD students.

The next day, on Friday 3rd December, students will be able to present their PhD research work to all attending professors and PhD students, in addition to other local participants.

This second meeting of ITA-CET university professors and PhD students will take place in Montanuniversity Leoben, Austria and is open to all members of the ITA-CET university network, whether from Europe or elsewhere around the world. It will be preceded two other events in English at Montanuniversity in the same week: an international conference entitled TBM Digs 2021 and the ATCC-Seminar "Digital transformation in tunnelling". ITA-CET university network members are welcome to attend.

Universities that are interested in taking part in the professors' dinner meeting on 2nd December and/or the PhD student conference on 3rd December are invited to contact the ITA-CET Committee secretariat at the following address:

ita-cet.secretariat@developpement-durable.gouv.fr

Abstracts for proposed PhD presentations can be sent to the same address.

To register for the TBM-DiGs 2021 conference and/or the ATCC Symposium at MontanUniversity Leoben, please do so through the corresponding web sites via the links above. Both events will be organised in a hybrid format, but a physical meeting is highly preferred.

We invite you to save the dates and look forward to hearing from you!



PhD students presenting their research work at Politecnico di Torino in 2019

Innovative training for blue-collar workers in tunnelling



The tunnelling industry urgently needs highly trained employees, not only at the engineering level but also in fields covered by blue-collar-workers.

Together with 7 tunnel construction companies, a four-month training course for blue collar workers in tunnelling has been developed at ZaB – Zentrum am Berg, an underground education and training centre in Austria (www.zab.at) and was held for the first time in 2020. For each of the involved construction companies it was possible to send 2 trainees. The training took place from August to November 2020 and a similar course is already fixed for 2021 and 2022.

During the 4 months of training, the participants are given an overview of all aspects of tunnelling and the corresponding technology and machinery. In the process, they obtain a blasting certificate, i.e. the authorization for blasting work in tunnel construction and the TSS - Tunnelling Shotcrete Specialist license, enabling them to drive shotcrete machinery. The course also enables trainees to qualify as a first aider and on-site safety officer.

This new training in tunnelling technology was set up jointly by well-known tunnelling companies such as STRABAG, PORR, BEMO, Hinteregger, JÄGER, ÖSTU-Stettin and SWIETELKSY, together with Montan-University Leoben (member of the ITA-CET university network).

The tunnelling industry representatives involved have described this new training course as not only very innovative, but also unique in the world.

The training comprises a total of 568 teaching units and is divided into four modules:

- Theoretical basics in tunnel construction
- Occupational health and safety
- Training on special tunnel equipment and machinery
- Practical exercises in tunnelling technology

Technical knowledge and experience in tunnelling are desirable prerequisites for attending the course. Special tunnels for training purposes, on a scale of 1: 1, have been designed at the ZaB - Zentrum am Berg in Eisenerz, Austria and ensure realistic practical applications. The trainees take their final exams at two road and rail tunnels within the ZaB - Zentrum am Berg.

The curriculum also includes excursions to well-known equipment manufacturers and to construction sites. The prospective tunnelling technicians get to know the latest equipment, receive on-site instructions from the manufacturer and can then actively use the equipment during their education and training as well as during the final exams. The final exam includes the personal "Tunneling Technician" certificate in accordance with ISO 17024. This internationally recognized certificate of competence is issued by the accredited certification body SystemCERT Certification Society. m. b. H. and is valid for five years. Relevant advanced training of at least eight teaching units and three years of full-time professional experience in the subject area must be proven in order to be extended.

