



The International Journal for the Tunnelling Industry

Tunnelling Journal

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Catching up with ITAtech



Tunnelling Journal's Pete Kennedy talks with ITAtech chair, Nick Chittenden and discovers what's been keeping the ITA sub-group busy over recent months.

What's worked in the past has... well, worked in the past. Why change now?

That's a great question, according to Nick Chittenden, chair of ITAtech, a subgroup of the International Tunnelling Association.

"There are better ways to do things," he says. Clients, such as town planners, could save a fortune on time and materials if they tried different approaches, in particular utilising new technologies.

Yet Chittenden also realises there is a great deal of incentive to maintain the status quo. "By default, consultants and designers want to essentially cut and paste," he comments. "Within the ITA, most of the working groups are made up of consultants. They tend to be conservative."

Sometimes it's to avoid risk. Other times it's likely a matter of comfort.

Regardless, the "why change?" approach prevents clients from getting all they can out of a project. And Chittenden and others at ITAtech are out to change that. Their key initiative is publishing a series of best practice guidelines to give tunnelling decision-makers the technical knowledge and background they need to modernise the industry's thinking.

From the start

The first guidelines were issued in 2013. There are now 12, with two more ready for publication in the immediate future.

"We are starting to create a library of sorts that we hope will make an impact on the industry," Chittenden says.

Collaboration across the industry is essential for ITAtech – as are suppliers, because they are often the drivers of change. "To bring something innovative to the party, you generally rely on the suppliers," he says, "They tend to create something new."

He offers wet-mix sprayed concrete as such an example, "The development of wet-mix concrete was 100 per cent driven by the suppliers."

Yet "new" is sometimes frowned upon by industry professionals. There tends to be little incentive to try a new approach, and many times those designing or consulting don't fully understand how to improve a particular process.

ITAtech's guidelines were created to counter such mindsets.

"We want people to go and use these guidelines," Chittenden adds. "If you are a town planner who is looking at creating more underground space, and you're not sure of the technical details, then you might want to look at ITAtech. We are developing best practices and guidelines to enable those clients to make the right decisions."

For example, some planners might fear they cannot tunnel through the rock beneath a historical structure due to vibration from the drill and blast process. Yet that course of action can be done safely if the correct

procedures are followed. "You can do it properly if you adopt the latest technology," Chittenden says.

ITAtech has also published guidelines for TBM rebuilds. "Clients might buy a TBM because they know they have several different projects to complete," he says. "But they would have to rebuild the TBM every time. What constitutes a rebuild? What is the process, and how do you know the rebuilt TBM is safe? You don't just throw something together and call it a rebuilt machine. The guidelines explain that."

TBMs are good examples of how a specific topic can be explored on both the machine and material sides of the process. "It's not just TBM technology, but also fibres for segments and spray-applied waterproofing," he says. "We have guidelines on those as well."

Future publications are likely to tie in sustainability, which presents itself in a number of ways on tunnelling projects.

Suppliers Are Key

In addition to his position at ITAtech, Chittenden is BASF's regional manager for underground construction for the Middle East and Africa. His role as a supplier has opened his eyes to the opportunities that are there for the industry.

"There are industry standards, but they don't cover all the information and all the technologies that are available today," he said. "The standards



An ITA Activity Report

(separate from the ITAtech guidelines) are conservatively built. They do not cover new supplier products."

"I see day in and day out that designers do the same as they did last year. They do not take advantage of all the resources that are available in the industry today," he explains.

Chittenden believes that is because suppliers are not given the proper credence – even if they can offer a difference-maker on the project. "Suppliers are viewed as simply trying to sell their product," he says.

ITAtech consists of suppliers who often compete with one another, yet also see the benefit of advancing the broader industry.

"As a supplier myself, my main focus is to make the entire pie bigger," Chittenden says. "The industry then grows. By doing that, we grow the potential business



as suppliers – but in a very professional and sustainable way."

The resources are there for the designers and consultants. They just need to be aware of what is available – and become comfortable utilising it.

"We encourage any suppliers out there who want to develop the

use of the products and advance the technologies to become part of ITA and ITAtech," Chittenden says. "It's a great way to generate support for the industry and ultimately to drive change. We are specialists who understand the industry. We are engineers who happen to be suppliers." 

International Tunnelling Association (ITA)

The ITA provides training, publications and advocacy for the tunnelling industry. It is the parent organisation of ITAtech. The ITA has three main focuses:

- How to go underground
- Why to go underground
- The use of underground spaces

ITAtech

about.ita-aites.org/wg-committees/itatech

ITAtech, a committee of the ITA, promotes new and state-of-the-art construction technologies and methods for the sustainable development of underground space.

- Established in 2011
- Comprised of suppliers, consultants and contractors
- 60+ prime sponsors and supporters
- Emphasises new techniques and products
- Specialises in "how to go underground"

Goals

- To provide a platform for engineers, manufacturers, contractors and suppliers to draw global experience and expertise together for the benefit of the entire industry

- To find ways to support the introduction of new techniques and products by collaborating on the development of design and performance criteria and preparing application of best practice guidelines

Structure

ITAtech is comprised of activity groups that include all processes related to underground construction. The organisation consists of four sub-groups:

- Data Management
- Excavation
- Lining, Support and Waterproofing
- Maintenance and Repair

Benefits

- Improved information exchange on technologies and development between suppliers and contractors
- One-voice policy for the underground industry, which enables more clarity for stakeholders

Participation

- Open to all companies involved in the tunnelling industry
- Individuals wanting to be involved can learn more at: <https://about.ita-aites.org/wg-committees/itatech/information-and-contact>

Published Guidelines

Available at: <https://about.ita-aites.org/wg-committees/itatech/publications?start=0>

- Practical Approach for Controlling Blasting Vibration and Optimizing Advances in Tunnelling
- Rebuilds of Machinery for Mechanized Tunnel Excavation
- Geophysical Ahead Investigation Methods / Seismic Methods
- Good Practice of Fibre Reinforced Precast Segment – Volume 1
- Good Practice of Fibre Reinforced Precast Segment – Volume 2
- Vibration Control in Urban Drill & Blast Tunnelling
- Remote Measurements Monitoring Systems
- Monitoring Frequencies in Urban Tunnelling – Version 2015
- Rebuilds of Machinery for Mechanized Tunnel Excavation
- Best Practices for Segment Backfilling
- Standard Indication of Load Cases for Calculation of Rating Life (L10) of TBM Main Bearings
- Design Guidance for Spray Applied Waterproofing Membranes

Pending Publications

- Permanent Sprayed Concrete for Ground Support
- Rock Support for Mechanized Excavation



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Our global network of tunneling specialists provides you with tailored solutions and application know-how that improve operational safety and sustainability whilst increasing efficiency.

More at www.ugc.basf.com