

## DFI Europe



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In 2016, DFI Europe achieved a lot for our industry and for our members. For 2017, DFI Europe has set out additional goals, as the industry undergoes significant changes, and we are all challenged by a shortage of staff and a change in community values. The importance of work-life balance is increasing for the upcoming generation. DFI Europe will be broader in its approach to other associations, universities, federations, institutes, young professionals, experts, etc. We see a bright future ahead due to exciting projects and collaboration throughout our industry and community.

Currently, the economic situation in Europe is still very diverse geographically – Southern Europe is developing slowly; some of the Eastern European countries have caught up, especially Poland who has increased its infrastructure portfolio and is well on its way; and Scandinavia and Western Europe are still investing in long-term infrastructure projects and supporting renewable energy development, with a strong focus on sustainability. The Carbon Calculator, which was developed through a joint project effort by DFI and EFFC, is a tool that is used to compute the CO<sub>2</sub> emissions of foundation and geotechnical works. This tool can be used by decision makers to assess the carbon footprint of their projects and to make a more informed choice when selecting appropriate methods and equipment. Details about the Carbon Calculator can be found at [www.geotechnicalcarboncalculator.com/en/](http://www.geotechnicalcarboncalculator.com/en/). Building information modelling (BIM) will be a standard requirement in our industry, and its development is complex and fast. In all fields represented by DFI activities, BIM will be an integral part of the work. Some countries are developing their own guidelines for BIM, as a Europe-wide standard does not seem possible currently. Standardization is difficult due to varying requirements from owners, manufacturers, consultants, construction companies, etc.

However, the future is BIM, which goes along with a digitalization of all our processes. If we use 3D models, collect all of the monitoring data, integrate collaboration platforms, survey with aerial photos obtained from drones, remote control the equipment, furnish all workers with safety devices (e.g., to avoid collision with equipment, etc.), then all of these digitalized processes can be combined to create big data in a BIM model. This supports integrated work from all stakeholders, access to current data, tracking of changes to project documents, which always provides updated information, etc. This type of system will assist in preventing mistakes, improving communication and making available all of the data during the lifetime of a project. We, as DFI, will follow the topic

closely during the upcoming years, as the impact on our industry could be significant. In addition, we see that clients from large infrastructure projects are already requiring BIM as a standard.

PileInspect is a joint research program conducted by a consortium of 10 partner organizations, including DFI Europe, from six European Union (EU) countries and is funded by the EU Government. The research program was formed to address the perceived shortcomings of the impulse-echo and impulse-response integrity testing methods and to develop an improved low-strain integrity test method for deep foundations. A workshop was held in November 2016 to explain the justifications and objectives for the research and to present the research performed to date. DFI Europe intends to schedule additional workshops during 2017 to continue to inform industry members about the project and its potential in detecting damaged piles.

DFI Europe is drafting and compiling the content for a webinar or video to be delivered by its board members to universities. The webinar or video will present and explain various deep foundation methods in an effort to educate civil engineering students on the value of specializing in geotechnical engineering and of the various career opportunities available to them after graduation.

**International Conference  
on Deep Foundations and  
Ground Improvement**

**June 6-8, 2018 | Rome, Italy**



### Rome 2018

Plans are coming together for next year's joint DFI-EFFC International Conference on Deep Foundations and Ground Improvement in Rome from June 6-8, 2018. A call for abstracts will be released shortly, which will solicit papers on the following topics:

- Deep Foundation Technologies
- Ground Improvement Technologies
- Modeling & Computing for New Techniques
- Information Management Systems
- Building Information Modeling
- Equipment and Material Advancements
- Contractual Rules
- Construction Risk
- Case Histories including Lessons Learned
- Innovative Solutions for Complex Problems
- Harmonization of National & International Codes
- Geotechnical Investigation & Testing

Additionally, clients or client representatives from all over the world are being invited to present their upcoming projects pertaining to the development of new infrastructure and the specific challenges they are facing with regard to the geotechnical works involved. In response to these challenges:

- Researchers and designers are invited to contribute and debate design and modeling criteria for new and innovative technologies.
- Contractors are invited to discuss case histories that highlight how these procedures impact contractual rules, construction risk, execution procedures, quality control and final acceptance criteria.
- Geotechnical equipment and material manufacturers as well as technology providers are invited to present advancements and trends in capabilities, safety, sustainability and environmental compliance.

Young researchers are encouraged to submit, for consideration, summaries of their students' Ph.D. dissertations and M.Sc. final reports that are related to the conference theme of deep foundations and ground improvement.

## European Projects

**Prague Metro Expansion** — This project in the Czech Republic is an example of a new infrastructure project where BIM is required per the contract documents. The Prague Metro comprises about 60 km (37 mi) of railway along three lines, mostly underground, that serves 57 stations and more than 620 million riders annually, making this metro system the sixth busiest in Europe. Though the first portions of the system began operating in the early 1970s, the bulk of the network was built about 30 years ago, and was last expanded in 2008.



**Prague Metro bridge between Lužiny and Hurka**

The latest expansion of the Metro system is expected to add a new line that would connect the southern areas of Prague to the city center. Construction was approved in 2013 and is expected to start in 2017 and be completed by 2022. In addition, there are plans to expand the system further through the addition of a fifth line. In the future, plans are being developed to extend the existing Line A to bring service to those living in the western and northwestern parts of the city, and will eventually reach Ruzyně International Airport. Additional details can be found at [www.railway-technology.com/projects/prague\\_metro/](http://www.railway-technology.com/projects/prague_metro/).

**Copenhagen Metro Expansion, Denmark** — When completed, Cityringen will be a 16 km (10 mi) long twin bored underground metro that will form a loop around the historic center of Copenhagen linking the city centers of Copenhagen and Frederiksberg. As part of this ambitious project that was started in 2011 and expected to be open in 2019, there will be 17 stations, 4 ventilation/service shafts, and a fully-automated driverless system. Upon completion, the two stations of the Nordhavn extension will be linked to Cityringen and will be part of the metro system.

In addition to the construction aspects of the metro expansion, *Cool Construction* is an endeavor by the city of Copenhagen where the walls encapsulating the construction work sites are turned into temporary urban artistic labs for the benefit of neighbours and passers-by. More details about *Cool Construction* can be found at



**Example of the Cool Construction artistry**

[intl.m.dk/#!/about+the+metro/metro+expansion/cool+construction](http://intl.m.dk/#!/about+the+metro/metro+expansion/cool+construction).

In 2015, the Danish Parliament approved the construction of a Metro extension to Sydhavn, which will be approximately 4.5 km (2.8 mi) long and will be a part of the Copenhagen Metro network. Construction of this new line is expected to be completed in 2023, and will provide five new stations from Fisketorvet to Ny Ellebjerg. This new extension will consist of four underground stations and one above-ground station where riders will be able to transfer to regional and S-trains. Additional details can be found at [intl.m.dk/#!/about+the+metro/metro+expansion/the+sydhavn+extension](http://intl.m.dk/#!/about+the+metro/metro+expansion/the+sydhavn+extension).



**Map of Sydhavn metro extension**