UNDERGROUND ENGINEERING: Opportunities, Challenges and Innovation

Complexity, sustainability, safety, security, versatility, creativity, and innovation are essential themes driving engineering science today. The world is changing rapidly and although the content and methods of engineering are evolving with it, an engineer’s professional mission remains the same: to solve problems and make decisions.

The application of new software such as BIM, Digital Project and Advanced TBM is shaping the landscape of underground design and construction, particularly for mass transportation and water conveyance. This lecture will demonstrate the successful use of technology to improve project design and management via project examples from around the globe. A particular focus will be Italy, which presents unique geographic and geologic challenges for the development of sophisticated underground infrastructures.

Underground works will remain a massive market all over the world for at least the next two decades, and the bright light at the end of every tunnel will be the new and exciting opportunities these projects present for engineers across multiple disciplines and locations.

About Paolo Mazzalai, P.E.

A native of Italy, Mr. Mazzalai earned a Master of Science degree in civil engineering in 1973 from Padua University, where he has taught as an associate professor for many years. The field has been his laboratory on advanced engineering projects: the dam of Valda in the 1980s, the road tunnel of Martignano in the 1990s, and into the 21st century with record-setting infrastructure such as the Brenner Base railway tunnel connecting Italy and Austria through the Alps. An international planner of major infrastructure projects in transport and water, Mr. Mazzalai is the author of over 100 scientific papers and a member of several scientific and entrepreneurial professional associations.


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