

Special Issue

Maintenance and Safety Strategies for Existing Tunnels: Challenges and Innovations

Message from the Guest Editors

This Special Issue aims to provide a platform for state-of-the-art research and case studies focusing on the maintenance, inspection, and safety assessment of existing tunnels for road and railway systems.

Contributions addressing innovative methods for condition evaluation, risk-based maintenance planning, and the implementation of national and international guidelines (such as EU directives or country-specific codes) are especially welcome. Topics of interest include, but are not limited to, the following:

- Structural diagnosis and condition classification of existing tunnels;
- Risk-informed approaches to tunnel maintenance and safety;
- Application of digital tools (BIM, digital twins, sensors, AI) in tunnel asset management;
- Experiences with tunnel inspections and periodic assessments;
- Repair techniques and strengthening methods for tunnel linings;
- Case studies of tunnel retrofitting, refurbishment, or failure investigation;
- Implementation of safety regulations and standards (e.g., EU Directive 2004/54/EC, national frameworks);
- Integration of monitoring data into decision-making processes;
- Life-cycle assessment and sustainability of tunnel maintenance strategies.

Guest Editors

Dr. Andrea Carigi

Department of Environment, Land, and Infrastructure Engineering,
Politecnico di Torino, 10129 Turin, Italy

Dr. Carmine Todaro

Department of Environment, Land and Infrastructure Engineering,
Polytechnic University of Turin, 10129 Turin, Italy

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Applied Sciences
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
appls-ci@mdpi.com

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

Editor-in-Chief

Prof. Dr. Giulio Nicola Cerullo
Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32,
20133 Milano, Italy

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