

User name: Tecne Systra-Sws Advanced Tunneling Srl

Project name: Digital implementation in tunnel assessment and rehabilitation

Location: Italy

Background:

- The tunnels along Italy's Autostrada motorway, which were built in the 1960s and 1970s, had to be improved to meet updated management and risk guidelines.
- Sws Advanced Tunneling (Tecne) was hired to perform structural renewal and reinforcement.
- The project included investigative surveys to evaluate existing tunnel conditions, as well as design demolition and reconstruction recommendations.

Challenges:

- Needed to coordinate multiple disciplines working simultaneously while minimizing the impact on motorway traffic.
- Sought an integrated digital 3D modeling and simulation platform accessible to all project participants.

Solution:

- Used Bentley's geological, geotechnical, and structural modeling and analysis applications, establishing a connected data environment.
- Created three comprehensive 3D models representing the existing conditions, demolition, and proposed works.
- The rehabilitations sought to extend the existing tunnel lifecycles, and the 3D design models provided the basis for developing a digital twin for future asset management.

Outcomes:

- Bentley's technology helped infrastructure professionals collaborate and bring together engineering, enterprise, and operational data, above and below ground, in a geospatial context and at scale, to improve performance across the lifecycle.
- Reduced modeling time by 21% to save approximately EUR 26.6 million in costs.

Quote: "Bentley's workflow provided tools to develop assessment models for better survey data integration and interpretation, supporting an intervention solution for making and developing project and construction information tunnel models that can become the basis for a digital twin." – *Ana Emiliano dos Reis, BIM Manager, Tecne.*

Image caption/courtesy 1: Tecne used Bentley applications to conduct investigative surveys and evaluate existing tunnel conditions. *Image courtesy of Tecne.*

Image caption/courtesy 2: Bentley digital twin applications helped them create three comprehensive 3D models representing the existing conditions, demolition, and proposed works. *Image courtesy of Tecne.*

Image caption/courtesy 3: The 3D design models provide the basis for developing a digital twin for future asset management. *Image courtesy of Tecne.*

For more information, please contact Bentley PR at PR@news.bentley.com.