

Bentley[®]
Advancing Infrastructure

CONNECT Edition



OpenTower™

Structural Modeling, Analysis, and Design for Communication Towers

OpenTower CONNECT Edition is a leading structural solution for telecommunication towers. This purpose-built application captures real-life analysis workflows, including modifications, multiple scenario evaluations, foundation checks, and connection designs. It can connect with equipment databases to automatically generate wind and seismic loadings, analyze the structure, and produce custom reports. The application's advanced graphics offer a realistic view of the tower as modeled, including 3D rendering of equipment and feedlines on the tower.

Flexible and Extendable Architecture

OpenTower was developed with an open architecture. Considering changing business trends on modifying existing structures, the application is designed to work with external catalogs and libraries, which can be edited and extended throughout the lifecycle of tower management and re-analysis.

OpenTower includes comprehensive databases, such as appurtenances catalog, bracing library, and truss-leg library. A custom tower catalog is provided for built-up sections, typically used for reinforcing towers. This catalog can be extended by adding new sections and new section profiles. User-provided table (UPT) is an innovative method to create and use user-defined materials, sections, and appurtenances.

With state-of-the-art technology and graphics, OpenTower is designed for its openness and user-friendliness.

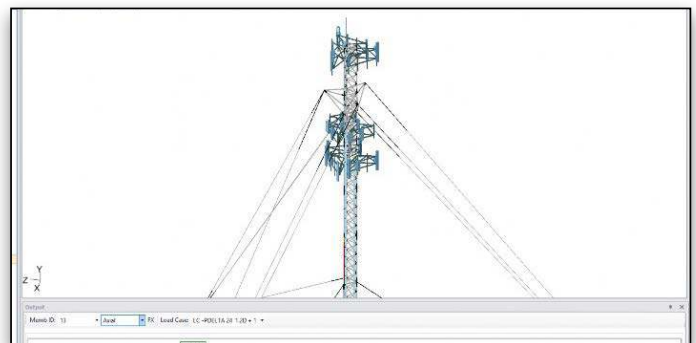
Increased Modeling Efficiency with Automation and Best Practices

Engineers can now model lattice towers faster than ever using our physical model generation utilities through parametric wizards. This includes automatic orientations of all members. It is a physical modeling system, where geometry is defined as a combination of multiple panels, starting from the top. Discrete and linear appurtenances can be easily attached and viewed through built-in catalogs and an intuitive user interface. OpenTower automatically generates wind, ice, and seismic loads based on TIA 222- Rev F, Rev G, and Rev H standards along with ASCE 07.

The application was designed by practicing engineers and encompasses engineers' desired workflow and best practices. All the inputs were cleverly structured and screens were reimaged to optimize your work. Discrete appurtenances can be attached through mounts, and feedlines are provided in reference to linear attachments, such as ladders and banjo brackets.

Advanced Capabilities

An OpenTower model essentially becomes a living history of a tower's lifecycle management through its modification layer and scenario analysis capabilities. The application's multilayered approach to separate modification layers from the base model enables users to combine an installed model with hierarchical proposed



Detailed post processing – member axial graph

modifications. All modifications are saved for future use.

The application separates loading layer from geometry layer. Users can create any number of load definitions, groups, and configurations with appropriate classifications. A loading layer can then be combined with a geometric layer to create an analysis scenario. Users can analyze and compare as many scenarios as needed to deduce the optimum configuration.

Realistic Graphics and Precision Modeling

OpenTower adopted "Wysivwyg" philosophy. It promotes precision modeling and offers many powerful capabilities to achieve it. All section profiles, including built-up sections like split-pipe, are drawn to scale with appropriate rotation of its major and minor axes. Any object, including discrete and linear appurtenances can be clicked to review its properties. Feedline Tool helps to position the feedlines along the height of the tower by forming and moving feedline stacks on a grid system. The application can automatically form clusters and calculate the effects of shielding. Visualization shows realistic 3D graphics of all modeled equipment on the tower along with geometry.

Powerful Results and Diagrams

OpenTower provides an exhaustive set of post-processing features that includes results and diagrams. It renders leg compression curves, deflection, tilts, twists, axial forces, moments, torsion, and stress diagrams along with dynamic browsing facility for member forces and member stresses at any point of the cross-section on any member at any location for any load case. It displays tables for member-end forces, joint displacements, and support reactions. Users can customize report formats through the intuitive report generator and export to various formats, including PDF and Excel.

Support for Legacy Software and Interoperability

OpenTower can import any RISA Tower or tnxTower model (.eri files). The application generates a STAAD.Pro® file that can be used for advanced analysis, like dynamic and buckling analysis, as well as flexible mat foundation design.

System Requirements

Operating System

Windows 10 x 64

Processor

Intel® Core i7 or similar

RAM

16 GB minimum,
32 GB recommended

Available Languages

English

Complementary Products

STAAD.Pro

Find out about Bentley
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Outside the US +1 610-458-5000

Global Office Listings

www.bentley.com/contact

OpenTower At-A-Glance

Physical Modeling with Bearing Angle for Square and Triangular Self-supporting and Guyed Towers

- Enhances productivity through faster model generation wizards
- Models can be edited parametrically, which increases efficiency and saves time
- Automatic member orientation enabling precision modeling

Flexible Libraries, Catalogs, and User-provided Table

- Increases productivity by providing a library of reusable bracing patterns and truss legs
- Custom tower catalog for commonly used built-up section profiles and materials
- Extensive database of mount, discrete, and linear appurtenances

Realistic 3D Graphics

- Tower and all equipment are drawn to scale
- Smart input screens for precise position of equipment with azimuth and offsets
- Feedline tool for stacking and positioning of feedlines along with cluster formation

Tower Modification, Scenario Analysis

- Automatic generation of wind, ice, and seismic load cases for tower structures and external attachments as per TIA-222-F, TIA-222-G, and TIA-222-H standards
- Hierarchical modification layers and scenario analysis for “what-if” scenario investigation and data management

Analysis-linear Static, P-delta, Nonlinear Cable, and Modal Analysis

- Post-processing features include joint displacements, member forces, stresses, support reactions, leg compression, deflection, tilt, and twist results in terms of diagrams and tables
- Enables the user to have a detailed insight of the analysis results
- Helps to plot multiple post-processing diagrams for a selective set of physical members for complex structures

Foundation, Connection, and Member Design as per TIA-222-F, TIA-222-G, and TIA-222-H Standards

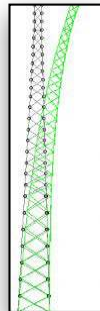
- Integrated foundation design saves time and reduces errors

Customizable, User-friendly Exhaustive Report-generation Facility

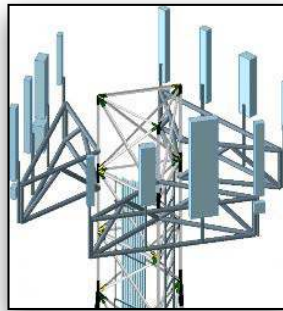
- Create all complete reports straight from the software and avoid manual report compilation activities
- Establish dynamic update links and save time in regenerating the desired report

Interoperability

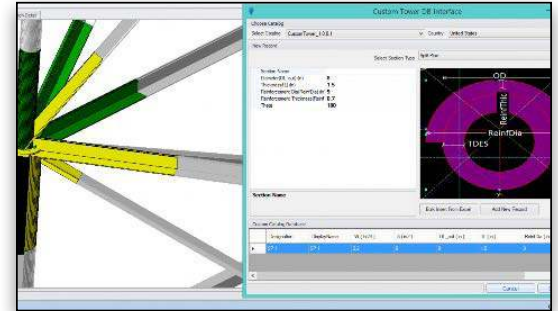
- Import tnxTower or Risa Tower models
- Interoperability with STAAD.Pro and other Bentley products for design, detailing, and drawing generations
- Safe software FME integration
- Preconfigure integration with ProjectWise®
- Bentley Map® Mobile publishing



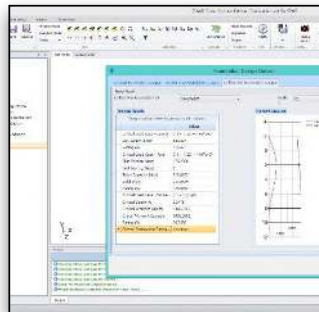
Interoperability
with STAAD.Pro



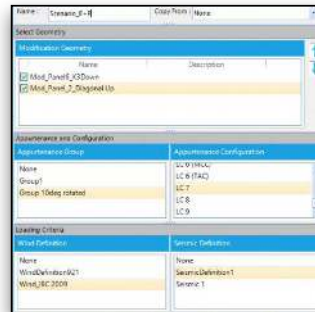
Realistic Graphics



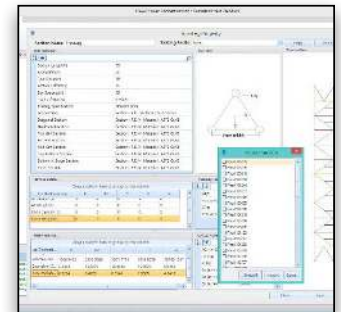
Physical modeling with custom tower catalog and automatic member orientation



Built-in foundation design



Scenario analysis



Flexible architecture, bracing library