

Bentley®

Building a Sustainable Future with Bentley: 10 Innovative Approaches

Part 1



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Introduction

Here are the first five of the 10 innovative ways that infrastructure professionals across the globe are looking for ways to transform how they design, build, and operate infrastructure to prepare for a changing climate. Solutions from Bentley Systems are helping industry leaders make more sustainable choices. From designing energy-efficient buildings to mapping and protecting groundwater, our applications are helping future-proof aboveground and belowground infrastructure.

Here are the first five of the 10 innovative ways that we're helping city planners, engineering teams, and other infrastructure professionals reduce the ecological footprint of infrastructure and adapt to the changing climate.



Reducing Embodied Carbon for Infrastructure

Engineering teams are looking for ways to reduce the embodied carbon in infrastructure designs. This effort can be challenging because carbon-intensive materials involved in construction, such as steel and cement, are difficult to replace. Transporting materials to project sites can also increase the carbon footprint of projects.

Our carbon analysis capabilities make it easy for designers and engineers to efficiently calculate, report, and visualize the embodied carbon footprint of their proposed design. Carbon analysis is an important first step in integrating sustainability into the design and construction process.



Designing Environmentally Resilient Infrastructure

Our solutions are helping infrastructure professionals design for a changing climate, as discussed in the following two examples.

Resilient Offshore Wind Platforms

Engineering teams use our structural software to design increasingly resilient wind power infrastructure. [OpenWindPower®](#) and [SACS™](#) can simulate the response of wind turbines and their foundations to different wind speeds and turbulence. Teams use our solutions to develop and manage control mechanisms for blade pitch, yaw, and load. These design simulation capabilities can also reduce the risk of turbine damage and downtime after severe weather. [Learn how](#) Fujian Yongfu Power Engineering used this technology to install one of the world's deepest offshore wind facilities.

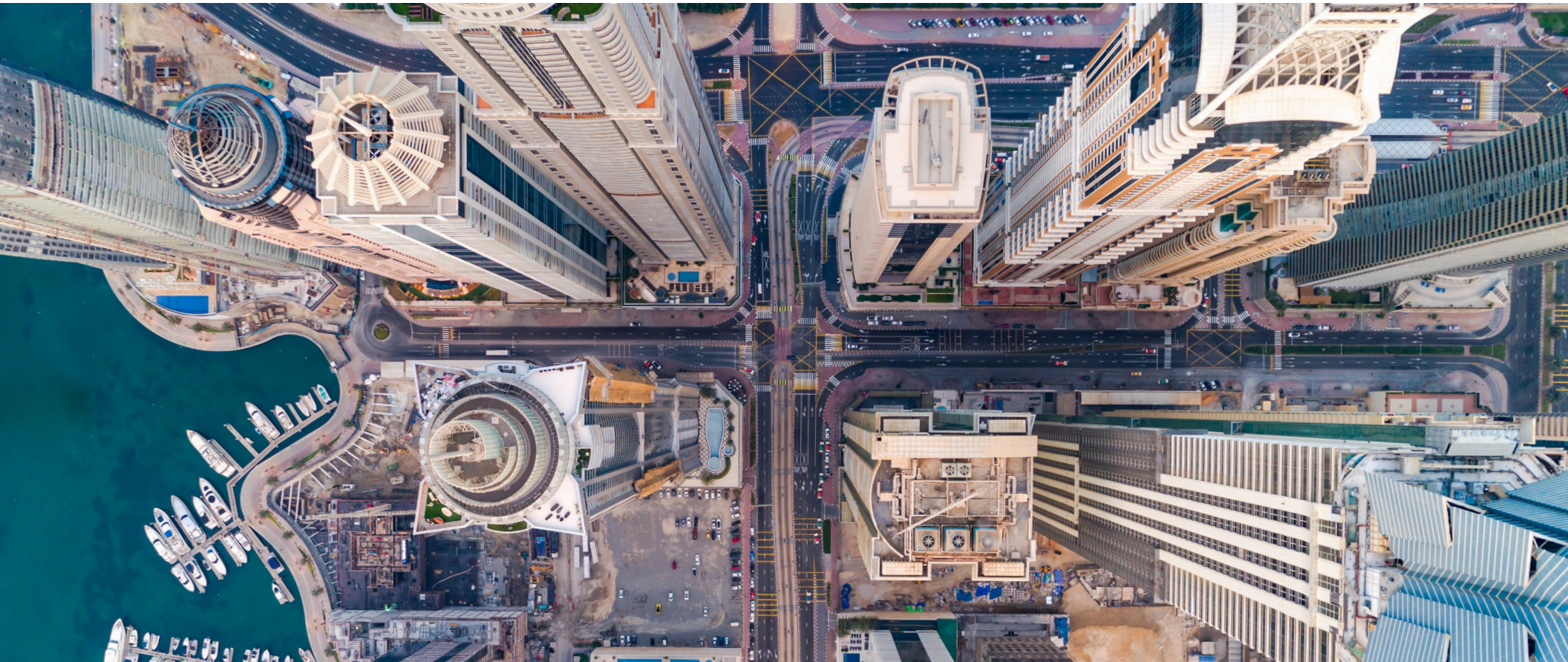
Safer Infrastructure

Structural engineers rely on [STAAD®](#) to perform 3D structural analysis for steel and concrete structures. STAAD helps teams develop environmentally resilient buildings, bridges, tunnels, towers, and industrial facilities. Engineers used Bentley solutions to [model and develop](#) a [storm surge concept](#) in Tacloban, Philippines.



Optimizing Operational Building Performance

We're helping engineers and architects design energy-efficient buildings. [OpenBuildings® Designer](#) allows engineering teams to analyze a building's energy performance and sustainability by using industry-leading standards, including ASHRAE, CIBSE, EnergyPlus, Radiance, and PartL. Teams can evaluate their designs by simulating heating and cooling loads, internal daylight levels, and HVAC performance. They can also analyze operational carbon and energy usage—enabling better-performing, more sustainable buildings that are cheaper and easier to maintain. [Learn how](#) our solutions are empowering sustainable infrastructure.



Hyperscaling Green Hydrogen Plants

Bentley's [AutoPIPE®](#), an application for pipe stress and vessel analysis, helps engineers design safe, efficient green hydrogen plants. Use it to build hydrogen pipes that can cost-effectively resist erosion, withstand high temperatures, and manage stress distribution. Design pipelines that can be used for underground storage, transportation to refueling stations, and injection into natural gas pipelines. The software has been updated to incorporate specific guidelines and requirements outlined in the ASME B31.12 standard for the design and analysis of hydrogen piping and pipelines.



Locating Geothermal Energy Production

Three-quarters of global greenhouse gas emissions are associated with the energy sector. Diversifying energy production from renewable sources—such as geothermal—is critical to achieving net-zero milestones. Once engineering teams locate geothermal resources, they need guidance to determine exactly where to drill. After all, drilling in the wrong place can be costly. Teams use [Oasis montaj®](#), [Leapfrog® Geo](#), and [Volsung™](#) to analyze geological data, visualize the flow of fluids through porous media, and refine well-targeting. These solutions can help minimize costs and redirect wells as they're being drilled. [Learn how](#) researchers in Botswana are using these tools to determine the geothermal potential of the Kasane Hot Springs.

We hope you'll continue to be inspired by reading the rest of the 10 innovative approaches to building a sustainable future in part 2 of this report.



Ready to get started? It is easy, and we can help.

[Start a chat](#)

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