

Devising smart building solutions

Software like STAAD.Pro from Bentley Systems can help design any kind of structures, thereby increasing design productivity and lowering total cost of ownership.

RECENT REPORTS SUGGEST that construction awards in the GCC may hit US\$85.6bn in 2017 and more than US\$40bn in contracts to be awarded in the UAE alone this year.

As the need for effective building models continue, Bentley Systems brings to us products and models that can quickly produce high quality and economical designs.

One such system was used by UAE-based Rasana Engineering. The firm used Bentley applications to deliver the luxury US\$544.5mn Nakheel Mall, which serves as the centerpiece for Dubai's world-famous manmade island, Palm Jumeirah.

The sole steel contractor for the project, Rasana used STAAD.Pro Advanced for analysis of all steel structures and Sectionwizard for the irregular built-up steel sections.

Implementing an integrated analytical modeling approach resulted in a 15 per cent savings in design time for this state-of-the-art complex featuring five retail levels with 350 shops, restaurants, and leisure attractions spread across 1.2 million square feet of leasable space.

Located in Palm Jumeirah, off the coast of Dubai, UAE, the Nakheel Mall is a 418,000- sq m complex featuring a hotel, medical centre, fitness facility, and cinemas, as well as a three-level underground parking structure that accommodates 4,000 vehicles. The facility boasts a VIP entrance and rooftop fountains and waterfalls plunging 19.8m into the mall. Nakheel Properties retained Rasana Engineering (Rasana) as the sole steel contractor for the project. To design the steel structure economically and safely, without sacrificing quality, Rasana needed interoperable structural design technology with advanced analysis capabilities.

Integrating STAAD.Pro Advanced reduced the originally budgeted 7,900 design hours to just 6,656 hours.



The aim of structural analysis is to design a structure that has the proper strength, rigidity, and safety. (Photo: Bentley Systems)

Rasana used STAAD.Pro Advanced for analysis and design of all steel structures, and Sectionwizard for irregular built-up structures. The project team initially modeled all structures in Tekla and then imported them directly into STAAD.Pro Advanced for further design and analysis. The flexibility and interoperability of Bentley's 3D structural analysis and design applications enabled an integrated design approach to deliver this unique world-class structure offering sprawling views of Dubai's skyline.

Using STAAD.Pro Advanced helped economise on a majority of the steel sections resulting in a 15 per cent savings in design time. The direct integration between STAAD.Pro Advanced and Tekla improved project collaboration and eliminated the rework of inputting information, while the dynamic performance of STAAD.Pro Advanced

accelerated the analysis process and helped Rasana deliver on-time, in-budget construction drawings. The focal point of the world's largest manmade island and popular holiday spot, Nakheel Mall will be a huge boost to the local economy.

Productivity promised

Integrating STAAD.Pro Advanced reduced the originally budgeted 7,900 design hours to just 6,656 hours. The flexible modeling environment enabled Rasana to better understand the behavior of the structure more quickly and instilled confidence that the design was 100 percent compliant with local steel requirements. Bentley's interoperable design and analysis applications optimized analytical modeling, allowing Rasana to efficiently define a complex model, streamline collaboration, and enhance information mobility among the team to meet project deliverables.

Jebin Jacob, structural design engineer, Rasana Engineering, said, "Bentley's technology helps our projects to be designed economically without sacrificing safety and quality. Using STAAD.Pro (Advanced), we were able to better understand the behaviour of our structure very quickly. This enabled us to deliver construction drawings on time and within budget." ■