



PROJECT SUMMARY

Organization:

Thompson, Ventulett,
Stainback & Associates

Solution:

Building

Location:

Dubai, UAE

Project Objective:

Mixed-use development

Products used:

GenerativeComponents®
MicroStation®

FAST FACTS

- Site development consists of 7 islands
- 70 million sq ft of building space

The four towers:

- Ranging from 54 to 97 floors designed to represent the movement of candlelight
- Over 6 million sq ft of office, hotel, and residential space
- Base podium of the business district can hold 35,000 automobiles
- Each floor plate is unique to itself

The Lagoons

A New Twist For Building Castles in the Sand

What is now 1,200 acres of sand will soon become a spectacular new community that combines waterways, harbors, lush landscapes, and dramatically designed skyscrapers. Thompson, Ventulett, Stainback (TVS) & Associates, the architectural firm charged with designing the Lagoons in Dubai, United Arab Emirates, envisions the project as seven islands. Each island thematically represents an emirate of the UAE and encompasses several specific, yet interrelated, functions that include central business districts, world-class retail shops, entertainment zones, cultural centers, and mixed-use residential buildings.

The Lagoons is being carved out of an extension of Dubai Creek and requires entirely new supporting infrastructure. The project comprises 70 million square feet of gross building area, and the base podium in the business district is designed to park 35,000 cars. The district's four signature towers contain more than 6 million square feet of office, hotel, and residential space. Making this already challenging project all the more difficult, the radical geometry for the towers requires that every floor plate be unique.



Designing these towers using traditional methods would have created cost overruns and been extremely time consuming. Therefore, in order to achieve its project goals, TVS used Bentley's GenerativeComponents to automate design processes and accelerate design iterations on the four signature towers. This game-changing software drastically reduced the time required to visualize the effects of any modification to the building form and measure its impact on structure, core placement, and the curtain wall system.

In addition, the TVS team used Bentley® TriForma® to generate unique floor plates directly from the GC model, saving vast amounts of documentation time. The project team's ability to modify such a complex design easily in GenerativeComponents and to visualize the repercussions of these modifications throughout the major building systems became a critical factor in moving such a complex project through the design process. In fact, prior

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to deploying GC, the team required two weeks to generate updated floor plates after completing a change to the building form.

GC allows this once time-consuming task to be completed in just a few hours. Visualizing this vast project three-dimensionally was also crucial to fully understand the scope of the ambitious project. Moreover, by modeling all business

district buildings in MicroStation®, the TVS team was able to fully understand their forms and relationship to the whole site. Because of the project's various elevated access points, the three-dimensional form also enabled vehicular access and other supporting infrastructure necessities to be more easily and quickly understood by the designers and engineers.