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The Dynamic Tower

Skyscrapers of the past were designed as massive structures to give their internal elements the physical ability to stand up to the wind and other forces of nature. The newest skyscrapers, often called smart

buildings, use engineered counter measures to enhance their structural stability. Even though a smart building's construction has less mass, it will stand up to the forces of nature with greatly reduced movement.

Now, imagine a new kind of building that physically embraces the forces of nature and, much like a wind chime, accepts the wind as its artist's final design element. David Fisher is the visionary architect behind the Dynamic Tower. His design creates a building façade that is constantly changing. Photo 1 shows you two static views of the tower. A snapshot in time will never catch the dynamics of this building where each floor rotates independently at a different speed. So, for a more dynamic view go online to <http://video.google.com/videosearch?q=dynamic+architecture+dubai&hl=en&emb=0&aq=0&oq=dynamic+architecture#>.

If our current financial crisis doesn't slow down Fisher's project, his first Dynamic Tower will be completed in Dubai next year. Can you imagine watching a sunrise and a sunset from the same window? Obviously the movement of each floor will be extremely slow so as not to cause the occupants to experience the physical manifestations of an arcade ride.

To turn his dream into reality, Fisher is working with many heavyweights in the world of architecture, engineering, and construction, including Leslie Robertson, the structural engineer for many of the world's most outstanding construction projects including the World Trade Center (New York), US Steel Headquarters (Pittsburgh), Bank of China Tower (Hong Kong), and the Shanghai World Financial Center.

The 80-floor Dubai Dynamic Tower, when completed, will be a 1,380-foot-tall skyscraper. If you focus on the number of floors in this building, you might not realize exactly how tall the structure will stand when completed. It will be 130 feet taller than New York's Empire State Building.

The space between each of the dynamic tower floors will be home to one of 79 horizontally mounted



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Photo 1—Two views of the Dynamic Tower

wind turbines designed to turn its floor and also generate electricity to run the building. The roof of each rotating section will also have photovoltaic cells to increase the electrical generating power of the building. With 20% of these roofs constantly exposed to the Dubai sun it is estimated that the building will meet its own electricity needs and have enough left over to meet some of the needs of the surrounding area.

Many other construction and physical features of this building make it unique. It will be the first ka-

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tory-built skyscraper. The building's central core will be constructed on site, and the rest of the structure will be prefabricated at Fisher's factory in Italy.

If future occupants are known, their building's section will contain the individual customized features they want in an architectural style of their own choosing. When shipped to the construction site, these sections will contain all the builder-supplied cabinets, room doors, painted walls, and electrical and plumbing fixtures—each section ready for occupants to add their own furniture and move in.

At the construction site, prefabricated sections will be raised and hooked together to form a floor ring. Buildings are usually constructed from the ground up. This building, once the central core is completed, will be assembled following the plan shown in a Dynamic Architecture assembly drawing. (See Fig. 1.) The building's first 20 floors will be offices, a luxury hotel will occupy floors 21 through 35, apartments will be located on floors 36 through 70, and the top 10 floors will contain luxury villas.

For more on new technologies in construction, check out these past "Technology Today" items: "A New Construction Paradigm" (February 2007), which delves into

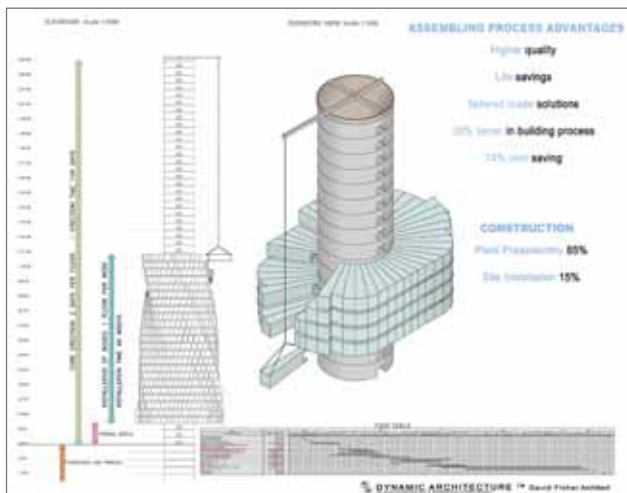


Fig. 1—Assembly drawing

the use of prefabrication to build unique homes, and "Smart Buildings" (January 1997), which describes the use of engineered counter measures to enhance a building's structural stability. You can find them online at www.techtodaynews.net.

Recalling the Facts

1. What do a wind chime and the Dynamic Tower have in common?
2. David Fisher has changed the skyscraper construction paradigm. Describe how the construction of this building differs from the construction of past skyscrapers.
3. How will time affect the architectural look of this building? Ⓢ

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