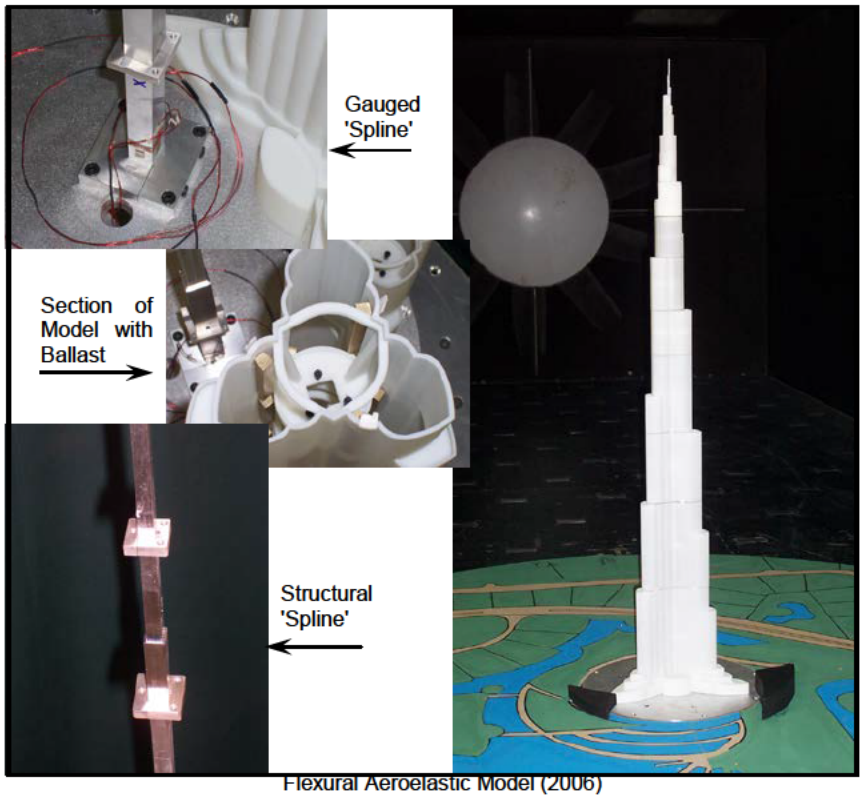
Burj Dubai, Dubai, United Arab Emirates

Wind Engineering Study

Rendering of Tower



Flexural Aeroelastic Model (2006)

Developer	*Structural Engineer / Architect*	*Primary Builder*
Emaar Properties	Skidmore, Owings and Merrill LLP	Samsung Engineering & Const.
Tested Height	*Year Tested*	*Model Scale*
725 m	2004	1:500

The Project

The Burj Dubai, at its time of completion, will be the tallest building and the tallest man-made structure in the world. This multi-use tower will consist of hotel, office, residential, retail and communication floor space.

The Burj Dubai will be constructed primarily of reinforced concrete. It sits on a concrete and steel podium supported by 192 piles that each descend to a depth of more than 50 metres.

The structure is composed of three lobes arranged around a structural core. The resulting Y-shaped plan maximizes the views of the Persian Gulf. As the height increases, setbacks at each of the lobes decrease the buildings plan until it melds into a spire.

The Wind Tunnel Studies

An equivalent multi-degree-of-freedom flexural aeroelastic model was designed and constructed to simulate the dynamic properties of the tower in its first six sway modes.

The aeroelastic simulations of the Burj Dubai Tower provided direct information on overall mean and dynamic wind-induced sway loads and response of the main structural system. The dynamic responses represent the action of unsteady aerodynamic forces on the entire tower envelope.

The Boundary Layer Wind Tunnel Laboratory

Western

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