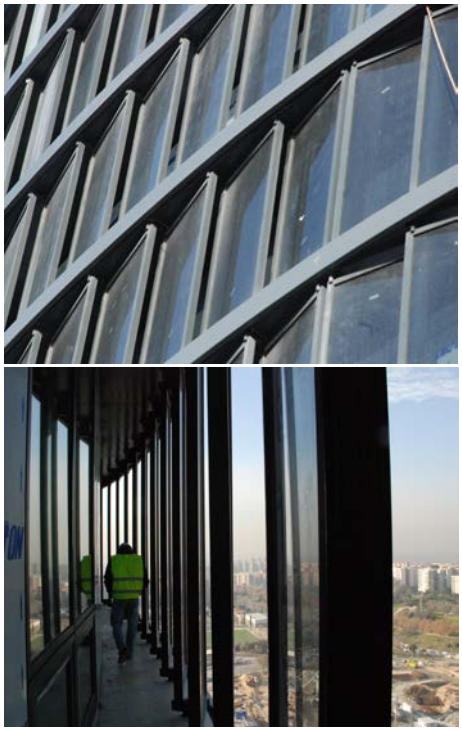
Torre Sacyr Vallehermoso, Madrid, Spain

Wind Engineering Study



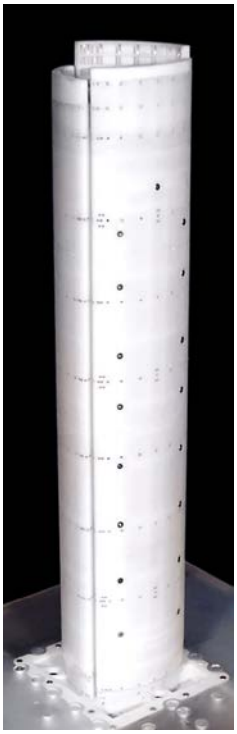


Image Credit: Sacyr Vallehermoso

Owner	*Structural Engineer*	*Architect*
Sacyr Vallehermoso	MC2 Estudio de Ingenieria, S.L.	Rubio & Alvarez-Sala Estudio de Arquitectura
Height	*Year Tested*	*Model Scale*
236 metres	2005	1:400 and 1:60

The Project

The Torre Sacyr Vallehermoso development in Madrid, Spain is a 54-storey office tower. The site is located at the north-west corner of Paseo de la Castellana & Avenida Monforte de Lemos. The plan form of this tower is an equilateral triangle with convex curved sides and an indentation at each apex.

A unique feature of this tower is the open double façade over most of its height. The façade consists of an exterior glass and metal louvered exterior façade, and a nominally-sealed glass interior façade set in 0.9 m from the louvers. The vented vertical glass louvers of the exterior façade are set at a vertical gap of 0.13 m, and slant in opposite directions on either side of each 120º sector.

The Wind Tunnel Studies

The wind engineering studies for Torre Sacyr Vallehermoso included a study of the wind-induced structural loads and responses and local cladding pressure loads.

The study of overall structural loads and responses was carried out using the force balance technique.

The study of wind-induced cladding pressures was conducted using a 1:400 scale pressure model of the entire tower, as well as a 1:60 scale partial pressure model of the top 66.4 m. The 1:60 scale model included details of the louvered façade for 10 levels.

A flow visualization study was conducted to investigate the overall airflow characteristics of this louvered facade.

The Boundary Layer Wind Tunnel Laboratory

Western

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