Wind Case Studies - Landmark Projects

Vipac is a multi-disciplinary engineering consultancy with 5 offices and 150 staff, many qualified to PhD level. With acoustics and vibration consultants on the same site as our wind tunnels, we adopt a holistic approach to problem-solving, providing clients with one hassle-free point of contact.

Our Capabilities:
By understanding how wind loads and buildings interact, we can increase the saleable floor space, minimise the amount of building materials needed, reduce unnecessary risks, get planning applications approved faster and ensure a reliable design that offers occupancy comfort and structural safety.

Our Facilities:
- Five Australian offices
- Two open-circuit boundary layer wind tunnels, a full-scale field testing site and façade testing facility
- An onsite model-making studio, where models of your development are made at a scale of 1:400
- NATA-accredited, independent testing laboratories.

World's Most Unique Design
Project: Scotts Tower
Location: Singapore
Features: 153 metres tall, 20,000m² built floor area and 68 high-end apartment units.
Challenge: Four individual apartment towers vertically offset from one another and suspended from a central core.
Vipac’s Role: To run a structural wind load study to determine all the required design parameters, including base moments in the sway directions and torsion and acceleration at the top habitable floor.
Benefit: The predicted acceleration was evaluated on time and on budget, satisfying internationally accepted criteria to ensure the occupants’ comfort.

World’s Tallest Residential Building
Project: Princess Tower
Location: Dubai, UAE
Features: 414 metres high and 101 storeys tall with 763 individual units.
Challenge: To ensure occupant comfort in balconies and terraces and devise a control system in case of storms.
Vipac’s Role: To develop measures that ensure the comfort and safety of occupants using their balconies.
Benefit: Helped develop a high-tech system which notifies occupants and building managers when occupants leave their apartments without closing all of their windows. Also, Vipac installed balustrades to ensure outdoor furniture is secure and occupants safe.

World’s Tallest Building
Project: Burj Khalifa (previously Burj Dubai)
Location: Dubai, UAE
Features: At 829.8 metres high, it is the centrepiece to a large scale development of 30,000 homes.
Challenge: Due to never before seen heights, the interaction between lateral winds and gravity loads was unexplored territory. Other challenges were massive loads, large thermal expansion on electrical busbars, isolation, pipe stresses and seismic rating.
Vipac’s Role: Appointed by the contractor to consult on MEP noise, vibration control, seismic and pipe stress, and to test the building façade to ensure no vibration or wind-noise.
Benefit: A building capable of surviving all exposure conditions, with the façade producing acceptable wind-noise and vibration levels.
Vipac delivers design solutions worldwide that shape the building landscape and help build a more sustainable future. Our two boundary layer wind tunnels form one of the largest commercial facilities in the world, and is unique to Australia and South East Asia.