


The logo for VIPAC, featuring the letters 'VIPAC' in a bold, white, sans-serif font on a red rectangular background.

Engineers & Scientists

The background of the top section features two images. On the left is a large, modern building with a complex, faceted glass facade. On the right is a tall, slender skyscraper with a glass curtain wall and some balconies with plants. A red horizontal band is overlaid across the middle of these images, containing the main title.

Building Approval, Design & Construction Services

A photograph of Southern Cross Station at night, showing its iconic arched glass and steel roof structure illuminated from within. The station is busy with cars and pedestrians.

Getting a new development to run to schedule requires the professional expertise of a team that has experience and an understanding of the building and construction industry.

Vipac Engineers & Scientists has nearly 50 years' experience in problem solving and solutions for the building and construction industry both nationally and internationally.

Vipac can help get your project on the right track — from start to completion.

Developments Vipac's specialised services cover

- Residential
- Commercial
- Educational
- Industrial
- Defence

Services Vipac's multidisciplinary team provides

- Wind engineering
- Acoustics
- Vibration — exposure to rail, road, construction and generator vibration
- Sensitive equipment requirements (e.g., MRI, electron microscope, X-ray)
- Air quality consulting
- HVAC testing (thermal and air distribution studies)
- Environmentally Sustainable Design (ESD) consulting
- Electrical safety

How Vipac can assist through every step of your project

STAGE 1 Concept / Schematic design

Wind impact study

- Preliminary desktop assessment
- To evaluate the likely wind effects on your project
- Assess the fundamental building form for compliance

Pedestrian comfort wind tunnel study

- To investigate ground-level and outdoor amenity areas' wind speeds
- To assess wind speeds against criteria for human safety and comfort

Wind loads calculation

- In accordance with Australian standards
- For floor-by-floor maximum pressure and suction diagrams
- Aiding in the detailed design of façades and internal walls

Wind-driven rain study

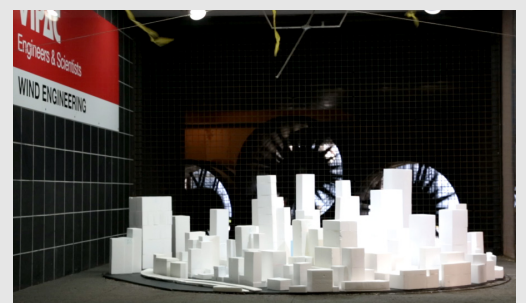
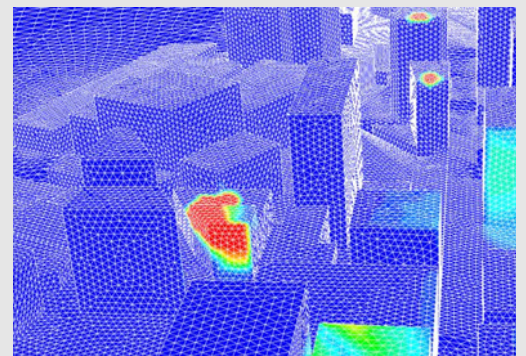
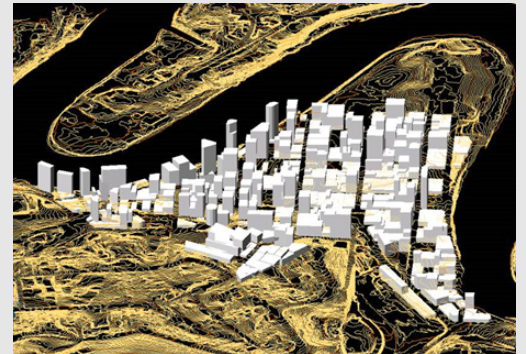
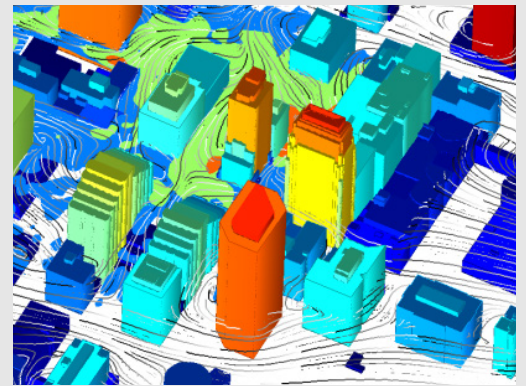
- Analyse data in the aggregate for a water dispersion model and appropriate recommendations
- Optimised by wind tunnel study data where possible

Air Quality Assessment

- Working closely with urban planners to provide specialist support

Acoustic assessment

- Measure background noise to determine the applicable noise criteria
- 3D noise modelling to predict noise levels on facade and design facade
- Ensuring compliance with recommended/required internal levels (e.g., AS2107, Better Apartment Design Standards)
- To establish SEPP N-1 and N-2 limits at sensitive receivers
- To assess special activity areas (e.g. pools, gyms, other communal spaces)
- To ensure planning permit's additional acoustic requirements are met
- Providing acoustics advice
- To help manage costing via the selection of wall, floor/ceiling and glazing



STAGE 2 Detailed design

Acoustic and ESD design development

- Reviewing proposed wall, floor/ceiling and glazing for NCC compliance
- Assisting with Green Star requirements for acoustics and ESD
- Predicting service and HVAC noise from proposed equipment to ensure compliance of levels
- Deemed to Satisfy or Section J modelling for ESD solutions
- CFD modelling for complex air flow prediction

Structural response wind tunnel study

- To determine the overall forces on towers, floor-by-floor equivalent static loads, building deflections, and accelerations
- Helps to ensure building accelerations are within acceptable comfort levels
- Savings in structural and foundation costs
- Maximises the amount of letting space

Detailed design, *cont.*

Facade pressure wind tunnel study

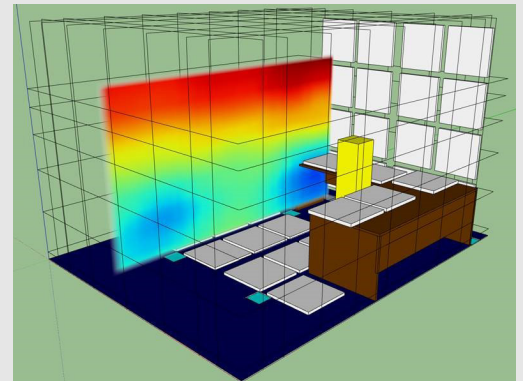
- Maps variation of local peak pressures over the building's surface area
- Identifies locations prone to lower or excessive wind pressure
- Replace conservative NCC façade design with a low cost wind environment specific design
- Up to 30% wind load improvement

Natural ventilation study

- Building design is assessed to ensure optimum natural ventilation
- Helps to lessen carbon footprint and energy emissions from the use of HVAC systems
- For better indoor air quality and thermal comfort
- For effective measures on electricity, health and operating costs

Building comfort full-scale modelling and lab testing

- To assess how a proposed building performs under different environmental conditions, and advise on floor layouts, furnishings, HVAC and lighting



STAGE 3 Tender and construction

Ground vibration monitoring

- To monitor and advise on ground-vibration issues affecting public amenity and/or causing structural damage to other buildings nearby

Wind noise testing and assessment

- To understand the effect building design has on the potential for wind noise
- To produce recommendations to mitigate any potential risk

Damper design

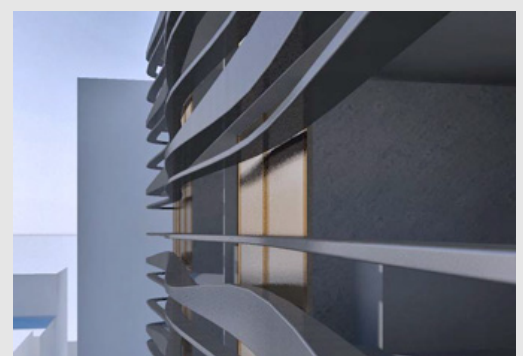
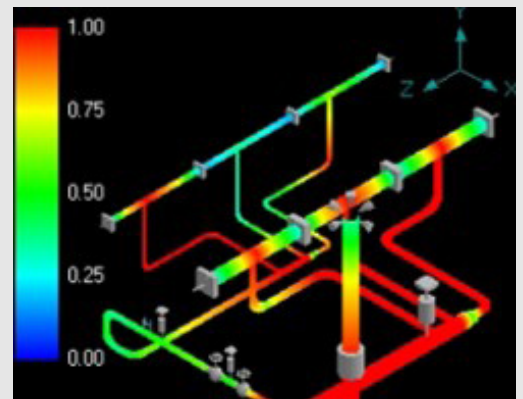
- To produce a tailored damper design in accordance with project requirements
- Ensuring that a building complies with building codes and ISO standards

Acoustics consulting

- Regular site checks and specialist advice on your project throughout the period
- Managing approval for selected construction material

Acoustic commission

- Testing to ensure NCC compliance of wall and floor/ceiling construction
- Checking noise attenuation of system via facade noise tests
- Noise monitoring to ensure internal levels meet design criteria



STAGE 4 Defect compliance

Acoustic monitoring

- Working with the builder to monitor/resolve any complaints from the occupants

Room comfort study

- To measure and improve indoor environment conditions (temperature, humidity, airflow) of new, existing and heritage buildings



Project experience

Melbourne Cricket Ground: Wind and computational fluid dynamic (CFD) assessments.

Southern Cross Station, Melbourne: Wind driven rain study.

Hydro Tasmania: Acoustic and air dispersion modelling. Occupational exposure, health & safety systems consultation.

State Theatre, Victorian Arts Centre: Acoustic and sound system design, and construction administration.

Bourke Junction, Melbourne: Acoustic and vibration design services covering the buildings' elements.

Sugar Dock at Jacksons Landing, Sydney: Energy efficiency and thermal comfort analysis.

Melbourne Convention & Exhibition Centre: Assessing effect of wind exposures.

Perth Arena: Facade testing: Air leakage, water penetration, structural performance.

Brisbane CBD: Generator Exhaust Air Quality Study. City-wide Computational Fluid Dynamics (CFD) simulation.

300 George St, Brisbane: Environmental wind tunnel test, cladding pressures, structural response, ground vibration monitoring.

Lilli Apartments, Melbourne: Bronze glass façade to help: sunshading, harness natural light, increase air flow.

388 Brunswick St, Fortitude Valley, Brisbane: Wind impact assessment for resident, patron and pedestrian comfort.



About Vipac

Vipac Engineers & Scientists was founded in 1973 and continues to be a family owned Australian company with offices located throughout Australia.

The Company has been an industry leader since 1973 by providing high-quality and high-value testing and consulting services and customisation for clients.

International Projects such as the Burj Kalifa in Dubai, Changi Airport Terminal 2, Gardens by the Bay in Singapore, demonstrate the calibre of international projects.

Our multi-disciplinary and highly specialised team applies a holistic approach to problem solving for optimum outcomes, and offers independent technical assessment to the design, building and construction industry.

To enquire

1300 847 222

info@vipac.com.au

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