



- Other Initiatives - 7 metre long interactive audio visual 'canvas' of 12 daisy-chained touch screens in main foyer conveys building's energy usage via live data visualisation aggregating building metrics, such as energy consumption, solar, water and gas usage.

The total Greenhouse Gas reductions in the Tyree Energy Technologies Building is close to 70% (a difference of 687,216 kgCO2/yr) when compared to the benchmark project.

#### Energy Efficiency

- 150kW photovoltaic array covers the 1,100sqm roof including a transparent photovoltaic 'sandwich' skylight. Array design allows testing and changes to the panels by UNSW researchers with easy access.
- A 800kW gas generator drives single stage absorption chiller connected to campus ring main system, exporting power to the main system when electrical load is lower
- This results in significant peak energy demand reduction as tri-generation and photovoltaic combined capacities reduce the maximum demand of the building by greater than 100%.

#### Water Efficiency

- 308,000 litre rainwater harvesting and retention system with recycled bore water (used in cooling system) accessed from existing shared energy system on campus. A percolation chamber replenishes the bore aquifer.
- Treated non-potable water supply feeds sanitary fixtures (AAA rated), laboratory sinks, reverse osmosis water treatment plant and evaporative cooling unit serving the generation plant.
- Native landscape automatic drip irrigation system supplied by site-stored water.
- Permeable paving installed where possible to increase water infiltration, especially in canopy zones of existing mature trees retained on site.

#### Indoor Air and Environment Quality

- Two thermal labyrinths pre-cool supply air by moving at a low velocity.
- Individual offices are mixed mode spaces with operable windows and variable volume air handling units incorporating VOC and CO2 sensors.

- Night purge air flushing through the main atrium exiting via automated glazed awning windows.
- Low energy displacement air conditioning serves all three 90 person horseshoe theatres (Lower Ground) and all open plan areas (Ground to 4). High Performance Facades
- Site specific high-performance facade system with passive sun-shading measures. Vertical and horizontal porcelain louvres exclude sunlight during the hotter months but permit sunlight in winter. Non-reflective louvres also control glare.
- Long term durable porcelain tile curtain wall with thermally-broken double glazing system.
- High performance glazing to windows allows maximum daylight penetration and minimises solar heat load.