Building HVAC Upgrade

Dadanco Pty Ltd

Perimeter Induction Unit Refurbishment

Project Name:	175 Pitt Street Sydney, NSW
Date Completed:	February 2010
Building Size:	23,000 m²
Installed Sensible Capacity:	966 kW
Engineered By:	Medland Metropolis
System Used:	CM10 Ceiling Mounted Perimeter Terminal Units
Number of Units:	656
<u>Design Criteria:</u>	
Room Temperature:	22.8°C / 50%RH
Chilled Water Temperature:	11.1°C
Primary Air Temperature:	12.2°C
Maximum Available:	17,610 l\L/s Total

Refurbishment,

sustainability

+ flexibility

22 story high-profile A-Grade multi-tenancy Sydney CBD office building with approximately 1050m² net lettable area per typical floor.

Building originally installed in the early 1970's with Barber Coleman ceiling mounted perimeter induction terminal units.

Building required a significant improvement in energy efficiency together with desirable reductions in air noise and fan energy to achieve targeted NABERS 4 Star rating to suit modern occupancies.

Existing chilled water HVAC systems and on-floor infrastructure needed to be retained for compressed refurbishment program. Solution must deliver best practice air performance, reduced noise and increased energy efficiency using existing primary air ductwork and secondary chilled water infrastructure and risers.

Active Chilled Beam **Perimeter System** Inffuser cold air solution

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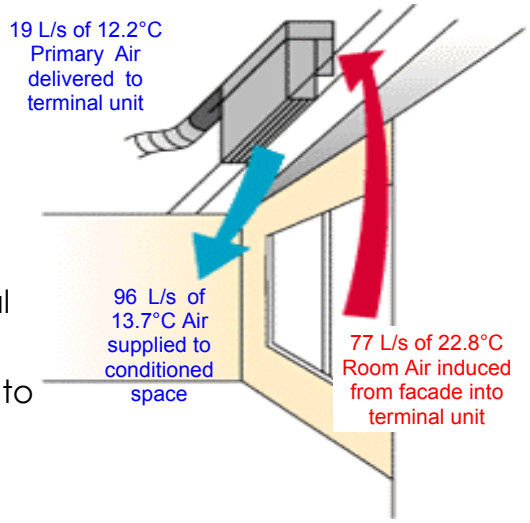
The Challenges

- Insufficient on-floor perimeter cooling capacity
- Replacement units cannot exceed 1100 & 1400mm coil lengths to fit into existing induction unit locations
- Must deliver existing cooling capacity and primary air quantity for a reduction in terminal unit static pressure from the existing 650 Pascals
- Existing perimeter induction units at the end of their useful life
- Existing air risers, chilled water circuit and on-floor ductwork must be re-used
- Perimeter zones Primary Air quantity limited to 775 L/s maximum available air per typical mid-rise floor
- On-floor HVAC must be replaced in a compressed time frame while the building is unoccuppied

The Solution

- Reconfigure primary air & secondary chilled water infrastructure to suit new CM10 units
- Install 656 High Induction 'CM10' ceiling mounted perimeter terminal units
- Reduce primary air pressure from 650 to 200Pa
- Retain primary air quantity of 775 L/s per typical mid-rise floor
- Deliver uniform 12.2°C primary air temperature to all perimeter units
- Increase secondary chilled water flow by 3%



The Benefits

- ✓ Achieved perimeter sensible cooling capacity of 966,000W across the perimeters of the building using only 17,610 L/s of primary air
- ✓ Delivered reduced fan energy for targetted NABERS 4 Star rating through reduction in unit static pressure from 650 to 200Pa
- ✓ Delivered reduction in air generated noise for the same primary air quantity as previously installed
- ✓ Delivered increased air distribution rate for all perimeter zones
- ✓ Delivered a compact ceiling mounted induction unit to fit within tight ceiling spatial constraints
- ✓ Enabled HVAC refurbishment work to be performed over a short time frame while the building was vacant

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