Building HVAC Upgrade

Dadanco Pty Ltd

Perimeter Induction Unit Refurbishment

Project Name:	360 Collins Street Collins Wales House Melbourne, VIC
Date Completed:	August, 2006
Building Size:	44,000 m²
Engineered By:	Lincolne Scott Australia
System Used:	CM10 Ceiling Mounted Perimeter Terminal Units
Number of Units:	1,938

Design Criteria:

Room Temperature:	24°C / 50%RH
Chilled Water Temperature:	12.5°C
Primary Air Temperature:	12.4°C

Refurbishment,

sustainability

+ flexibility

Collins Wales House is a 35 story high-profile multi-tenancy Melbourne CBD office building with approximately 950m² net lettable area per typical floor.

Building originally installed with Dunn-Air in-ceiling perimeter induction terminal units operating at 400Pa static pressure.

Building required significant increase in delivered perimeter cooling capacity with desirable reductions in air noise levels to suit modern occupancies.

Existing chilled water HVAC on-floor infrastructure and perimeter induction units not capable of delivering higher cooling capacities to each floor.

Solution must deliver best practice air performance, reduced noise and increased cooling capacity using existing primary air ductwork and secondary chilled water infrastructure and risers.

Active Chilled Beam

Perimeter System

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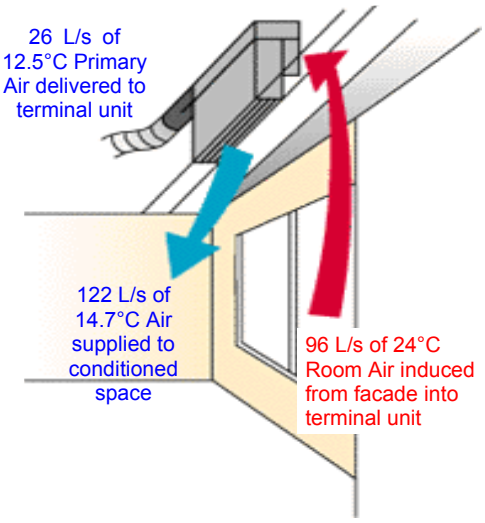
The Challenges

- Insufficient on-floor perimeter cooling capacity
- Existing perimeter induction units at the end of their useful life
- Existing air risers, chilled water loop and on-floor ductwork could not be changed
- Required new typical floor perimeter cooling per unit of 1260 -1330 Watts
- Perimeter Primary Air quantity limited to 1,750 L/s maximum available air per floor
- Existing primary air temperature of 12.5°C and secondary water temperature of 12.4°C must be retained until completion of project
- Existing primary air pressure of 400Pa and associated air noise problems must be reduced
- On-floor HVAC must be refurbished as and when tenancies are vacated

The Solution

- Retain & re-use existing primary air & secondary chilled water infrastructure for new terminal units
- Install 64 High Induction 'CM10' ceiling mounted perimeter terminal units per floor
- Reduce primary air pressure to 225Pa
- Deliver primary air quantity of 1,665 - 1,750 L/s per floor at reduced pressure
- Deliver uniform 12.5°C primary air temperature to all perimeter units
- Increase secondary chilled water flow by 4%



The Benefits

- ✓ Achieved perimeter capacity of 86,300W sensible cooling per typical floor using only 1,704 L/s of primary air at reduced primary air pressure (225Pa vs 400Pa)
- ✓ Achieved 6 dB(A) noise reduction in the conditioned perimeter space
- ✓ Delivered 35% increase in air distribution rate for perimeter zones
- ✓ Secondary sensible cooling capacity of 62,635 watts per floor and increased air distributions rates delivered for **NO ADDITIONAL FAN ENERGY**
- ✓ New secondary sensible cooling capacity of 62,635 watts per floor delivered for 6.91 L/s secondary chilled water flow per floor
- ✓ Delivered a compact ceiling mounted induction unit to fit within tight spatial constraints
- ✓ Enabled refurbishment work to be performed selectively on each floor on an 'as needed' basis

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