



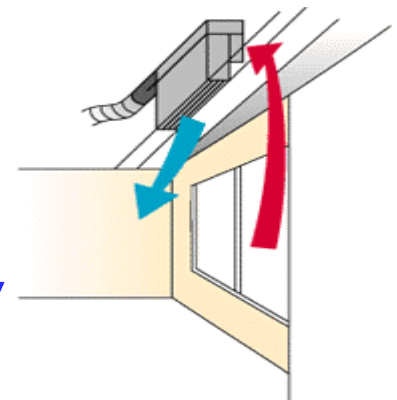
All-Air System Upgraded to Perimeter Induction Terminal Units

Project Name:	437 St Kilda Road Melbourne, VIC
Date Completed:	October, 2003
Building Size:	6,500 m ²
Installed Sensible Capacity:	700 kW
Engineered By:	NDY Melbourne
System Used:	Ceiling Mounted Perimeter Terminal Unit
Number of Units:	62
<u>Design Criteria:</u>	
Room Temperature:	24°C / 50%RH
Chilled Water Temperature:	14.0°C
Primary Air Temperature:	14.0°C

active chilled beam

Perimeter System

Refurbishment, sustainability + flexibility



Continuous Linear Perimeter Grille and Ceiling Mounted Terminal Units

The Project

6 story high-profile multi-tenancy redevelopment of South Melbourne office building with approximately 1100m² net lettable area per typical floor.

Building originally installed with all-air pressurised plenum Constant Air Volume air conditioning system.

Building required significant increase in delivered perimeter cooling capacity due to extended floor plate and high glazing area per floor.

Existing chilled water HVAC system and on-floor infrastructure not capable of delivering higher cooling capacities or air quantities to each floor. Solution must deliver best practice air performance and increased cooling capacity within tight spatial constraints of 350mm ceiling void.

Infuser cold air solution

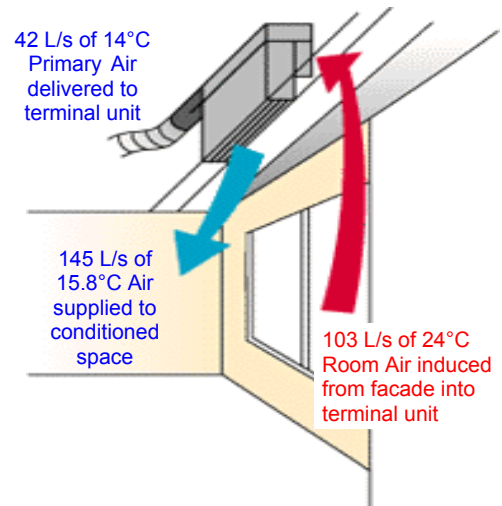


The Challenges

- Insufficient on-floor perimeter cooling capacity from original pressurised plenum CAV system
- Poor perimeter air distribution from existing available perimeter air quantity
- Existing air risers could not be enlarged
- Large perimeter area of 595m² per typical floor
- Required perimeter sensible cooling capacity per typical floor of 84,000 watts
- Ceiling void spatial constraints of 350mm imposed by slab-to-slab clearance of 2990mm limits possibilities with all-air systems
- High load diversity from facade to facade

The Solution

- Install Primary Air ductwork & secondary chilled water infrastructure in existing air risers
- Install 62 High Induction 'CM10' ceiling mounted induction terminal units per floor
- Deliver total primary air quantity of 2,560 L/s per typical floor at uniform pressure of 200Pa
- Deliver uniform primary air temperature of 14°C to all perimeter terminal units
- Deliver 14°C secondary chilled water to all perimeter terminal units



The Benefits

The new perimeter using CM10 ceiling mounted induction terminal units resulted in:

- ✓ New installed perimeter capacity of 88,800 watts sensible cooling using only 2,560 L/s of primary air
NOTE: Same delivered sensible cooling capacity would have required 6,100 L/s of air using 12°C air
- ✓ New typical floor total perimeter supply air quantity of 8,882 L/s delivered for only 2,560 L/s of primary air per typical floor processed at the air handler
- ✓ Secondary sensible cooling capacity of 57,248 watts per typical floor delivered through the induction process for NO FAN POWER REQUIREMENT and 9.3 L/s of 14°C secondary chilled water per typical floor
- ✓ Delivered 65% of installed sensible cooling capacity through secondary air cooling for maximum efficiency advantages of load diversity and greatest zone controllability