



**Awarded Perth's first 6 Star Green Star - Office Design v2 certified rating**



**Active Chilled Beam**

Perimeter System

Infuser cold air solution

### Active Chilled Beams

Project Name:	2 Victoria Avenue (Durack Centre 2), Perth, WA	
Date Completed:	November 2008	Building Size: 7,200 m <sup>2</sup>
Installed Capacity:	312 kW CM10 Perimeter	245 kW ACB40 Centre Zones
Engineered By:	Bassett Consulting Engineers	Installed By: W.A. Mechanical Services
System Used:	ACB40 & CM10 Active Chilled Beams	Number of Units: 438
<u>Design Criteria:</u>		
Room Temperature:	22 ± 2°C / 50%RH	Chilled Water Temperature: 13°C
Primary Air Temperature:	12°C	Total Primary Air Quantity: 13,049 L/s

Energy efficiency,

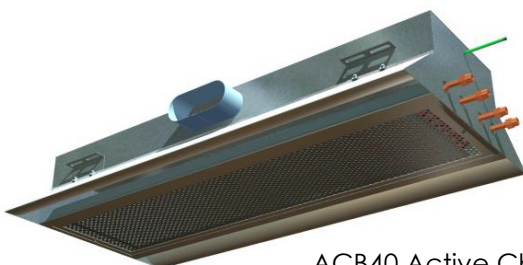
sustainability

+ Quality

### Awarded Perth's First 6 Star Green Star GBCA project

2 Victoria Avenue is a 4 story high-profile multi-tenancy office building completed in 2009 located on the Swan River with approximately 7,200m<sup>2</sup> net lettable area.

Modern energy efficient building required significant perimeter cooling capacity together with low noise levels and best practice air movement to achieve the design goal of 6 Star Green Star (GBCA) office design v2 certified rating.



ACB40 Active Chilled Beam

Active Chilled Beam design solution must deliver best practice air performance, reduced noise and increased cooling capacity using the smallest possible air ductwork and secondary chilled water infrastructure and risers.



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## The Challenges

- Required perimeter cooling of 312kW with smallest possible infrastructure
- Required internal zone cooling of 245kW with smallest possible infrastructure and average 1.2 L/s/m<sup>2</sup> of primary air to centre zone spaces
- Minimise primary air quantity to achieve Green Star strategy
- Must deliver best practice air movement to meet 6 Star Green Star requirements
- Satisfy zone latent loads with minimum primary air quantity
- Zone control flexibility needed for integrated fitout options

## The Solution

- Design for maximum primary air pressure of  $\leq 150$ Pa for all units
- Install 248 High Induction 'CM10' in-ceiling perimeter Active Chilled Beams throughout the perimeter of 4 floors
- Install 190 full-tile 2-way discharge internal zone Active Chilled Beams throughout center zones of 4 floors (1 ACB40 per average 24m<sup>2</sup> of floor area)
- Deliver uniform 12°C primary air temperature to all Active Chilled Beams
- Deliver an average of 1.2 L/s/m<sup>2</sup> of primary air to centre zone spaces
- Deliver an average of  $\geq 3.0$  L/s/m<sup>2</sup> of primary air to perimeter zone spaces
- Deliver an average 3.3°C secondary water temperature differential

## The Benefits

- ✓ Delivered a compact ceiling mounted Active Chilled Beam to fit within tight spatial constraints
- ✓ Achieved target perimeter zones sensible cooling capacity of 312kW using only 7,410 L/s of primary air
- ✓ Achieved target centre zones sensible cooling capacity of 245kW using only 5,639 L/s of primary air
- ✓ Delivered average primary air distribution rate of  $\geq 2.3$  L/s/m<sup>2</sup>
- ✓ Delivered higher total air distribution rates through induction process of Active Chilled Beams
- ✓ Secondary sensible cooling capacity of **362kW** (65% of total sensible cooling) and higher air distribution rates delivered for **NO ADDITIONAL FAN ENERGY** through induction process of Active Chilled Beams
- ✓ Australian designed, manufactured and supported products for a prestige Australian project