Active Chilled Beams

Anticipated Energy Savings at New Broughton Hospital

Architect: The Freelon Group / Rendering: Proviz

Affiliated Engineers

Agenda

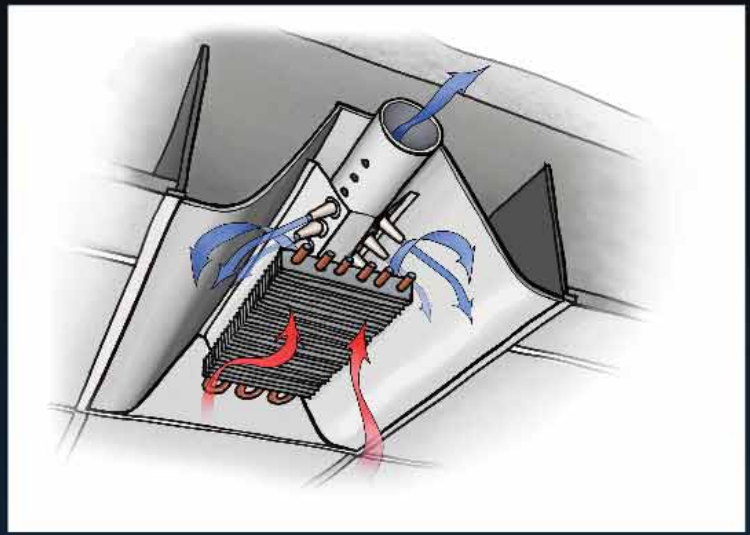
- Description of New Broughton Hospital
- What are Active Chilled Beams?
- How do they work?
- Pros and cons of ACBs
- Anticipated energy savings

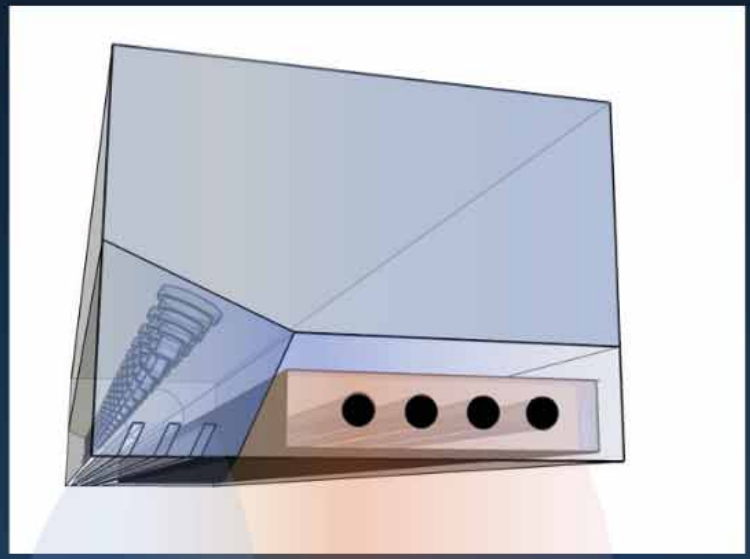
New Broughton Hospital

- Psychiatric hospital
- 58 acre greenfield site
- Serves western 37 counties
- 382 beds relocated from main campus
- 444,000 sf hospital
- 10,000 sf central energy plant

What are Active Chilled Beams?

- Ceiling mounted
- Sensible-only
- Cooling/heating
- Induction air delivery device



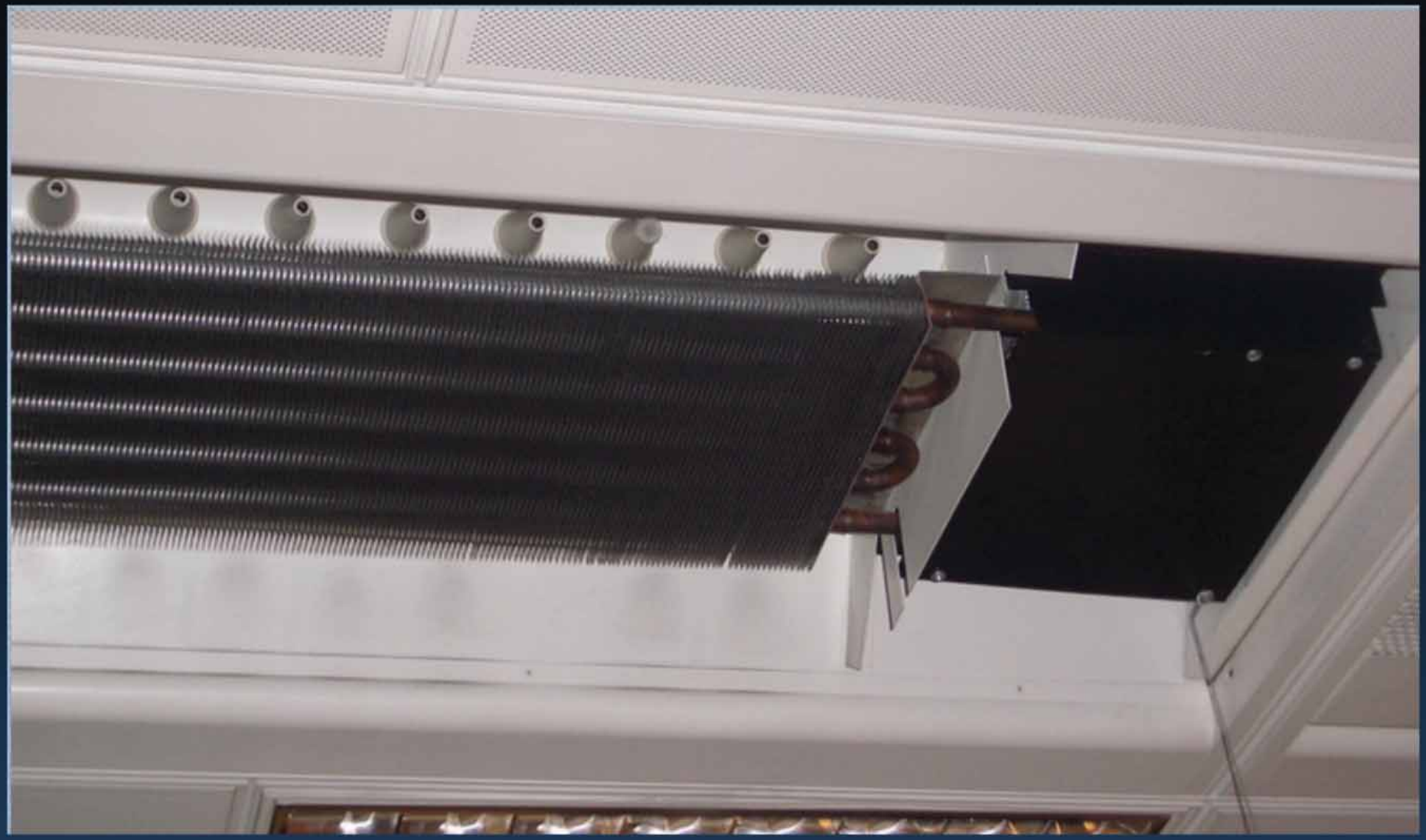


Typical Hospital Patient Room

Chilled Beam Installation

University of Washington - School of Medicine

Chilled Beam Maintenance



Require coil vacuuming approximately every 3-5 years

Pros & Cons

- Smaller ductwork
- Smaller AHUs
- Minimize reheat
- Smaller boilers
- Ease of maintenance

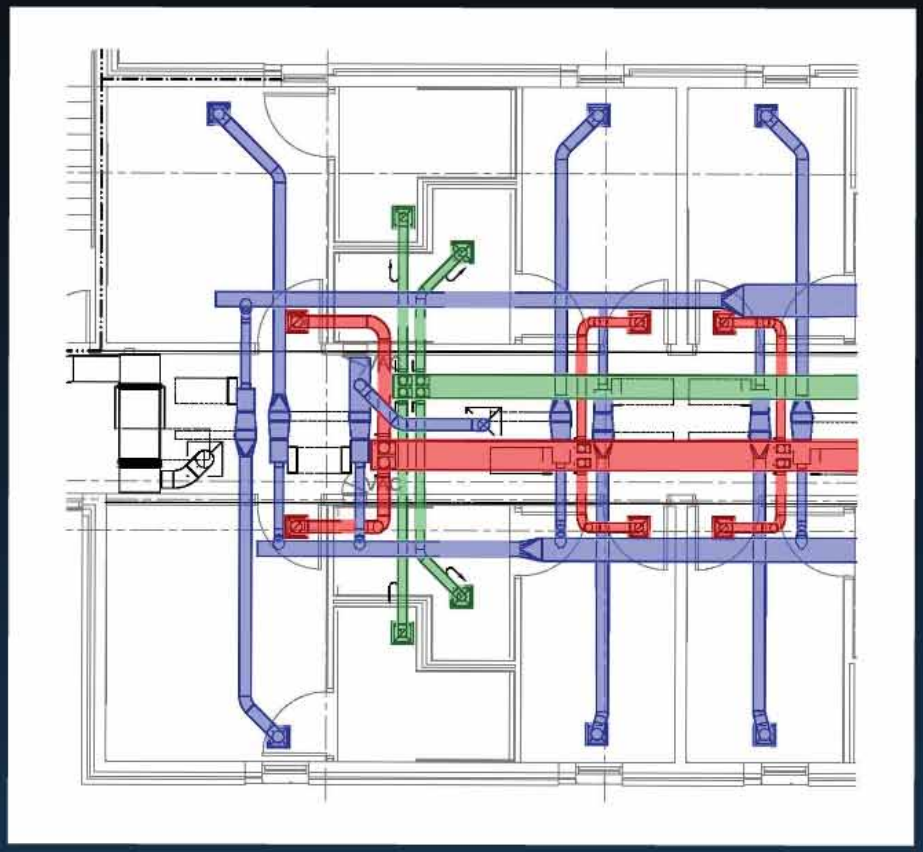
- No latent cooling
- Humidity sensing
- RCP coordination
- More piping
- More control valves

System Comparison

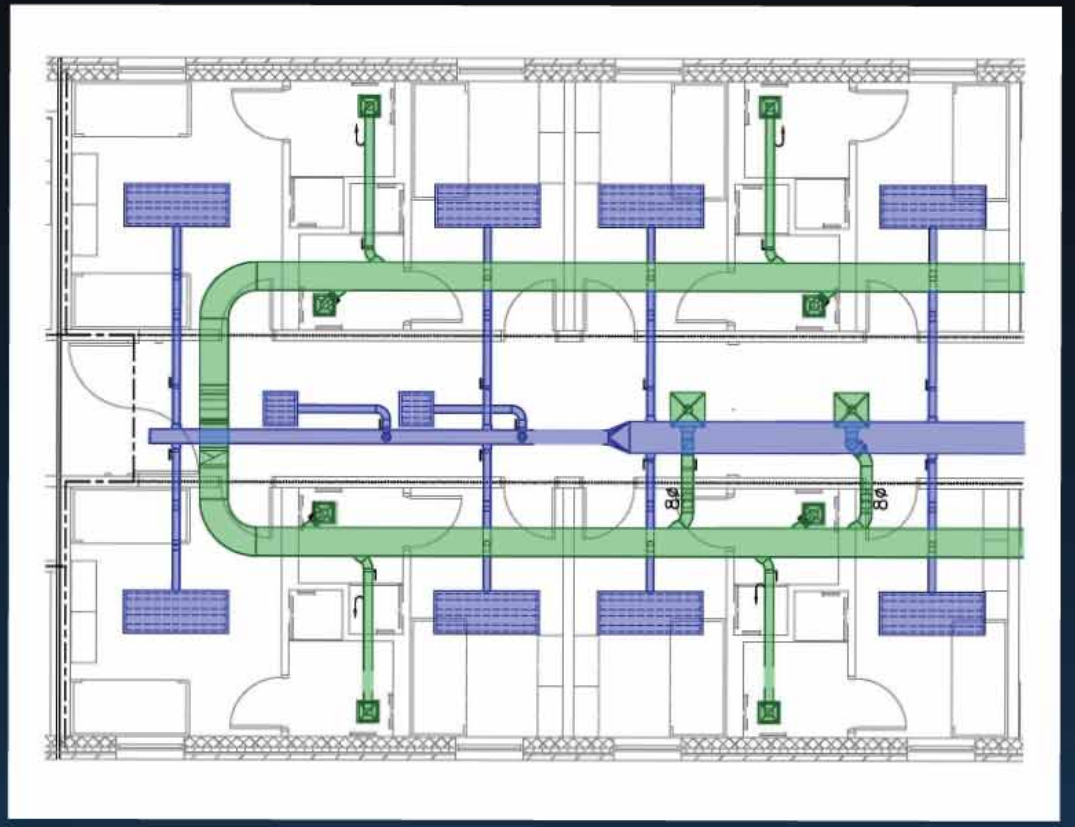
Constant Volume Reheat vs. Active Chilled Beam

- CVR
  - 2 Air Changes/Hour outside air
  - 4 Air Changes/Hour return air
  - 6 Air Changes/Hour total air
- ACB
  - 2 Air Changes/Hour outside air
  - 4 Air Changes/Hour induced air
  - 6 Air Changes/Hour total air

Constant Volume Reheat



Active Chilled Beams



Anticipated Energy Savings

- Reduced cooling
- Reduced pumping energy
- Greatly reduced reheat

Anticipated Energy Savings

35%