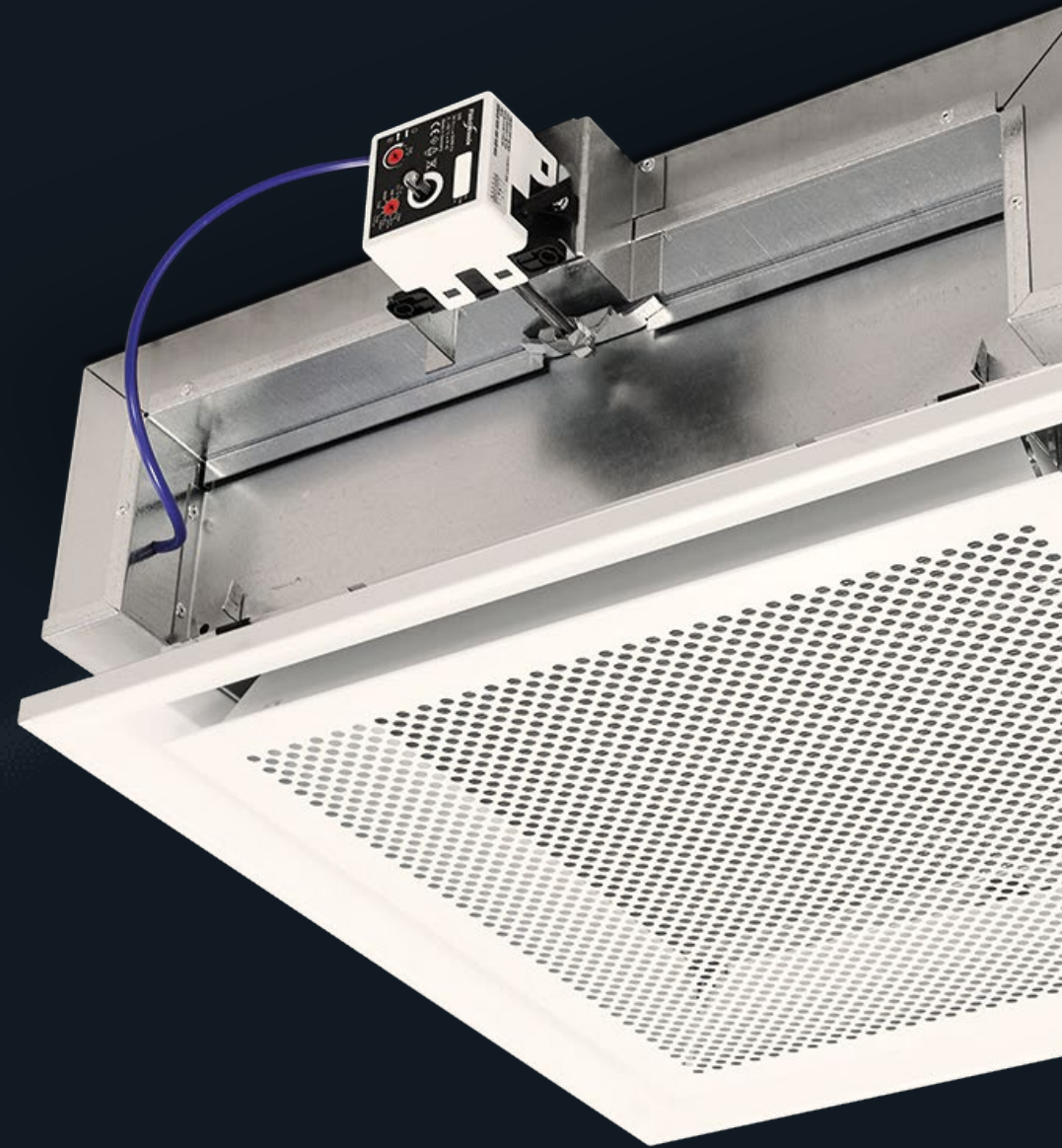


Chilled Beams



What are Chilled Beams?

Chilled beams combine radiant cooling with conventional overhead ventilation to:

- Reduce energy usage
- Improve comfort levels
- Reduce the architectural impact of ductwork and other mechanical systems

Designed for non-residential applications where there is a high temperature load and/or rooms that require individual comfort control.

Chilled beams often are used in lieu of a fan coil unit.





ENVIRONMENTALLY FRIENDLY

- Improves the indoor environment with a low velocity (draught-free) solution
- Low noise level to surrounding area



ECONOMICAL & ENERGY EFFICIENT

- Lower airflow means that you can use a smaller AHU
- Low temperature gradient — more uniform room temperature



EXPERTISE DRIVEN

- No fans, no filters & no drain for condensation means that less maintenance is required over time



AIR TEMPERATURE



HUMIDITY



**VENTILATION &
AIR QUALITY**



AIR VELOCITY



SOUND LEVEL



LIGHTING LEVEL



**CLOTHING
& ACTIVITY**



COMFORT

OPTIMIZED COMFORT WITH CHILLED BEAMS



FULLY MIXED AIR

Low-temperature gradient



LOW NOISE

No fan in Chilled Beams



FRESH AIR

Right humidity & temperature



EVEN AIR DISSEMINATION

No pockets of concentrated air



JUNO IQHC

Highest cooling with lowest air & water pressure drop



LYRA II IQCC

Low noise level with high flexibility & high cooling capacity



NOVA II IQFI

Exposed active chilled beam suitable for many ductwork system types



AURORA IQSA

Narrow 1-foot-wide active beam for ceiling mount



ORION II IQHA

Very low noise level – perfect for hotel & hospital rooms



NEUTON PUMP MODULE

Active condensation control for chilled beams

Chilled Beam Benefits: IAQ and Comfort

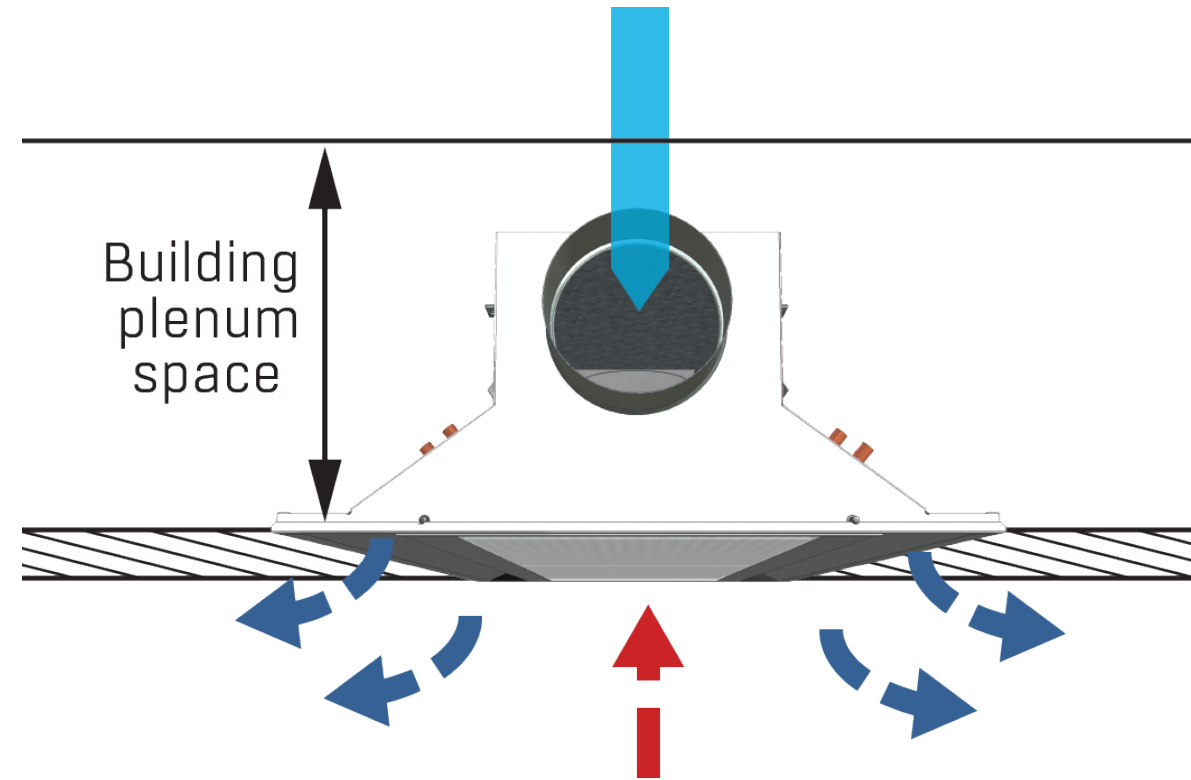


Indoor Air Quality

- Increased ventilation to each space (all applications)
- Better air distribution (circulation) within the space
- Lower noise levels than most HVAC systems ~30 db(A)
- Low velocity – no perceived draft

Cost Savings

- Reduced duct size
- Reduced building plenum space – “free” 13th floor
- Smaller air handlers, plant rooms



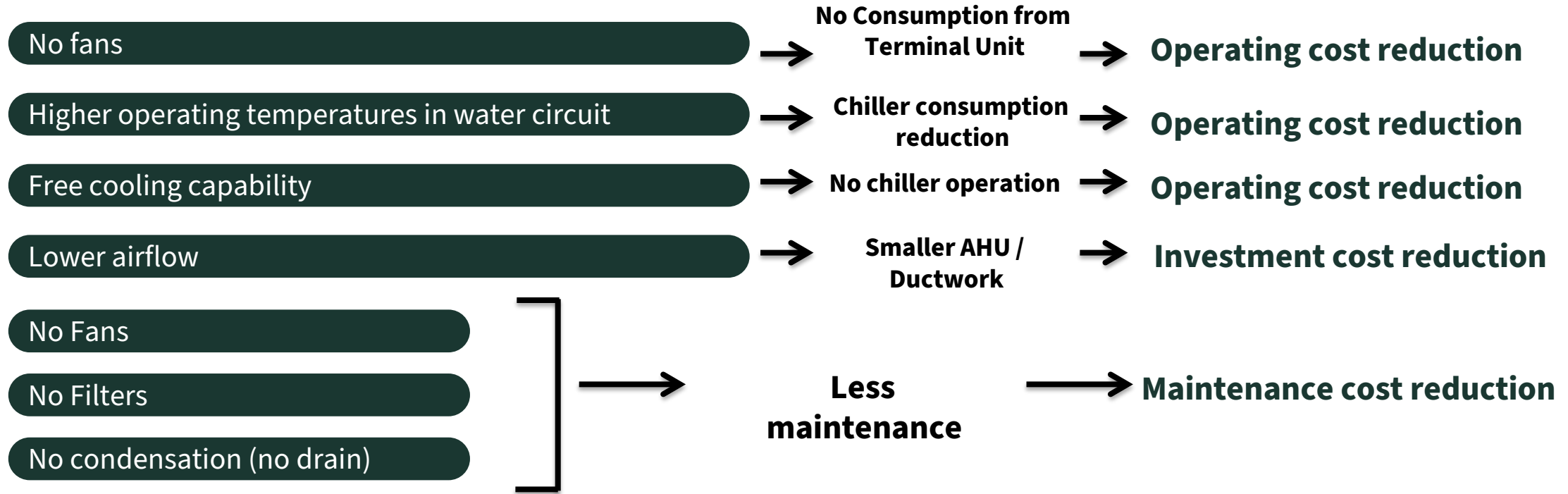
Chilled Beam Benefits: Energy Savings

- **Reduced fan horsepower**
- **Load matching** (only use space cooling if required)
- **Water Cooling:** ~ 75% of cooling handled by higher capacity water rather than by having the full load handled by air
- **Increased Chiller Efficiency:** Chilled water temperatures in chilled beams operate at higher water temperatures than fan coil systems. Chiller energy consumption with chilled beam systems provides ~35% energy savings.
- **Free Cooling:** When outside ambient air conditions are sufficiently dry and cooler than the return water temperature, energy can be saved in the chiller and primary air supply by using outdoor air.

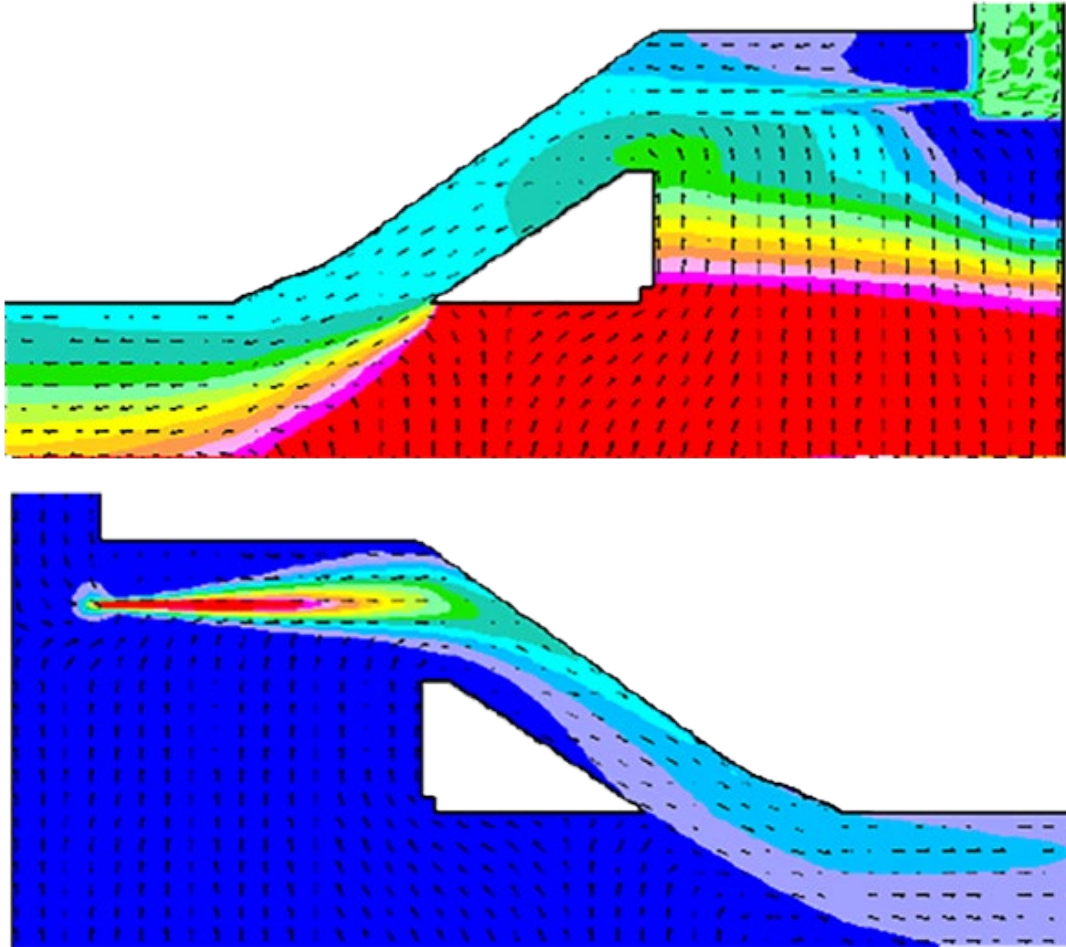




Lower Cost Solution

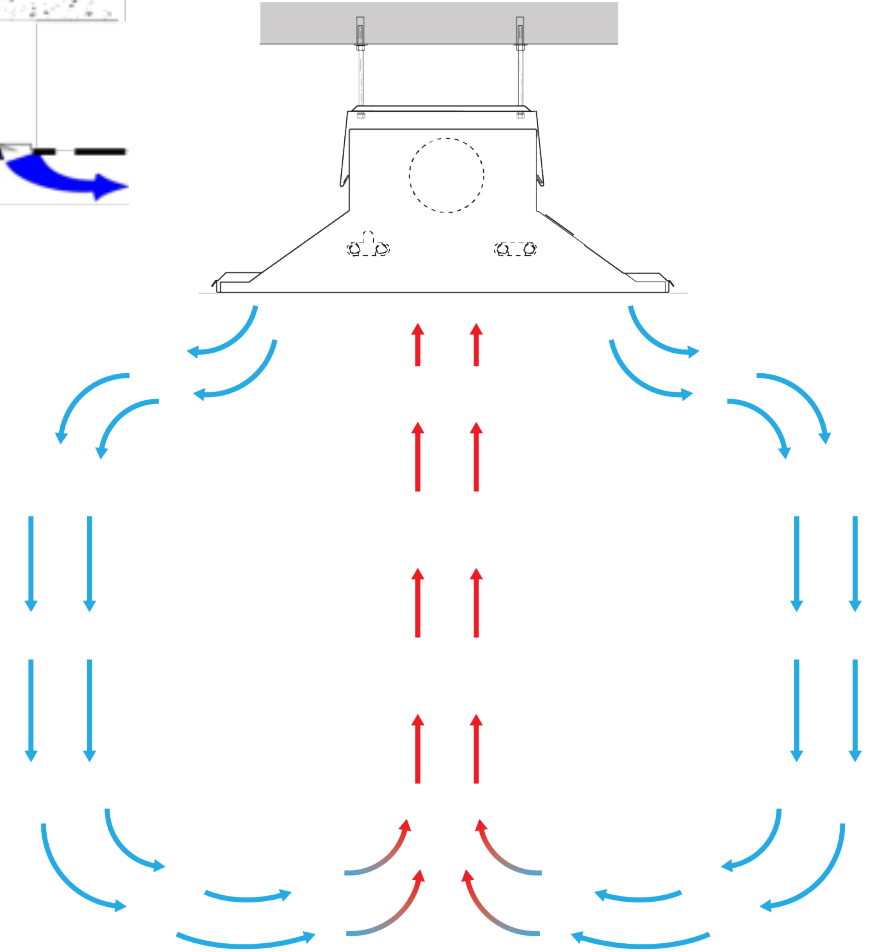
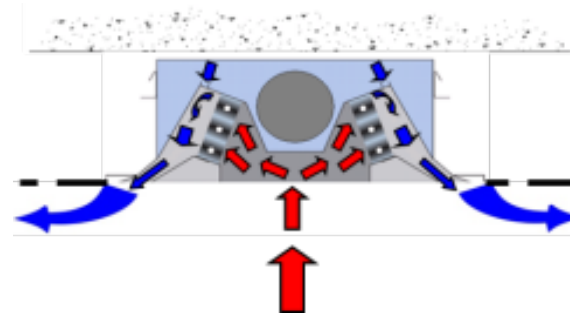


Lower energy consumption + Lower Maintenance = **Low LIFE CYCLE COST**



- Active chilled beams are connected to ductwork
- Used when cooling, heating & ventilation are needed

- The “engine” is the induction created by the adjustable slots.
- Cooling and heating modes
- The fresh air is supplied through the chilled beam.
- Mixing air diffusion into the room so the air velocity is controlled.



Active chilled beams provide heating, cooling and ventilation with high comfort.

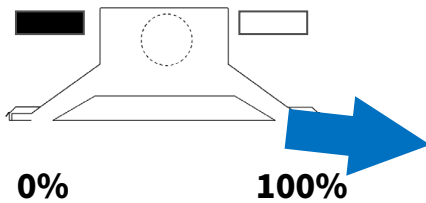
Juno IQHC – Active Chilled Beams

- Highest industry cooling capacity with the lowest air and water pressure drop
- Diffusion system allows for customized comfort control with adjustable induction, flow pattern control and twelve configuration slot settings
- Flexible, universal air & water connections
- Available with less than 20 dB of sound level which provides practically silent operation
- Significant energy savings
- Ease of installation
- Made in the U.S.A
- Available in 2' wide X 2'-10' long (length in 1' increments)
- Air flow range: 19 – 267 CFM

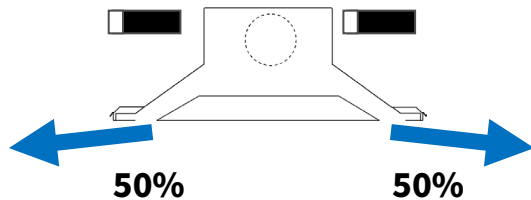


- Adjustable induction on site
- Different air distribution available:

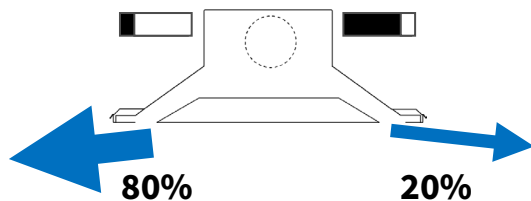
- One way distribution



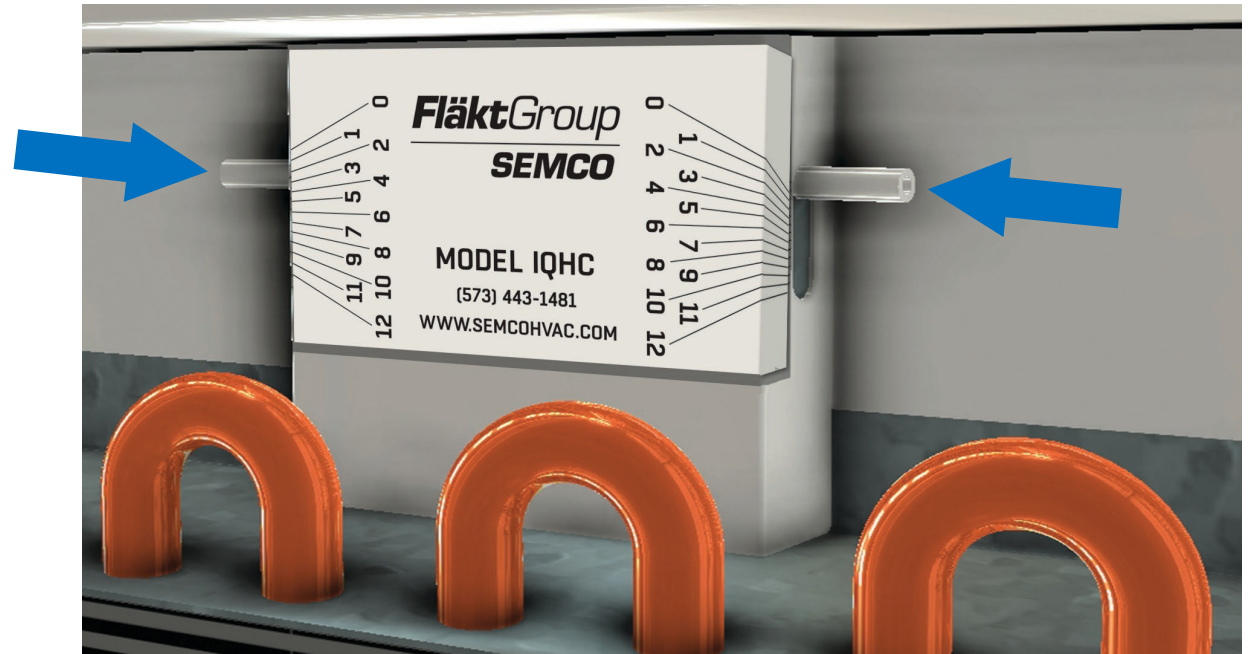
- Two-way distribution



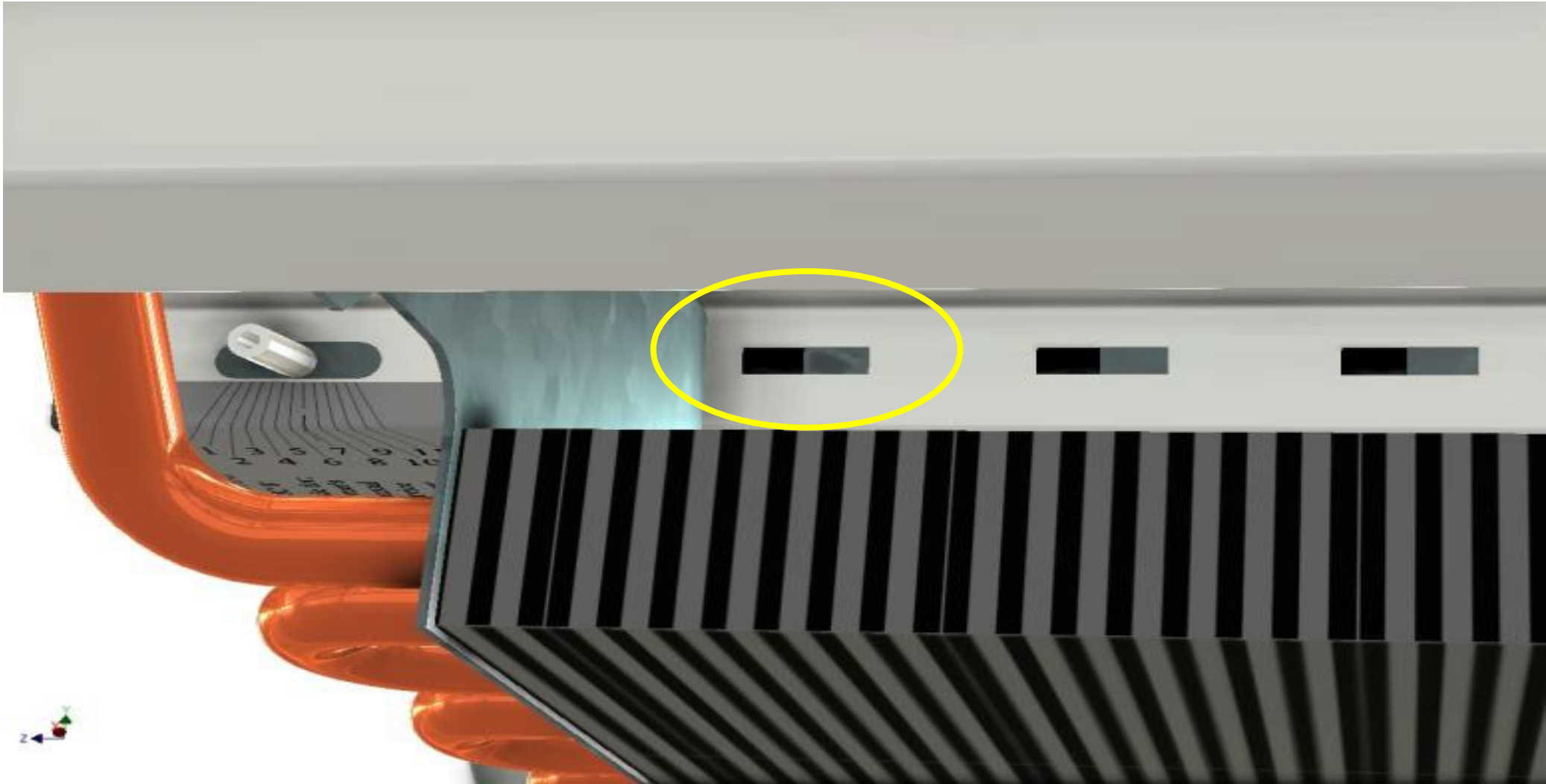
- Asymmetric air diffusion



- Chilled beam capacity can be increased or decreased by slot adjustment
- No tools required











Easy-to-Open Faceplate



- Cassette – Active
 - Easily-adjustable four-way throw
 - Comes in 2' and 4' lengths
 - Ceiling grid or with shroud for exposed
 - Grill height is adjustable to maintain throw distance
-
- **Pi** functionality - **P**ressure **i**ndependent demand control ventilation (DCV)
 - Nozzle change can be actuated to match airflow to occupancy level and kept at set values regardless of pressure changes in ductwork, saving energy, based on:
 - Occupancy
 - CO₂
 - Temperature



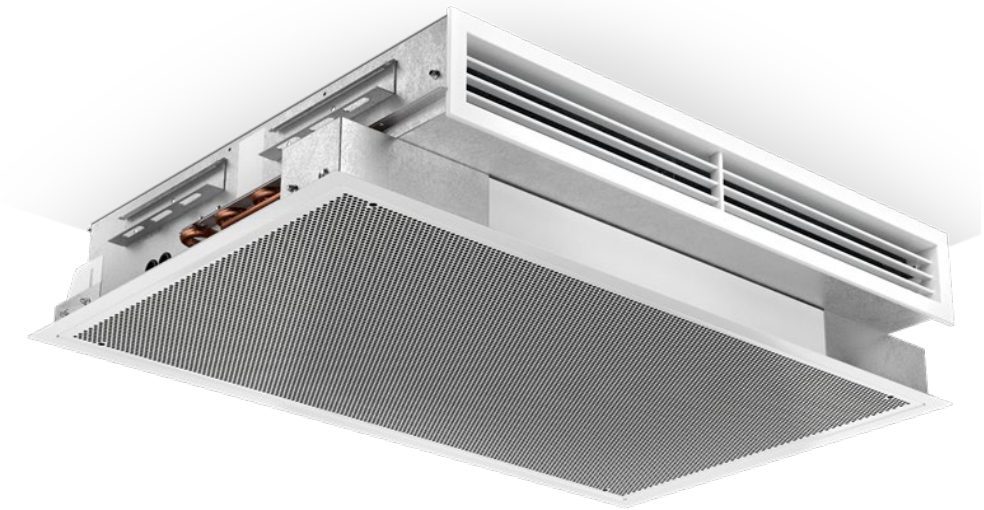
- For exposed applications - active
- **Pi** functionality - **P**ressure **i**ndependent demand control ventilation (DCV) optional
- High flexibility
- Easy installation
- Demand controlled ventilation (Motorized Nozzles)
- Adjustable induction (Energy Control)
- Adjustable air diffusion (Flow Pattern Control)
- Cooling and/or Heating (2 pipe coil)
- Flexible Construction Design



- Ceiling flush - active
- Ideal for 1' wide ceiling grid applications
- High flexibility
- Easy installation
- Capacity volume easily adjustable
- Bottom plate can be pushed aside to enable adjustments of capacity as well as check-up and cleaning
- Cooling and/or heating (2 or 4 pipes coil)
- Flexible construction design

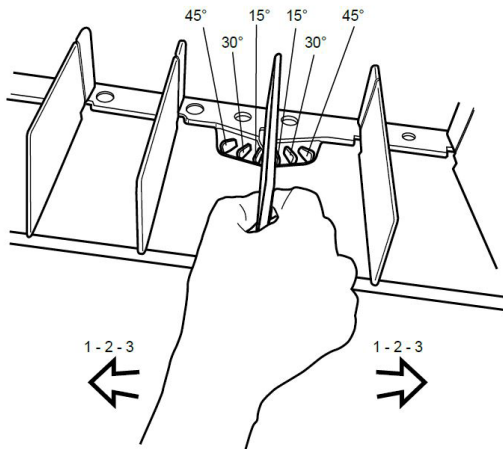
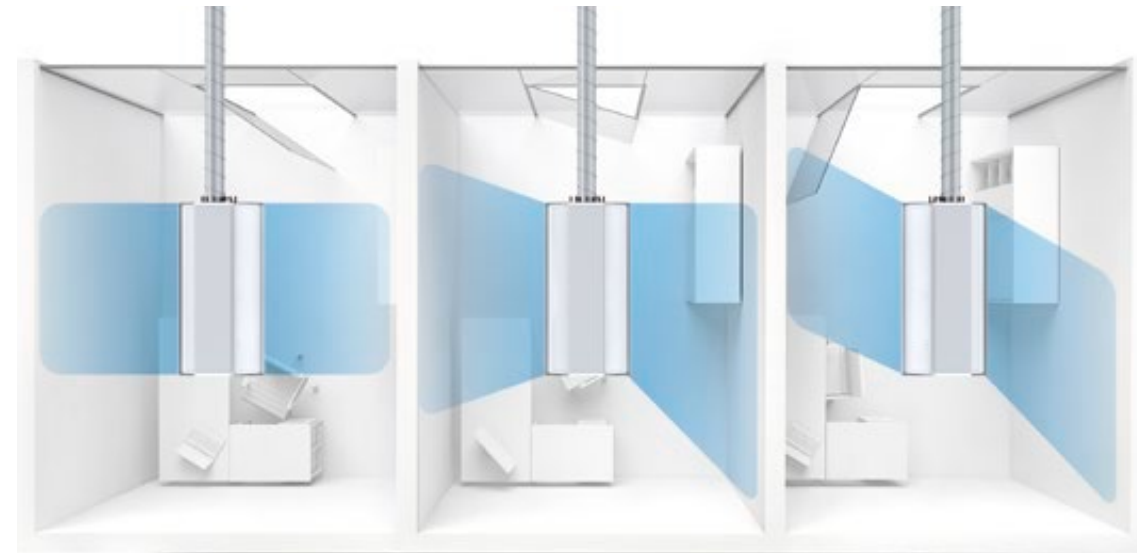


- Designed for use in hotel bedrooms, individual hospital and offices.
- Ensures high quality indoor air with a very low noise level
- Provides high cooling capacity through optimal utilization of its cooling coil already while the air pressure and airflows are low
- Brings comfort thanks to low and silent diffusion:
 - Low noise level
 - Flexibility
 - Comfortable indoor air climate



Flow Pattern Control System *

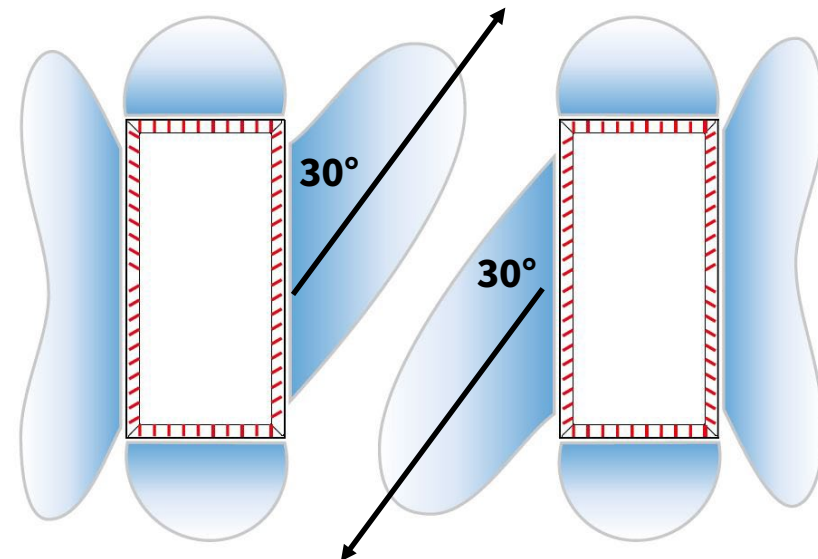
- The adjustable plastic vanes enable optimized air diffusion.
- By a combination of different angles on each side, adapt the flow pattern to always maintain optimal comfort



Vary throw direction

No tools required

Accessible from room

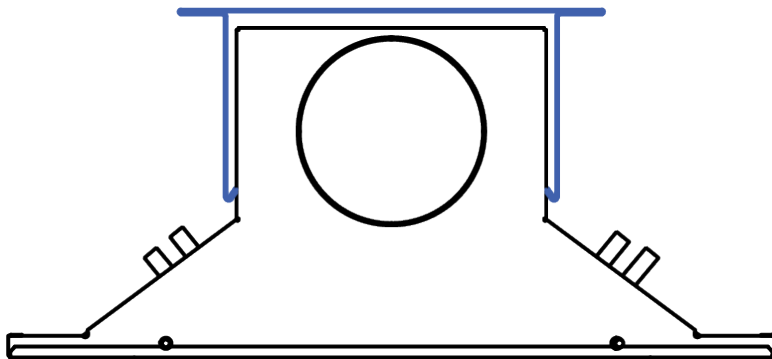


**Energy
Control
symmetrical;
Blades set at
30° angle
settings on
opposing units**

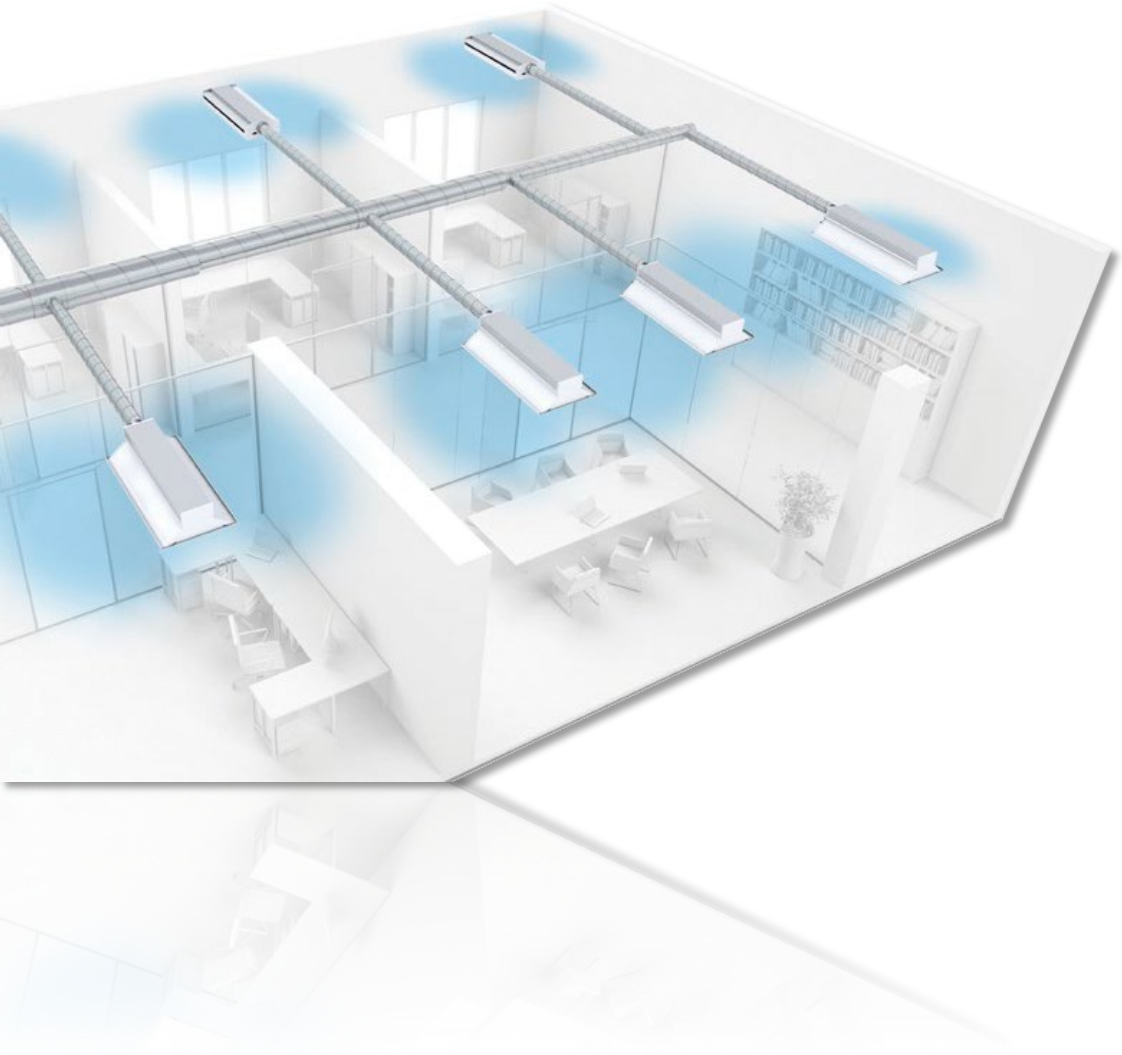
*Not available on Juno IQSA & Orion IQHA

Installation

- Fastening brackets for easy installation (free hanging or false ceiling). These brackets provide longitudinal adjustments.
 - Use threaded rods to attach brackets to Unistrut.
 - Clip beam into place.
- **Easy + Fast Installation = Low Installation Costs**



- Can also be installed with cable hanging systems



1. IAQ is paramount as is occupant comfort. Comfortable people are more productive and are healthier.
2. Chilled beams low pressure drop saves energy by reducing fan power. Fan energy also saved when chilled beams are used in lieu of fan coil units.
3. Chilled beams reduce the required capacity on the central plant – reducing first costs.

- Schools
- Offices
- Hotels
- Laboratories
- Health care facilities
- Renovations – including historic renovations with limited plenum space
- Environments with moderate to high sensible heat ratios



Case Study: 2.0 University Place, Philadelphia



“The chilled beam system is a major contributor to the building’s sustainability story and ongoing energy efficiency.”

- Michael W. Pavelsky, sustainability director, AIA, LEED AP

- 98,000-square-foot, multi-certified LEED Platinum
- 500 active chilled beams
- Air around ceiling-mounted chilled beam water coils continually cools and falls while warmer air rises in a continual convection of air comfort benefits with no drafts, no noise and stable temperature tolerances of $\pm 1^{\circ}\text{F}$.
- Beams reduce fan energy by up to 50% vs. the large fan horsepower required in the conventional rooftop DX, ductwork and variable air volume system the design team considered.

