

FANLESS

FILTERLESS

NO DRAIN PAN

# SEMCO CHILLED BEAMS

INDOOR AIR QUALITY AND ENERGY SAVINGS  
PROVIDING COMFORT AND FLEXIBILITY





# CHILLED BEAMS INDOOR AIR QUALITY WITH

When we enter a modern building today we expect nothing but perfect indoor air quality. In fact anything less will be noted; It can't be too warm, nor too cold. Not too dry or too humid. Obviously without annoying smells or noises, and with oxygen levels like a walk in the park. That's the human side of it.

On the other hand, ever more stringent legislation and building regulations when it comes to environmental aspects and reduced energy consumption are introduced. Also, economical pressures demand both the smallest possible operational costs and a low life cycle cost. At SEMCO we strive to meet these demands in our individual products as well as by integrating them in optimized systems.

SEMCO offers chilled beams that combine radiant cooling with conventional overhead ventilation to reduce energy usage, improve comfort levels, and reduce the architectural impact of ductwork and other mechanical systems. A chilled beam system is designed for use in non-residential applications where there is a high temperature load and/or rooms that require individual comfort control.

SEMCO's chilled beams are designed to manage high cooling capacity by using a primary air supply, typically outdoor air, to increase airflow over the element. The primary air is then supplied to the room through diffusers built into the beam. Many of our beams have a patented system for adjusting airflow, cooling effect and airflow pattern and can be adapted to suit the changing conditions of any given space.

## **INCREASED WELL-BEING = HIGHER PRODUCTIVITY**

Today most people spend over 90% of their time indoors. That means indoor air quality is of ever growing importance. Not just for comfort reasons, but also because it is vital for us to perform to the best of our ability; to learn more at school, get well sooner in hospitals and be more productive at work. Tests show that by optimizing the indoor climate, productivity can increase by as much as 5 to 10%.

# MINIMAL ENERGY CONSUMPTION

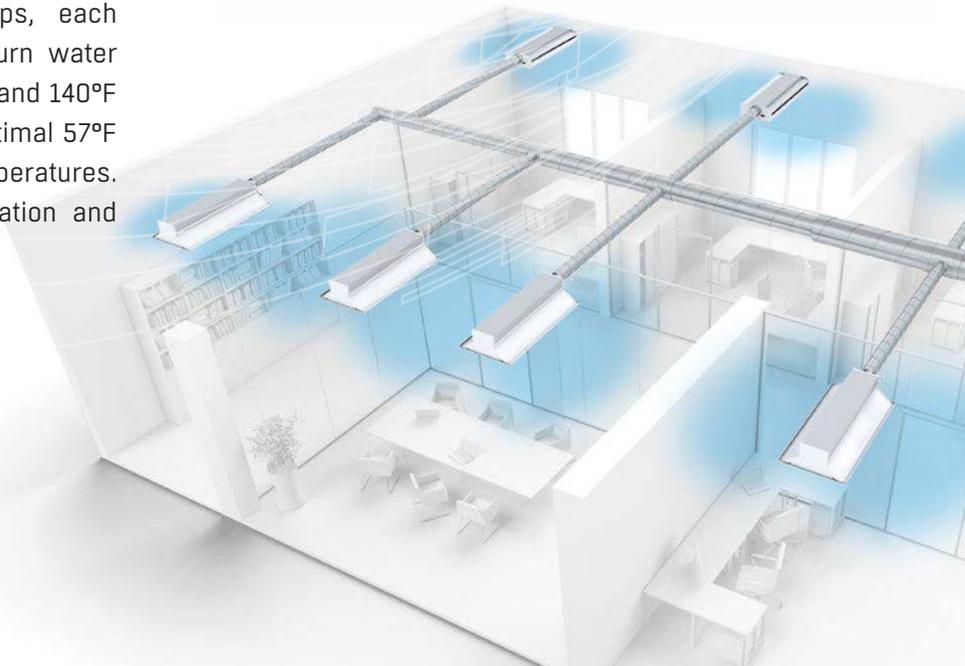
## THE PERFECT PARTNER FOR YOUR CHILLED BEAM SYSTEM

### NEUTON Pump Module

NEUTON is the HVAC industry's first smart, plug-and-play controlled chilled beam pump module (CCBPM) for reducing chilled beam system installation and operational costs.

NEUTON is a factory-built and pre-tested CCBPM package complete with its own powered integrated direct digital controller, chilled and hot water connections, valves, variable-speed electronically commutated motor (ECM) pumps, smart sensors, and other unique features. The device provides active condensation control effectively addressing one of the key design concerns regarding active chilled beams.

The intuitiveness of NEUTON eliminates the expense of a separate chiller, boiler, and secondary water distribution system associated with conventional chilled beam designs. Instead of expensive secondary piping loops, each NEUTON blends and re-circulates return water within its zone to convert typical 42°F and 140°F primary loop water temperatures to optimal 57°F or 100°F chilled beam discharge temperatures. This prevents cooling mode condensation and heating season stratification.



# IQHC

## ACTIVE CHILLED BEAM



Highest Industry  
Cooling Capacity



Lowest pressure  
high capacity beam



Reliable operation and  
long life expectancy

An intelligently designed active chilled beam that has the highest industry cooling capacity with the lowest air and water pressure drop

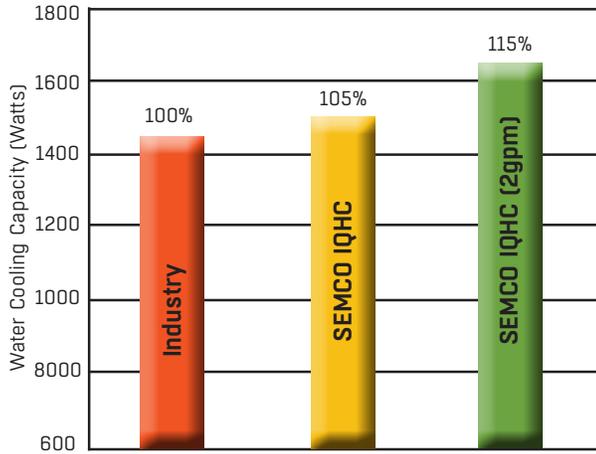
By utilizing low pressure coils and slots in lieu of nozzles, true energy savings is realized. SEMCO gives the building automation system the opportunity for the greatest energy turndown by placing the bulk of the cooling capacity on the coil. With SEMCO's beam capacity, the forced primary airflow can be selected for its smallest value, maximizing the reduction of fan horsepower.

### **DESIGNING FOR PRESSURE OPTIMIZATION**

The industry of chilled beams generally utilizes fixed nozzles, creating difficulties for design and commissioning with regards to air and pressure. SEMCO's approach is to utilize adjustable slots, allowing the engineer to design around a single termination pressure. The test and balance contractor then has an easier time of system wide balancing to one pressure.

## COIL COOLING POWER: 8' BEAM

(.5" Beam Pressure, 58°F Water and 76°F Room Temperature, GPM)



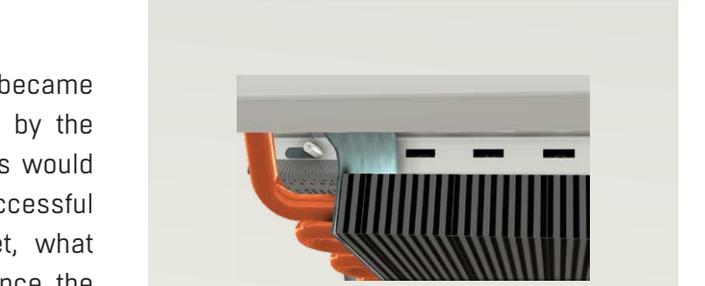
Comparison of coil cooling power provided by the previous top performing chilled beam (benchmark) against the new IQHC beam shown at the same water flow (yellow) as an industry standard, and at the same water-side pressure loss/pump energy used (green)

## THE UNIVERSAL BEAM

After SEMCO's first 50 U.S. chilled beam installations, it became evident that designers and contractors were disadvantaged by the chilled beam industry. At the time of order, a number of items would have to be coordinated for the beams to be fabricated for successful installation. Duct location, water location, which nozzle set, what duct size... and the list continues with the options. Then, once the beams arrive, the contractor would have to spend countless hours sorting through the beams to find the exact beam for a specified room. SEMCO has implemented the Universal Beam feature to alleviate the complications, and created a 12 configuration solution. This streamlines and simplifies the process and reduces errors.

## PRIMARY AIRFLOW AT .35" OF BEAM PRESSURE FOR A 8' LONG CHILLED BEAM

Slot or Nozzle Setting	SEMCO IQHC (12 slot settings)	Competitor 1 (4 nozzle sizes)	Competitor 2 (4 nozzle sizes)
1	14	NA	NA
2	28	36	30
3	42	NA	NA
4	52	NA	NA
5	62	55	60
6	72	NA	NA
7	86	NA	NA
8	100	100	105
9	114	NA	NA
10	128	NA	NA
11	142	NA	NA
12	156	162	150
Field Adjustable?	Yes	No	No



## SIMPLE FEATURES. HUGE IMPACT.

To make the design and installation as simple as possible, flexibility is a key ingredient to success. Having an easily adjustable slot means that a specific nozzle set does not have to be predetermined. The duct connection is field selectable. The water location is ideally located. These features simplify the installation, as selection of the beam now only requires knowing the beam length and type of coil.

# LYRA II

## CASSETTE CHILLED BEAM



### FUNCTIONS

- Heating and cooling
- Compact chilled beam
- Adjustable induction
- Flow Pattern Control
- Recessed or Exposed

### OPTIONS

- Actuated Pi (Pressure Independent)
- High airflow version Integrated Control



LYRA is the new SEMCO chilled beam cassette. It offers a very low noise level combined with high flexibility and high cooling capacity.

- Less than 20 dB sound level for a single cassette installation
- Less than 25 dB sound level with 3 units in the same room

LYRA diffuses air in 4 directions. This gives a high cooling capacity as well as a high level of comfort. Like all SEMCO active chilled beams, it provides comfort with low air velocities in the room by mixing the supply air with the ambient air. With SEMCO chilled beams system, you will also reduce your investment and operating costs.

### VERSIONS AVAILABLE

- Ceiling installation, available in 2' x 2' and 4' x 2'
- Exposed installation, available in 2' x 2' and 4' x 2'
- High flow version, available in 2' x 2' and 4' x 2'



## FLEXIBILITY

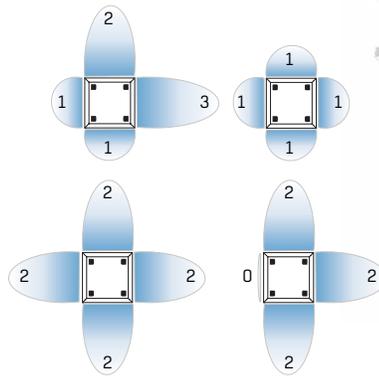
The Pi functionality as well as the Flow Pattern and Energy Control functions are all designed to adapt to the frequent changes in a modern office. When the demands change, the Pi actuator can simply be moved to another chilled beam and readjusted in minutes.



## COMFORT CONTROL FUNCTION

It is an adjustable induction system which fits the performances to the needs and enables 1 to 4 diffusion directions.

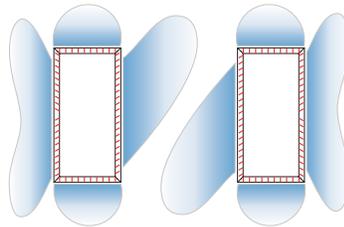
- Symmetric or disymmetric airflow
- Possible to change at any time
- No tools required



## FLOW PATTERN CONTROL FUNCTION

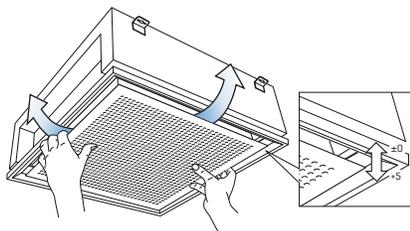
The adjustable plastic blades enable optimized air diffusion.

- No tools required
- Possibility to adjust the throw length according to room layout



## COANDA SAFETY CONTROL FUNCTION

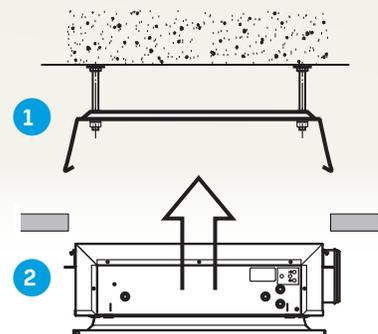
Coanda Safety Control (CSC) maintains the Coanda effect (adhesion of the air to the ceiling) while achieving the highest possible cooling power. The position of the front panel ensures a good air diffusion whatever the airflow.



## EASY INSTALLATION

With the fastening brackets, the installation of the cassette beam is quick, safe and easy. The system is installed in two steps.

First the rods and brackets are installed, and the beam itself is installed when the building is clean. Only one person is needed to install LYRA.



# WEGA II CEILING FLUSH ACTIVE CHILLED BEAM



## FEATURES

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- Length: 47 to 118 inches (120 to 300 cm)
- Demand controlled ventilation (Motorized Nozzles)
- Adjustable induction (Energy Control)
- Adjustable air diffusion (Flow Pattern Control)
- Easy installation (Fastening Brackets)
- Cooling and/or Heating (2 or 4 pipes coil)
- Flexible construction design
- Flush mounting in false ceiling
- No moving parts (less Maintenance)
- High flexibility
- Easy installation

The WEGA II chilled beam is an active chilled beam system for ventilation, cooling and heating. This diffusion system offers comfort and flexibility thanks to the Flow Pattern Control combined with adjustable induction. The pressure independent advanced function gives even more flexibility adding a Demand Controlled Ventilation (DCV) function to the system. The air diffusion follows building occupancy and makes the HVAC system highly efficient. WEGA II is pressure independent and makes the system suitable for many duct work system types.

## OPTIONS

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- Low-build model for low ceiling elevation
- Demand Controlled Ventilation (DCV)
- Actuated Pi (Pressure Independent)
- Electrical Heating
- Controls

# NOVA II

## EXPOSED ACTIVE CHILLED BEAM



The NOVA II chilled beam is an active chilled beam system for ventilation, cooling and heating. This diffusion system offers comfort and flexibility thanks to the Flow Pattern Control combined with adjustable induction. The pressure independent advanced function gives even more flexibility adding a Demand Controlled Ventilation (DCV) function to the system. The air diffusion follows building occupancy and makes the HVAC system highly efficient. NOVA II is pressure independent and makes the system suitable for many duct work system types. NOVA II is an aesthetic exposed Chilled beam giving full flexibility for your building layout for today and tomorrow.

### FEATURES

- Length: 47 to 118 inches (120 to 300 cm)
- Demand controlled ventilation (Motorized Nozzles)
- Adjustable induction (Energy Control)
- Adjustable air diffusion (Flow Pattern Control)
- Easy installation (Fastening Brackets)
- Cooling and/or Heating (2 or 4 pipes coil)
- Flexible Construction Design
- Free hanging Chilled beam

- No moving parts (less Maintenance)
- High flexibility
- Easy installation

### OPTIONS

- Demand Controlled Ventilation (DCV)
- Actuated Pi (Pressure Independent)
- Lighting
- Controls



### Pi AIRFLOW CONTROL

#### SIMPLIFIED DCV FOR ALL DUCTWORKS

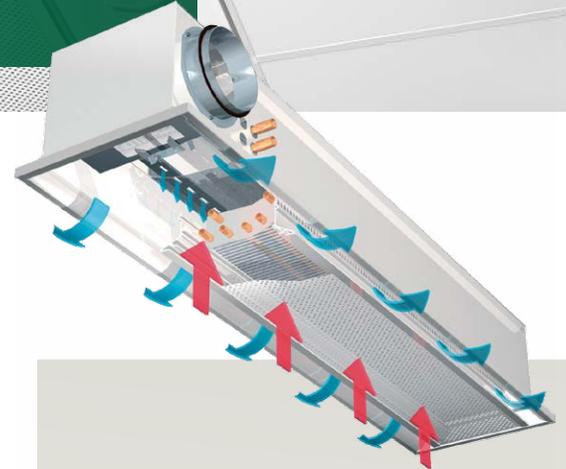
Varying airflow to match occupancy levels reduces energy consumption and increases comfort. A DCV system with chilled beams with Pi functionality gives energy savings of more than 50% when compared to a CAV system.

- Can be retrofitted
- Saves money while maximizing comfort
- Fit into any ductwork system
- Fast & easy installation

# FLEXICOOL® IQSA

## CHILLED BEAM

The Flexicool® IQSA chilled beam is an integrated system for ventilation, cooling and heating, fulfilling most needs for indoor climate. These supply air beams are designed to manage high cooling effects that, because of good mixing with room air, provide comfort and low air velocities in the occupied zone. IQSA, with a covered top side, can be used for straight and slanting duct and water connections. The beam is designed for ceiling mounting and its dimensions are suited for 12" wide ceiling panels. The chilled beam is equipped with adjusting rails, comfort control, for the adjustment of air flow, cooling effect and flow pattern. The simple adjustment of flow pattern makes it possible to adapt to changing conditions in the room.



### FEATURES

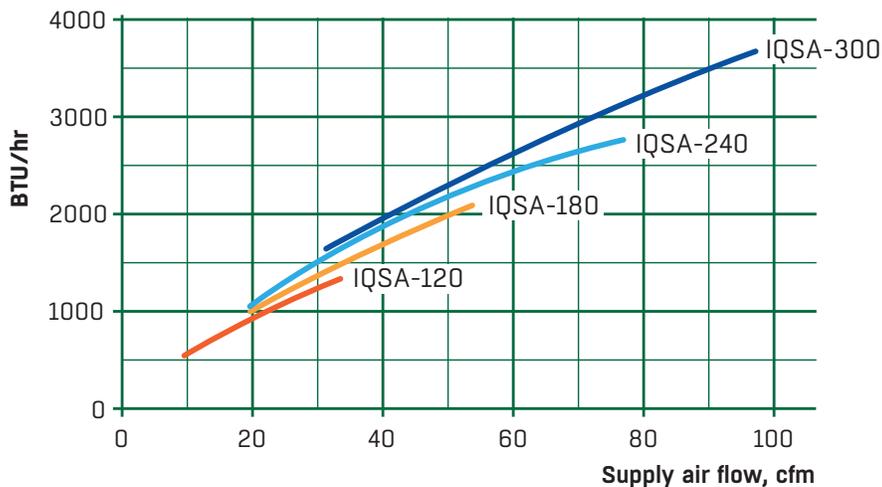
- High Air-flow
- Controls
- Lighting
- Comfort control
- Heating

### PRODUCT FACTS

- Chilled beam IQSA for ceiling mounting
- Suited for standard 12 inch ceiling module
- Capacity and flow directions easily adjustable
- Bottom plate can be pushed aside to enable adjustments of capacity as well as check-up and cleaning
- Patent pending for the sound attenuator
- Fastening brackets for quick and easy mounting - lift up - snap on

### QUICK SELECTION

Cooling effect in BTU/hr including supply air



The diagram shows the approximate cooling effect  $P_{tot}$  in BTU/hr with water flow  $q_w = 0.8$  GPM, temperature difference between room air and supply air  $\Delta t = 14^\circ\text{F}$ , difference between room air and average water temperature =  $14^\circ\text{F}$ , pressure drop 0.25 in w.g. on the air side and maximum sound pressure level  $L_{A10} = 34$  dB(A).

# QPVA PASSIVE CHILLED BEAM



- High cooling capacity
- Easy maintenance (cleaning)
- Easy installation (fastening brackets)
- Flexibility in water pipe connection position
- False ceiling/free hanging installation
- Galvanized steel casing
- Integrated Lighting (option)

The QPVA passive chilled beam provides for the cooling in a room. QPVA (width 22.5" or 570 mm) is a broad passive chilled beam. Passive chilled beams are either ceiling installed, in which case they lie flush with the suspended ceiling, or free space installed without ceiling. QPVA is available in lengths 4 feet to 13.75 feet at 2 foot intervals. In installations with passive chilled beams the air is supplied by means of separate supply air valves. Ceiling installation or free space installation.

# SILENCIA QV FH HOTEL CHILLED BEAM



Chilled beam designed for hotel application bringing comfort thanks to low and silent diffusion

- Low noise level
- Flexibility
- Comfortable indoor air climate

Silencia is designed for use in hotel bedrooms, individual hospital wards and cellular offices. It ensures high quality indoor air with a very low noise level. It provides high cooling capacity through optimal utilization of its cooling coil already while the air pressure and airflows are low.

- Length: 39 inches (100 cm)
- Easy installation
- Cooling and/or Heating (2 or 4 pipes coil)
- Exposed installation (in roof angle)
- No moving parts (less Maintenance)
- Horizontal air connection

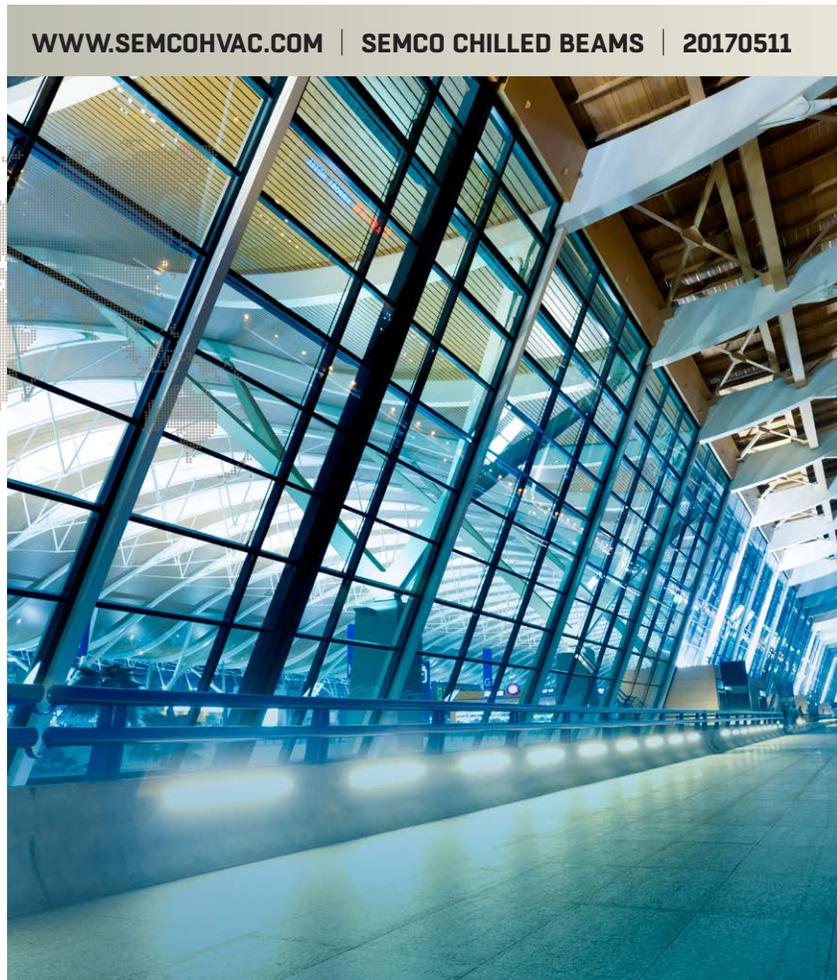


# WE BRING AIR TO LIFE

SEMCO® is a global leader in air management. We specialize in the design and manufacture of a wide range of air climate and air movement solutions. Our collective experience is unrivaled.

Our constant aim is to provide systems that precisely deliver the best indoor air quality and performance, as well as maximize energy efficiency.

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To learn more about SEMCO offerings and to contact your nearest representative please visit [www.semcohvac.com](http://www.semcohvac.com)

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