

Why Specify the SEMCO IQHC Active Chilled Beam?

Features and Benefits Provided By the SEMCO IQHC Active Chilled Beam

Reason #1: The Highest Cooling and/or Heating Capacity Output Available

The SEMCO IQHC beam provides exceptional cooling/heating output while simultaneously minimizing the water side pressure loss (pump energy) and accommodates a wide range of primary airflows to suit the needs of almost any project.

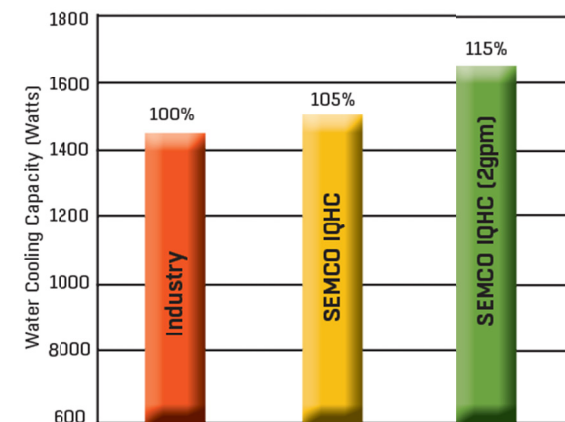
Cooling: With all passes used for cooling (two pipe), the coil cooling power output has been increased by up to 50% over our previous highest capacity chilled beam. The SEMCO IQHC beam now delivers a cooling capacity (at typical design conditions) that exceeds the competition while using less pump energy.

Heating: When configured as a 4 pipe beam (heating and cooling) the IQHC is available with added heating passes (if needed) to provide a substantial increase in heating output when compared to our previous highest heating capacity beam as well as beams offered by the competition.

These capabilities increase system energy efficiency while reducing the length of the beams that may be needed, thereby reducing the first cost of the project.

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)

Reason #2: The Greatest Airflow/Pressure Optimization in the Industry

With 12 field adjustable slots, almost any combination of beam pressure and airflow can be easily commissioned in the field without the need for additional tools or changing/plugging nozzles.

The competition provides a limited number of nozzles that have to be manually replaced or plugged to accommodate changes in the desired airflow and/or pressure settings. Replacing nozzles is labor intensive and plugging nozzles degrades performance. As important, limited slot/nozzle selections makes it difficult to supply the airflow required while simultaneously maintaining the desired system pressure to provide the necessary cooling and/or heating capacity.

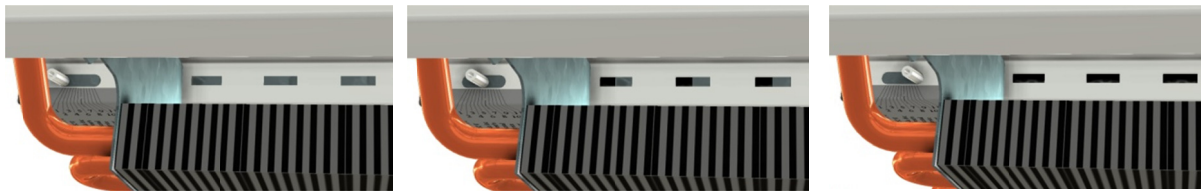
This means that most, if not all SEMO IQHC beams can be selected at the same, low pressure which greatly simplifies the commissioning process and saves the installing contractor substantial labor hours.

With nozzles, most beams require widely different pressure settings. This increases the installation cost, complicates the commissioning process and reduces energy savings (since higher duct static pressures are usually required to reach all primary airflow conditions).

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

Table comparing primary airflow options possible with the IQHC beam, using the multiple slot settings available at .35" of beam pressure, against the limited slot offering of the competition

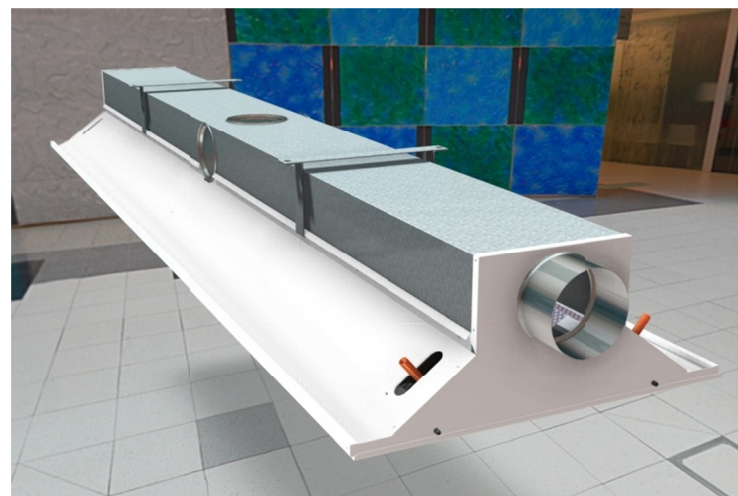
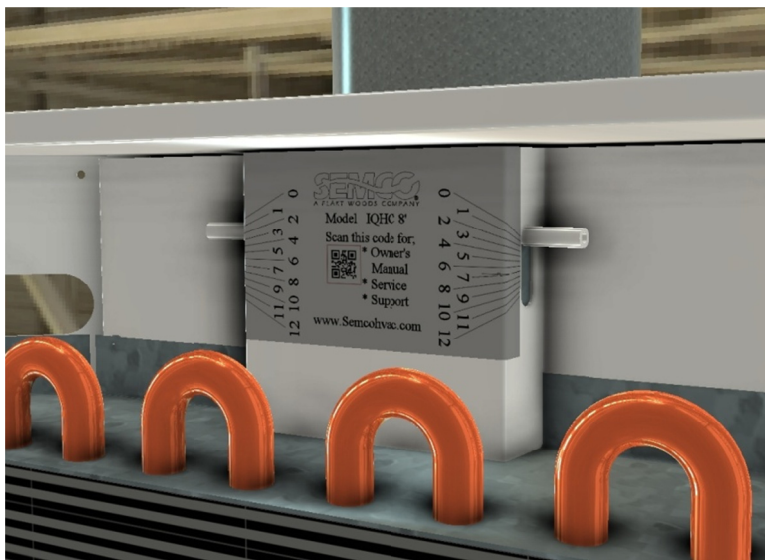


IQHC adjustable slots shown closed (setting 0), half open (setting 6) and fully opened (setting 12)

Reason #3: The Simplest Beam in the Industry to Install and Commission

Each beam can be installed in seconds once the IQHC installation brackets are secured. Once installed, the beam can be easily aligned to match the fit the ceiling tiles.

A commissioning tube is conveniently located (preinstalled at the factory) within each IQHC beam to quickly and accurately measure the chilled beam operating pressure during the startup process. The beam slot setting is easily adjusted in seconds, without the need of tools, using the adjustment arm and index markings of the integral airflow adjustment station (shown below) to achieve the primary airflow desired. Knowing the slot setting and beam pressure, the primary airflow can be easily determined from a convenient lookup table.



Installation brackets (shown above) are suspended from the ceiling structure. The beam snaps in place for a secure connection which can be easily aligned

The air slots for each side of the beam can be independently adjusted to provide the necessary flow at the desired beam pressure using the "airflow adjustment station". This allows for the delivery of increased or decreased airflow to either side of the beam. This is particularly helpful when increasing cooling capacity and/or throw length is needed to address space load requirements.

Reason #4: The Quickest and Most Comprehensive Design and Selection Tool Available

The IQHC beam is supported by the “SEMCO High Capacity Chilled Beam Design and Selection Software”. This software is far more than just a beam selection tool. It is a design tool that quickly and accurately provides the following important capabilities:

- Generates a full engineering schedule instantly
- Optimizes all beams automatically based on user defined input parameters – allowing full beam selections for the entire project to be completed in minutes
- Ensures that the primary airflow meets all of the following -
 - Minimum ventilation airflow
 - All internal latent load requirements
 - Achieves the cooling and/or heating sensible loads
- Allows for global changes to design parameters including beam water temperature, beam pressure, primary air dew point, etc. for all beams instantly
- Allows for a quick comparison of selections made based on the best performance with those made using the shortest possible beam (lowest cost)
- Allows manual optimization at each zone or individual beam
- Allows for cooling only or heating and cooling applications
- Estimates internal latent loads and zone area based on application type using ASHRAE defaults to expedite selections and check for erroneous inputs

Global Input Section:

Click to show recommended default values (1)

Cooling Design Parameters	Values Selected	Default Values
Desired beam pressure (inwg)	0.45 0.5	0.5
Beam water temperature (°F)	57 58	58
Primary air temperature (°F)	63 64	65
Primary air humidity (grains)	51 52	45
Room temperature (°F)	74 75	75
Room vs. ceiling temp (°F)	2 2.5	1.5
Ceiling temperature (°F)		77

Heating Design Parameters	Values Selected	Default Values
Beam water temperature (°F)	110 120	110
Primary air temperature (°F)	65 66	75
Room temperature (°F)	70 71	72
Ceiling temperature (°F)		72

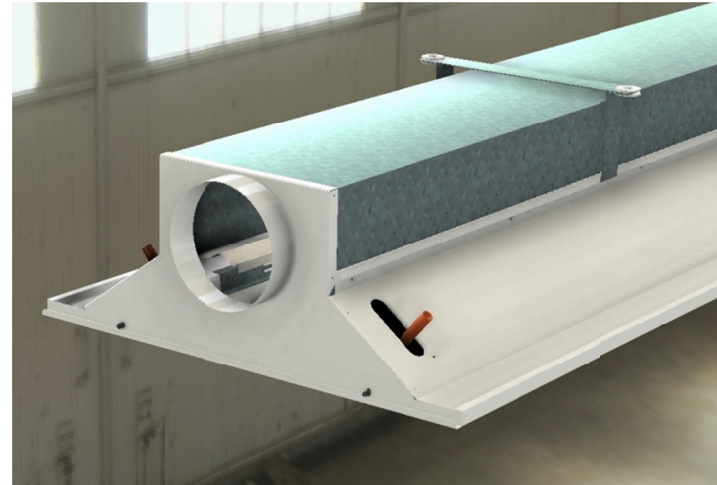
Example of the Global Input Section of the SEMCO IQHC Design Tool

Reason #5: Universal Duct and Water Connections Reduces Installation Errors

The IQHC beam design simplifies water connections by locating the tube ends external to the beam casing (shown to the right). To facilitate connections at the opposite end, the beam is simply rotated.

This is made possible by the unique universal duct connection option offered for the IQIC beam. Duct connection holes are located then plugged on both ends, both sides and the top of the beam. A “spin-fit” duct collar is provided that can be field installed in seconds at the location that best fits the installation. The unused holes remain filled using the factory provided snap in plugs (see below).

In this way, the installing contractor does not have to spend valuable time searching for the beam marked for a given zone and can configure the universal beam for the best water and air location that meets the needs of the space.



Water connections are located external to the beam housing to allow for simple and efficient installation



Top, side or end connections are no problem with the universal beam duct connection option

Reason #6: Architecturally Pleasing and Easy to Maintain

The IQHC has been developed to be visually pleasing to the room occupants using quality materials and finishes.

The unique “swing down” cover plate makes inspecting or vacuuming the integrated coil a breeze. It also allows modifications to the slot settings to be made efficiently since the airflow adjustment station is easily visible and accessible when the cover plate is open.

This is helpful to the installing contractor during startup as well as the end user if changes in occupancy or use of a space result in the need for more or less cooling or heating capacity over time.

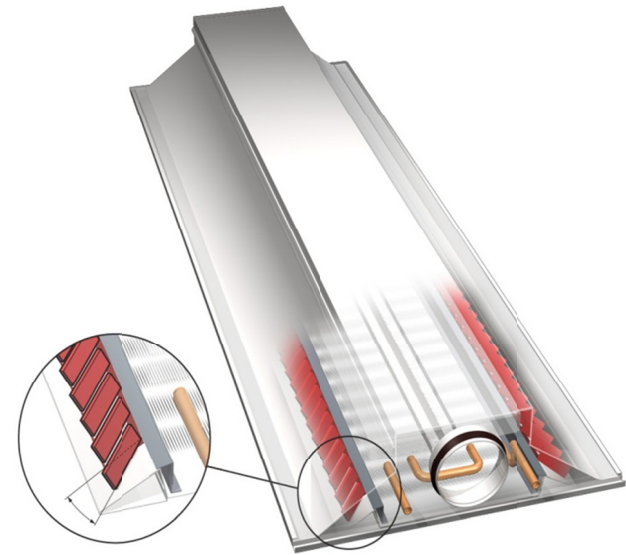


Standard swing-down cover plate allows for easy access to the integral coil and airflow adjustment station

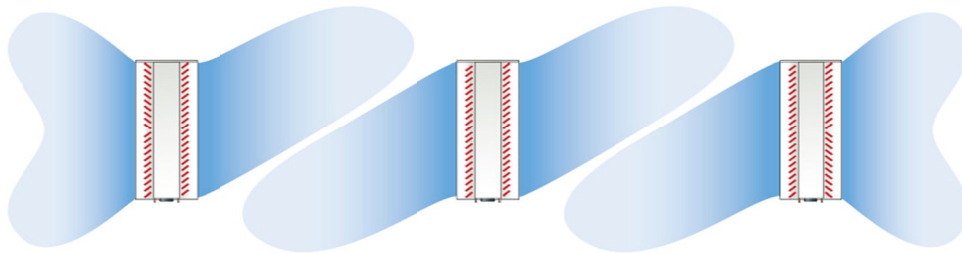
Reason #7: Integral Flow Pattern Control

The IQHC integrates an optional flow pattern control system. This unique system allows the installer or end user to distribute the air leaving the chilled beam as needed to achieve optimum comfort for the building occupants. The diverter plates snap into one of three directions, and can be moved by hand into the position desired.

This capability is very helpful to many situations. For example, if the beam is situated near a column in the building, if there is a desire to reduce a perceived draft on a single individual or if there is a desire to lessen the throw length from a particular beam.



Graphic showing the adjustable diverter blades of the flow pattern control system

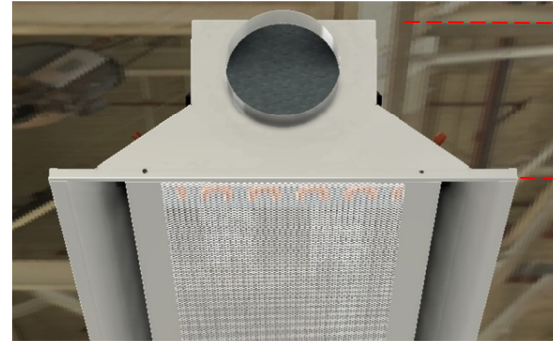


Flow pattern control provides the flexibility to deliver the airflow from an individual beam in a manner that best fits the needs of the occupied space

Reason #8: Optional Low Profile Design

The IQHC beam has a standard low profile design which minimizes the ceiling height required for installation. However, some renovation projects which are especially suitable for the use of chilled beams have very limited ceiling space and require the lowest possible beam height.

To accommodate such applications, the IQHC beam is offered in an optional low profile configuration thereby minimizing the installation height requirement while providing the same high cooling and heating capacity offered by our standard IQHC product.



Beam Height

	SEMCO IQHC (Standard)	SEMCO IQHC (Low Profile)	Competitor 1 (4 Nozzle Sizes)	Competitor 2 (4 Nozzle Sizes)
Beam Height (inches)	10"	7"	9" - 11"	11.2"

Beam height of the standard IQHC beam, the available low profile IQHC beam compared with the height of the two most popular competitive chilled beams