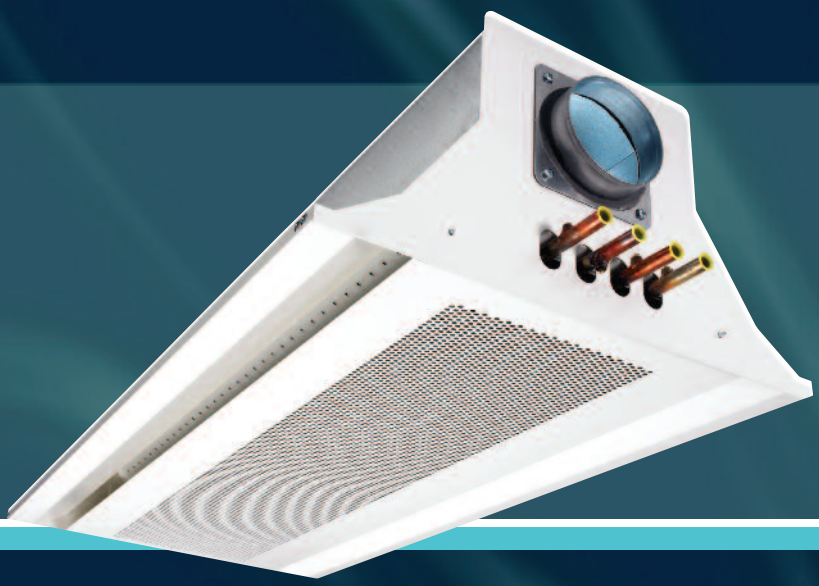
Issue A, October 2010

Active Chilled Beams

Metric



"ACTICOOL" – High induction, high performance active chilled beam

Advanced Air

Advanced Air

Company Profile

Advanced Air UK factory and technical centre of just over 60,000 sq ft

Advanced Air are part of the Nailor Industries Group in the USA and some of the key factors are:-

Turnover	£80m
Employees	750
Laboratories and Test Cells	6
Total factory area	600,000 ft^2

In the UK Advanced Air manufacture:-

- Chilled Beams
- Fan Coil Units
- Grilles and Diffusers
- Fire and Smoke Dampers
- Volume Control Dampers
- Electrical Control Panels
- VAV Terminal Units

The investment in R & D means there is a continuous flow of new products and upgrades to existing units. Specialist customer testing and mock ups undertaken in Advanced Airs specialist laboratories

R & D Facilities

Chilled Beam Overview

Advanced Air and Nailor Industries have over 40 years experience in the design development and manufacture of terminal air conditioning products and systems. Through Advanced Air's continuing investment in research and development facilities an extensive range of chilled beams has been created.

Advanced air is one of only a few UK manufacturers who have developed their beams in the UK, specifically for the UK market.

Acticool

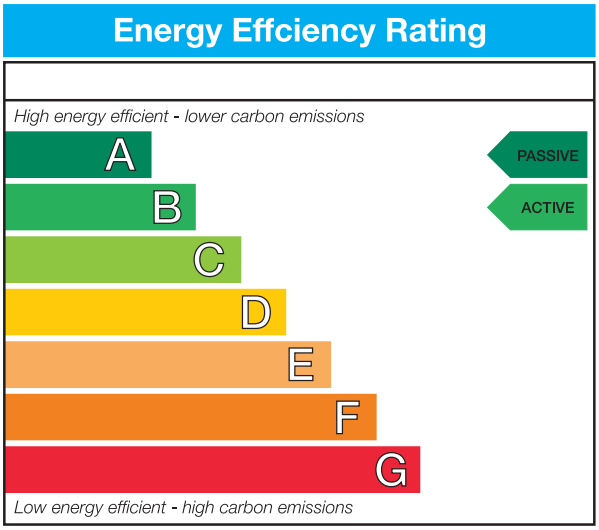
A high induction active beam with specially designed nozzles to create higher cooling outputs.

Advanced Air pursues a policy of continuous product development and we therefore reserve the right to change any of the information in this publication without notice. Please consult your local Advanced Air representative to verify current information.

Active Chilled Beam - Benefits

With the introduction of high induction active chilled beams a wide range of cooling loads can be achieved up to 200w/m2 which in today's modern buildings should cover virtually all the cooling loads. When load above 120w/m2 are being considered the air distribution within the occupied space needs to be checked by specialist air distribution engineers such as Advanced Air. The chilled beam can therefore replace the fan coil unit and bring about significant benefits.

Display Energy Certificates (DEC) show the specific buildings carbon emissions as calculated by approved software. The appearance is similar to the energy labelling of domestic electrical appliances. If a similar labelling system was used for individual components in an air conditioning system the ratings for chilled beams could look like the label below.



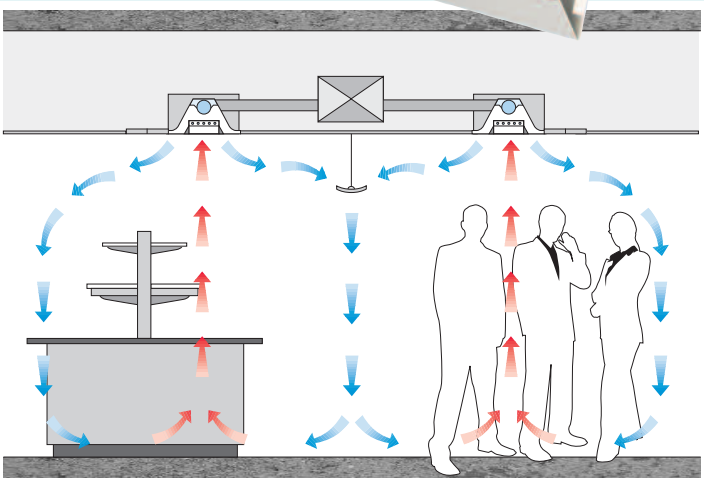
Energy

The chilled beam has two important energy considerations when compared to the fan coil unit.

Firstly there is no secondary or terminal fan unit since the beam operates by inducing air with nozzles (active). Usually a large quantity of fan coils are used even on an average sized project so the total kW consumption of these terminal fan units can be significant particularly where they are left running all the time (i.e. constant speed as opposed to variable volume VAV fan coils).

Secondly elevated chilled water temperatures of $14/17^0$ are utilised as opposed to $9/14^0$ usually associated with fan coils. This provides a further opportunity for "free cooling" thereby reducing energy usage.

Active Chilled Beams - Benefits



Comfort Levels

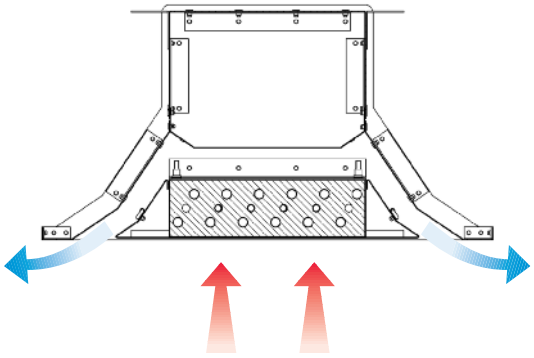
Very good comfort levels can be achieved utilising chilled beams. The air velocities are low within the occupied space and since the supply air temperature is around 16^0 there is not a high temperature gradient with chilled beams.

Noise levels are also very low with NR35 being easily achieved in the absence of a fan in the unit.

Maintenance and Whole Life Costs

One of the main advantages of chilled beams is the low level of maintenance required. This generally leads to low whole life costs as can be seen in the summary below:-

- No condensate pump
- No fans
- No motors
- No moving parts
- No filter
- No consumables
- Simple on/off control valves
- 3 year inspection
- 20 year life span



Chilled Beam Operation

As can be seen from the diagram the operation of the active chilled beams is relatively simple. Fresh air is supplied along a horizontal duct at the top of the unit. The air is forced through nozzles which are mounted in this horizontal duct and positioned to get maximum air entrainment.

As these jets of air dissipate in the chilled beam exit diffuser they induce room air to pass through the centrally mounted perforated diffuser and over the coils. These coils are normally used for cooling but they can provide heating as well. The 4 pipe heating and cooling chilled beam has coils with twin circuits. Since cooling is the main requirement the coil is designed to meet the maximum cooling load. On the heating cycle the hot water is conveyed to the centre of the coil by a separate micro bore copper pipe and achieves the relevant heating with no impact on the cooling potential.

Active Chilled Beams - Technology

Induction Nozzles

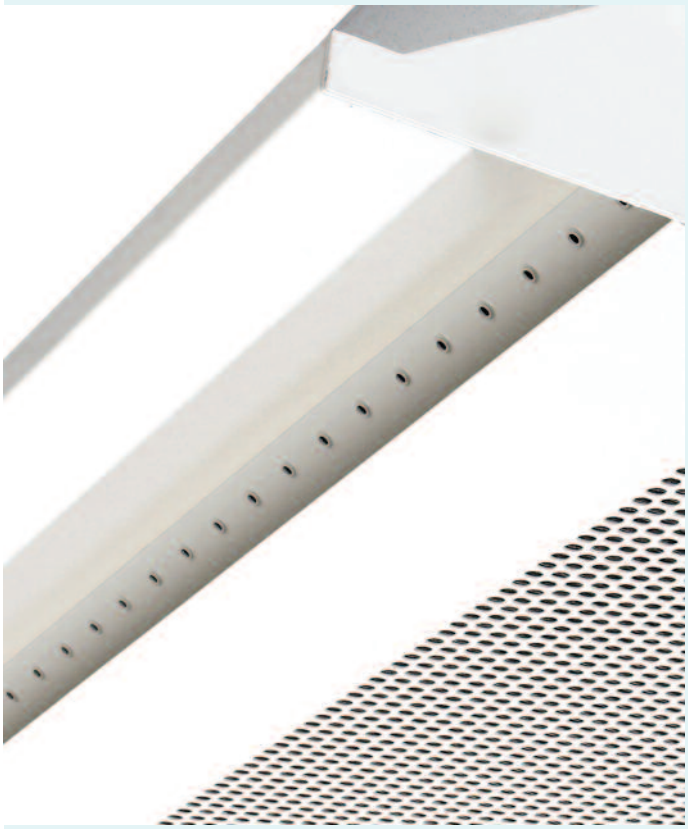
These are probably the most critical part of the beam since they control the induction rate which needs to be as high as possible. The induction rate for a given airflow is a measure of the efficiency of the beam and ultimately the overall cooling which can be achieved.

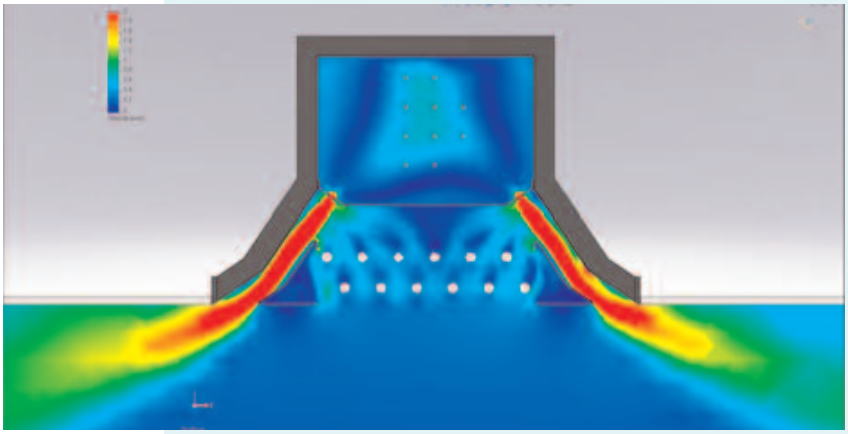
To say the nozzle can come in various “shapes and sizes” is somewhat of an understatement when the induction rate can be influenced by many factors in the nozzle design which include:-

- Shape - e.g. circular, oval, slot, star shape, etc
- Diameter - measurement of nozzle
- Spacing - distance between nozzles
- Configuration - pattern of an array of nozzles
- Position - in relation to the beam discharge slot
- Angle - the angle of discharge

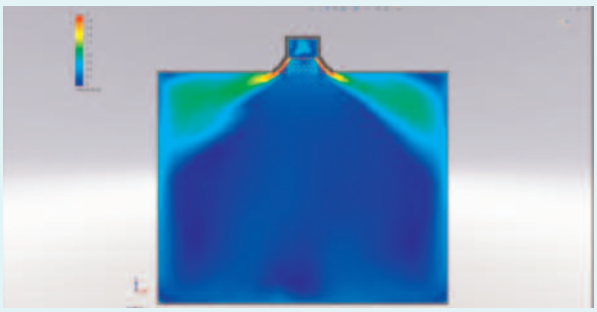
If there were 10 options for each category there would be 1 million variations that needed to be tested to explore the most effective combination.

Engineering fluid dynamics EFD was used to narrow the wide range of option and to create a short list of the most effective combinations for actual testing. It was found later that the EFD predictions on beam velocities, beam temperatures and room velocities were very close to those measured in actual test.



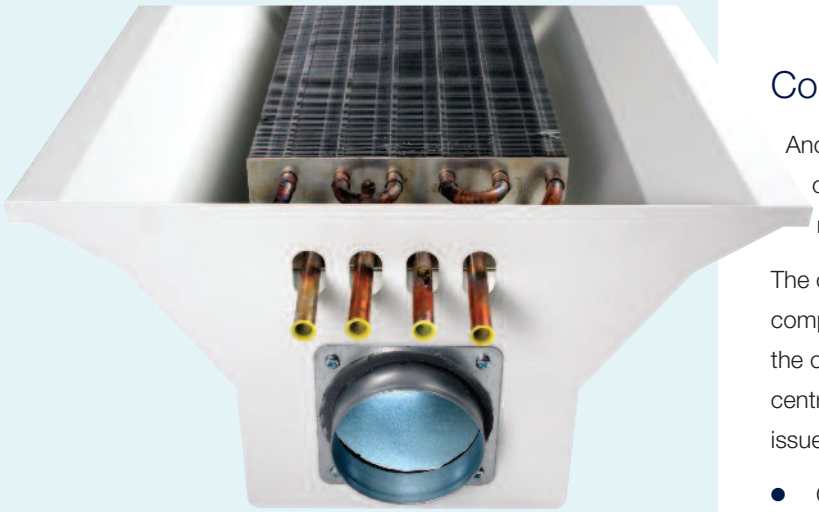


Beam velocity map



Beam function within a room

Active Chilled Beams - Technology



Coil Design

Another very important component is the coil where the objective is to maximise the cooling output and minimise the energy consumption.

The coils used are not a standard ”off the shelf” component but have been specially developed jointly by the coil manufacturer and the Advanced Air technical centre. To achieve the objective mentioned above many issues had to be investigated typically:-

- Coil circuits
- Copper pipe diameter
- Fin design and shape
- Fin spacing
- Pipe spacing
- Reynolds number

Each coil configuration was tested against a specific airflow and the output and pressure drop were measured. The best of these were fitted and tested in the beam so that the most effective coil configuration could be selected.

Air Distribution

The discharge air slot needs careful design to minimise any aerodynamic resistance whilst still maintaining coanda effect on the ceiling. In addition the discharge velocities have to be sufficient to give the beam a reasonable throw and maintain comfort conditions within the room at a typical 2-3m spacing.

The air distribution can be significantly affected by the shape and dimension of the slot and it is therefore essential all beams have been tested in specialist air distribution laboratories BSRIA approved similar to those in the Advanced Air Technical Centre.

Active Chilled Beams

Beam performance Nozzle A - 2 way discharge

Performance Parameters

Return Air 24.5 °C Room Air 24.0 °C Primary Air 14.0 °C Supply Water 14.0 °C Return Water 17.0 °C
Supply Water Heating 45.0 °C Return Water Heating 35.0 °C

Beam Length (mm)	Primary Air l/s	6 l/s	8 l/s	10 l/s	12 l/s	14 l/s				
1200	W/M	268 W	357 W	444 W	524 W	606 W				
	Throw m	0.3-0.9-1.5	0.4-1.2-2.0	0.6-1.5-2.5	0.7-1.7-3.0	0.8-2.0-3.5				
	Static Pa	36	64	100	144	196				
	dB(A)	<20	20	24	29	32				
	Water W	245 W	326 W	405 W	475 W	548 W				
	Water Flow	70.3 l/h	93.5 l/h	116.1 l/h	136.2 l/h	157.1 l/h				
	Water ΔP	0.5 KPa	0.9 KPa	1.3 KPa	1.9 KPa	2.5 KPa				
	Heating W	135 W	180 W	223 W	262 W	302 W				
	Total Air l/s	30 l/s	40 l/s	50 l/s	60 l/s	70 l/s				
	Primary Air W	77 W	102 W	128 W	154 W	179 W				
	Total W	322 W	429 W	533 W	629 W	727 W				
1800	**Primary Air l/s**	**10 l/s**	**12 l/s**	**14 l/s**	**16 l/s**	**18 l/s**	**20 l/s**	**22 l/s**		
	W/M	307 W	368 W	429 W	488 W	540 W	595 W	648 W		
	Throw m	0.4-1.0-1.7	0.5-1.2-2.1	0.5-1.4-2.4	0.6-1.6-2.8	0.7-1.8-3.1	0.8-2.0-3.4	0.8-2.2-3.7		
	Static Pa	44	64	87	114	144	178	215		
	dB(A)	23	26	29	31	34	36	37		
	Water W	425 W	509 W	592 W	674 W	741 W	814 W	885 W		
	Water Flow	121.8 l/h	145.8 l/h	169.8 l/h	193.2 l/h	212.5 l/h	233.4 l/h	253.8 l/h		
	Water ΔP	1.9 KPa	2.7 KPa	3.7 KPa	4.8 KPa	5.8 KPa	7.0 KPa	8.3 KPa		
	Heating W	234 W	280 W	326 W	371 W	409 W	449 W	488 W		
	Total Air l/s	50 l/s	60 l/s	70 l/s	80 l/s	90 l/s	100 l/s	110 l/s		
	Primary Air W	128 W	154 W	179 W	205 W	231 W	256 W	282 W		
	Total W	553 W	663 W	772 W	879 W	972 W	1071 W	1167 W		
2400	**Primary Air l/s**	**12 l/s**	**14 l/s**	**16 l/s**	**18 l/s**	**20 l/s**	**22 l/s**	**24 l/s**	**26 l/s**	**28 l/s**
	W/M	287 W	335 W	382 W	429 W	475 W	518 W	560 W	606 W	647 W
	Throw m	0.3-0.9-1.6	0.4-1.1-1.9	0.5-1.3-2.2	0.5-1.4-2.4	0.6-1.6-2.7	0.7-1.7-3.0	0.7-1.9-3.2	0.8-2.0-3.5	0.8-2.2-3.7
	Static Pa	36	49	64	81	100	121	144	169	196
	dB(A)	23	24	26	28	30	33	35	36	38
	Water W	534 W	624 W	711 W	798 W	883 W	960 W	1036 W	1122 W	1195 W
	Water Flow	153.2 l/h	178.7 l/h	203.8 l/h	228.8 l/h	253.1 l/h	275.3 l/h	296.9 l/h	321.7 l/h	342.5 l/h
	Water ΔP	4.0 KPa	5.4 KPa	7.0 KPa	8.8 KPa	10.8 KPa	12.8 KPa	14.9 KPa	17.5 KPa	19.8 KPa
	Heating W	295 W	344 W	392 W	440 W	487 W	529 W	571 W	618 W	658 W
	Total Air l/s	60 l/s	70 l/s	80 l/s	90 l/s	100 l/s	110 l/s	120 l/s	130 l/s	140 l/s
	Primary Air W	154 W	179 W	205 W	231 W	256 W	282 W	307 W	333 W	359 W
	Total W	688 W	803 W	916 W	1029 W	1139 W	1242 W	1343 W	1455 W	1554 W
3000	**Primary Air l/s**	**16 l/s**	**18 l/s**	**20 l/s**	**22 l/s**	**24 l/s**	**26 l/s**	**28 l/s**	**30 l/s**	**32 l/s**
	W/M	289 W	326 W	364 W	401 W	438 W	476 W	510 W	543 W	581 W
	Throw m	0.3-0.9-1.6	0.4-1.1-1.8	0.4-1.2-2.1	0.5-1.3-2.3	0.5-1.4-2.5	0.6-1.6-2.7	0.6-1.7-2.9	0.7-1.8-3.1	0.7-1.9-3.3
	Static Pa	41	52	64	77	92	108	125	144	164
	dB(A)	22	25	28	30	32	33	35	37	38
	Water W	798 W	896 W	995 W	1093 W	1187 W	1286 W	1369 W	1450 W	1547 W
	Water Flow	228.8 l/h	256.8 l/h	285.3 l/h	313.1 l/h	340.1 l/h	368.4 l/h	392.4 l/h	415.7 l/h	443.4 l/h
	Water ΔP	10.7 KPa	13.5 KPa	16.6 KPa	20.0 KPa	23.6 KPa	27.7 KPa	31.4 KPa	35.3 KPa	40.1 KPa
	Heating W	440 W	494 W	549 W	602 W	654 W	708 W	754 W	799 W	853 W
	Total Air l/s	80 l/s	90 l/s	100 l/s	110 l/s	120 l/s	130 l/s	140 l/s	150 l/s	160 l/s
	Primary Air W	205 W	231 W	256 W	282 W	307 W	333 W	359 W	384 W	410 W
	Total W	867 W	978 W	1092 W	1204 W	1314 W	1429 W	1529 W	1628 W	1742 W

Recommended maximum heating capacity for the above beams is equal to 50% of the indicated cooling potential.
The return air to the beam is taken as 0.5 °C above the average room for the values above.

Notations

W/M	Cooling capacity per linear meter
Throw m	Throw values are to 0.75 - 0.5 - and 0.25 m/s respectively.
Static Pa	Static pressure in beam plenum chamber Pascal's
dB(A)	Air regenerated sound power level
Water W	Cooling output of coil Watts
Water Flow	Water flow rate l/h
Water ΔP	Coil pressure drop kPa
Total Air l/s	Total discharge air volume from beam l/s
Primary Air W	Cooling capacity of the primary air Watts
Total W	Total cooling capacity of the chilled beam Watts

Correction Table	
K	Water W
11	1.22
10.5	1.17
10	1.11
9.5	1.06
9	1.00
8.5	0.94
8	0.89
7.5	0.83
7	0.78

The thermal data is based on 9.0 K between mean water and return air to the beam.
For example - If the room temperature of the design in question is 25 °C the K is increased to 10 as the data above is based on a room of 24 °C.

dB(A)	m/s
40	4
35	3.5
30	3
25	2.5
20	2

The sound power dB(A) levels are achieved by limiting the primary air spigot velocity as per the table above.

Active Chilled Beams

Beam performance Nozzle B - 2 way discharge

Performance Parameters

Return Air 24.5 °C Room Air 24.0 °C Primary Air 14.0 °C Supply Water 14.0 °C Return Water 17.0 °C
Supply Water Heating 45.0 °C Return Water Heating 35.0 °C

Beam Length (mm)	Primary Air l/s	14 l/s	17 l/s	20 l/s	23 l/s	26 l/s	29 l/s			
1200	W/M	475 W	570 W	693 W	766 W	859 W	936 W	1014 W		
	Throw m	0.6-1.6-2.7	0.7-1.9-3.3	0.9-2.3-4.0	1.0-2.6-4.4	1.1-2.9-4.9	1.2-3.1-5.4	1.3-3.4-5.8		
	Static Pa	49	72	100	132	169	210	256		
	dB(A)	30	35	40	43	47	50	50		
	Water W	391 W	467 W	566 W	625 W	697 W	752 W	806 W		
	Water Flow	112.0 l/h	133.7 l/h	162.2 l/h	179.2 l/h	199.9 l/h	215.4 l/h	231.1 l/h		
	Water ΔP	1.3 KPa	1.8 KPa	2.6 KPa	3.2 KPa	4.0 KPa	4.6 KPa	5.3 KPa		
	Heating W	215 W	257 W	312 W	345 W	384 W	414 W	444 W		
	Total Air l/s	49 l/s	60 l/s	73 l/s	81 l/s	91 l/s	102 l/s	112 l/s		
	Primary Air W	179 W	218 W	256 W	295 W	333 W	371 W			
	Total W	570 W	684 W	832 W	920 W	1030 W	1123 W	1216 W		
1800		**20 l/s**	**23 l/s**	**26 l/s**	**29 l/s**	**32 l/s**	**35 l/s**	**38 l/s**	**41 l/s**	
	W/M	482 W	528 W	597 W	663 W	732 W	799 W	859 W	921 W	
	Throw m	0.6-1.6-2.7	0.7-1.8-3.0	0.8-2.0-3.4	0.9-2.2-3.8	0.9-2.4-4.2	1.0-2.7-4.6	1.1-2.9-4.9	1.2-3.1-5.3	
	Static Pa	44	59	75	93	114	136	160	187	
	dB(A)	32	36	40	42	45	47	50	52	
	Water W	602 W	657 W	742 W	822 W	908 W	989 W	1060 W	1132 W	
	Water Flow	172.6 l/h	188.2 l/h	212.7 l/h	235.7 l/h	260.1 l/h	283.6 l/h	303.8 l/h	324.5 l/h	
	Water ΔP	3.8 KPa	4.6 KPa	5.8 KPa	7.2 KPa	8.7 KPa	10.4 KPa	11.9 KPa	13.6 KPa	
	Heating W	332 W	362 W	409 W	453 W	500 W	545 W	584 W	624 W	
	Total Air l/s	73 l/s	81 l/s	91 l/s	102 l/s	112 l/s	123 l/s	133 l/s	144 l/s	
	Primary Air W	256 W	295 W	333 W	371 W	410 W	448 W	487 W	525 W	
	Total W	868 W	951 W	1075 W	1194 W	1317 W	1438 W	1547 W	1657 W	
2400		**29 l/s**	**32 l/s**	**35 l/s**	**38 l/s**	**41 l/s**	**44 l/s**	**47 l/s**	**50 l/s**	**53 l/s**
	W/M	516 W	570 W	623 W	677 W	727 W	778 W	831 W	880 W	922 W
	Throw m	0.7-1.7-2.9	0.7-1.9-3.3	0.8-2.1-3.6	0.9-2.3-3.9	0.9-2.4-4.2	1.0-2.6-4.5	1.1-2.8-4.8	1.2-3.0-5.1	1.2-3.1-5.3
	Static Pa	53	64	77	90	105	121	138	156	176
	dB(A)	37	40	43	45	46	48	50	52	54
	Water W	868 W	957 W	1047 W	1137 W	1219 W	1304 W	1392 W	1472 W	1534 W
	Water Flow	248.7 l/h	274.4 l/h	300.1 l/h	325.9 l/h	349.3 l/h	373.6 l/h	399.1 l/h	421.8 l/h	439.6 l/h
	Water ΔP	10.4 KPa	12.7 KPa	15.2 KPa	17.9 KPa	20.6 KPa	23.5 KPa	26.9 KPa	30.0 KPa	32.6 KPa
	Heating W	478 W	528 W	577 W	627 W	672 W	718 W	767 W	811 W	845 W
	Total Air l/s	102 l/s	112 l/s	123 l/s	133 l/s	144 l/s	154 l/s	165 l/s	175 l/s	186 l/s
	Primary Air W	371 W	410 W	448 W	487 W	525 W	564 W	602 W	641 W	679 W
	Total W	1239 W	1367 W	1496 W	1624 W	1744 W	1867 W	1995 W	2112 W	2213 W
3000		**35 l/s**	**38 l/s**	**41 l/s**	**44 l/s**	**47 l/s**	**50 l/s**	**53 l/s**		
	W/M	547 W	587 W	633 W	679 W	726 W	768 W	814 W		
	Throw m	0.7-1.8-3.1	0.8-2.0-3.4	0.8-2.1-3.6	0.9-2.3-3.9	0.9-2.4-4.2	1.0-2.6-4.4	1.1-2.7-4.7		
	Static Pa	49	58	67	77	88	100	112		
	dB(A)	40	42	44	46	48	50	52		
	Water W	1192 W	1273 W	1374 W	1474 W	1575 W	1665 W	1764 W		
	Water Flow	341.7 l/h	365.0 l/h	393.8 l/h	422.6 l/h	451.4 l/h	477.1 l/h	505.7 l/h		
	Water ΔP	23.8 KPa	27.2 KPa	31.6 KPa	36.4 KPa	41.6 KPa	46.5 KPa	52.2 KPa		
	Heating W	657 W	702 W	757 W	813 W	868 W	917 W	972 W		
	Total Air l/s	123 l/s	133 l/s	144 l/s	154 l/s	165 l/s	175 l/s	186 l/s		
	Primary Air W	448 W	487 W	525 W	564 W	602 W	641 W	679 W		
	Total W	1640 W	1760 W	1899 W	2038 W	2177 W	2305 W	2443 W		

Recommended maximum heating capacity for the above beams is equal to 50% of the indicated cooling potential.
The return air to the beam is taken as 0.5 °C above the average room for the values above.

Notations

W/M	Cooling capacity per linear meter
Throw m	Throw values are to 0.75 - 0.5 - and 0.25 m/s respectively.
Static Pa	Static pressure in beam plenum chamber Pascal's
dB(A)	Air regenerated sound power level
Water W	Cooling output of coil Watts
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25	2.5
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Active Chilled Beams
Beam performance Nozzle C - 2 way discharge

Performance Parameters

Return Air 24.5 °C Room Air 24.0 °C Primary Air 14.0 °C Supply Water 14.0 °C Return Water 17.0 °C
Supply Water Heating 45.0 °C Return Water Heating 35.0 °C

Beam Length (mm)	Primary Air l/s	20 l/s	25 l/s	30 l/s	35 l/s	40 l/s			
1200	W/M	551 W	689 W	827 W	938 W	1027 W			
	Throw m	0.7-1.8-3.1	0.9-2.3-3.9	1.1-2.8-4.7	1.2-3.2-5.4	1.4-3.5-5.9			
	Static Pa	44	69	100	136	178			
	dB(A)	31	37	42	46	51			
	Water W	405 W	506 W	608 W	677 W	720 W			
	Water Flow	116.1 l/h	145.1 l/h	174.1 l/h	194.1 l/h	206.4 l/h			
	Water ΔP	1.3 KPa	2.1 KPa	3.0 KPa	3.8 KPa	4.3 KPa			
	Heating W	223 W	279 W	335 W	373 W	397 W			
	Total Air l/s	56 l/s	70 l/s	84 l/s	98 l/s	112 l/s			
	Primary Air W	256 W	320 W	384 W	448 W	512 W			
	Total W	661 W	827 W	992 W	1126 W	1232 W			
		30 l/s	**35 l/s**	**40 l/s**	**45 l/s**	**50 l/s**	**55 l/s**	**60 l/s**	
1800	W/M	565 W	659 W	753 W	847 W	1110 W	992 W	1051 W	
	Throw m	0.7-1.9-3.2	0.8-2.2-3.8	1.0-2.5-4.3	1.1-2.8-4.9	1.5-3.7-6.4	1.3-3.3-5.7	1.4-3.5-6.1	
	Static Pa	44	60	79	100	123	149	178	
	dB(A)	35	40	43	46	50	52	54	
	Water W	632 W	737 W	842 W	948 W	1357 W	1081 W	1123 W	
	Water Flow	181.1 l/h	211.3 l/h	241.4 l/h	271.6 l/h	389.0 l/h	309.9 l/h	321.9 l/h	
	Water ΔP	4.2 KPa	5.8 KPa	7.5 KPa	9.5 KPa	19.5 KPa	12.4 KPa	13.4 KPa	
	Heating W	348 W	406 W	464 W	522 W	748 W	596 W	619 W	
	Total Air l/s	84 l/s	98 l/s	112 l/s	126 l/s	140 l/s	154 l/s	168 l/s	
	Primary Air W	384 W	448 W	512 W	576 W	641 W	705 W	769 W	
	Total W	1016 W	1185 W	1355 W	1524 W	1998 W	1786 W	1892 W	
		40 l/s	**45 l/s**	**50 l/s**	**55 l/s**	**60 l/s**	**65 l/s**	**70 l/s**	**75 l/s**
2400	W/M	581 W	654 W	727 W	799 W	872 W	1117 W	989 W	1044 W
	Throw m	0.7-1.9-3.3	0.8-2.2-3.7	0.9-2.4-4.2	1.0-2.7-4.6	1.1-2.9-5.0	1.5-3.8-6.4	1.3-3.3-5.7	1.4-3.5-6.0
	Static Pa	44	56	69	84	100	117	136	156
	dB(A)	41	44	47	50	51	54	57	59
	Water W	883 W	993 W	1104 W	1214 W	1324 W	1849 W	1476 W	1545 W
	Water Flow	253.1 l/h	284.7 l/h	316.3 l/h	347.9 l/h	379.6 l/h	530.0 l/h	423.2 l/h	442.8 l/h
	Water ΔP	10.8 KPa	13.7 KPa	16.9 KPa	20.4 KPa	24.3 KPa	47.4 KPa	30.2 KPa	33.1 KPa
	Heating W	487 W	547 W	608 W	669 W	730 W	1019 W	814 W	852 W
	Total Air l/s	112 l/s	126 l/s	140 l/s	154 l/s	168 l/s	182 l/s	196 l/s	210 l/s
	Primary Air W	512 W	576 W	641 W	705 W	769 W	833 W	897 W	961 W
	Total W	1395 W	1570 W	1744 W	1919 W	2093 W	2682 W	2373 W	2506 W
		50 l/s	**55 l/s**	**60 l/s**	**65 l/s**	**70 l/s**	**75 l/s**	**80 l/s**	**85 l/s**
3000	W/M	626 W	688 W	751 W	813 W	876 W	938 W	1191 W	1032 W
	Throw m	0.8-2.1-3.6	0.9-2.3-3.9	1.0-2.5-4.3	1.1-2.7-4.7	1.1-2.9-5.0	1.2-3.2-5.4	1.6-4.0-6.9	1.4-3.5-5.9
	Static Pa	44	54	64	75	87	100	114	128
	dB(A)	44	47	50	53	55	55	58	60
	Water W	1236 W	1360 W	1483 W	1607 W	1730 W	1854 W	2549 W	2008 W
	Water Flow	354.3 l/h	389.7 l/h	425.1 l/h	460.6 l/h	496.0 l/h	531.4 l/h	730.6 l/h	575.5 l/h
	Water ΔP	25.6 KPa	31.0 KPa	36.9 KPa	43.3 KPa	50.2 KPa	57.6 KPa	108.9 KPa	67.6 KPa
	Heating W	681 W	749 W	817 W	886 W	954 W	1022 W	1405 W	1107 W
	Total Air l/s	140 l/s	154 l/s	168 l/s	182 l/s	196 l/s	210 l/s	224 l/s	238 l/s
	Primary Air W	641 W	705 W	769 W	833 W	897 W	961 W	1025 W	1089 W
	Total W	1877 W	2064 W	2252 W	2440 W	2627 W	2815 W	3574 W	3097 W

Recommended maximum heating capacity for the above beams is equal to 50% of the indicated cooling potential.
The return air to the beam is taken as 0.5 °C above the average room for the values above.

Notations

W/M	Cooling capacity per linear meter
Throw m	Throw values are to 0.75 - 0.5 - and 0.25 m/s respectively.
Static Pa	Static pressure in beam plenum chamber Pascal's
dB(A)	Air regenerated sound power level
Water W	Cooling output of coil Watts
Water Flow	Water flow rate l/h
Water ΔP	Coil pressure drop kPa
Total Air l/s	Total discharge air volume from beam l/s
Primary Air W	Cooling capacity of the primary air Watts
Total W	Total cooling capacity of the chilled beam Watts

Correction Table	
K	Water W
11	1.22
10.5	1.17
10	1.11
9.5	1.06
9	1.00
8.5	0.94
8	0.89
7.5	0.83
7	0.78

The thermal data is based on 9.0 K between mean water and return air to the beam.
For example - If the room temperature of the design in question is 25 °C the K is increased to 10 as the data above is based on a room of 24 °C.

dB(A)	m/s
40	4
35	3.5
30	3
25	2.5
20	2

The sound power dB(A) levels are achieved by limiting the primary air spigot velocity as per the table above.

Active Chilled Beams

Beam performance Nozzle A - 1 way discharge

Performance Parameters

Return Air 24.5 °C Room Air 24.0 °C Primary Air 14.0 °C Supply Water 14.0 °C Return Water 17.0 °C
Supply Water Heating 45.0 °C Return Water Heating 35.0 °C

Beam Length (mm)	Primary Air l/s	3 l/s	4 l/s	5 l/s	6 l/s	7 l/s				
1200	W/M	141 W	187 W	230 W	271 W	311 W				
	Throw m	0.3-0.9-1.6	0.5-1.2-2.1	0.6-1.5-2.6	0.7-1.8-3.1	0.8-2.1-3.6				
	Static Pa	36	64	100	144	196				
	dB(A)	<20	20	24	29	32				
	Water W	131 W	173 W	212 W	248 W	284 W				
	Water Flow	37.5 l/h	49.5 l/h	60.6 l/h	71.2 l/h	81.3 l/h				
	Water ΔP	0.1 KPa	0.2 KPa	0.4 KPa	0.5 KPa	0.7 KPa				
	Heating W	72 W	95 W	117 W	137 W	156 W				
	Total Air l/s	15 l/s	20 l/s	25 l/s	30 l/s	35 l/s				
	Primary Air W	38 W	51 W	64 W	77 W	90 W				
	Total W	169 W	224 W	276 W	325 W	373 W				
1800W/M		**5 l/s**	**6 l/s**	**7 l/s**	**8 l/s**	**9 l/s**	**10 l/s**	**11 l/s**		
	162 W	192 W	223 W	252 W	279 W	305 W	336 W			
	Throw m	0.4-1.1-1.8	0.5-1.3-2.2	0.6-1.5-2.5	0.6-1.7-2.9	0.7-1.9-3.2	0.8-2.0-3.5	0.9-2.2-3.8		
	Static Pa	44	64	87	114	144	178	215		
	dB(A)	23	26	26	31	34	36	37		
	Water W	227 W	270 W	311 W	352 W	388 W	421 W	463 W		
	Water Flow	65.1 l/h	77.3 l/h	89.2 l/h	100.9 l/h	111.1 l/h	120.7 l/h	132.8 l/h		
	Water ΔP	0.5 KPa	0.8 KPa	1.0 KPa	1.3 KPa	1.6 KPa	1.9 KPa	2.3 KPa		
	Heating W	125 W	149 W	172 W	194 W	214 W	232 W	255 W		
	Total Air l/s	25 l/s	30 l/s	35 l/s	40 l/s	45 l/s	50 l/s	55 l/s		
	Primary Air W	64 W	77 W	90 W	102 W	115 W	128 W	141 W		
	Total W	291 W	346 W	401 W	454 W	503 W	549 W	604 W		
2400		**6 l/s**	**7 l/s**	**8 l/s**	**9 l/s**	**10 l/s**	**11 l/s**	**12 l/s**	**13 l/s**	**14 l/s**
	W/M	151 W	176 W	200 W	223 W	245 W	268 W	290 W	314 W	332 W
	Throw m	0.4-1.0-1.7	0.4-1.2-2.0	0.5-1.3-2.3	0.6-1.5-2.5	0.6-1.6-2.8	0.7-1.8-3.1	0.7-1.9-3.3	0.8-2.1-3.6	0.9-2.2-3.8
	Static Pa	36	49	64	81	100	121	144	169	196
	dB(A)	23	24	26	28	30	33	35	36	38
	Water W	285 W	333 W	377 W	419 W	461 W	502 W	542 W	587 W	618 W
	Water Flow	81.8 l/h	95.5 l/h	108.0 l/h	120.2 l/h	132.1 l/h	143.8 l/h	155.2 l/h	168.1 l/h	177.1 l/h
	Water ΔP	1.1 KPa	1.5 KPa	2.0 KPa	2.4 KPa	2.9 KPa	3.5 KPa	4.1 KPa	4.8 KPa	5.3 KPa
	Heating W	157 W	184 W	208 W	231 W	254 W	277 W	298 W	323 W	341 W
	Total Air l/s	30 l/s	35 l/s	40 l/s	45 l/s	50 l/s	55 l/s	60 l/s	65 l/s	70 l/s
	Primary Air W	77 W	90 W	102 W	115 W	128 W	141 W	154 W	167 W	179 W
	Total W	362 W	423 W	479 W	535 W	589 W	643 W	695 W	753 W	797 W
3000		**8 l/s**	**9 l/s**	**10 l/s**	**11 l/s**	**12 l/s**	**13 l/s**	**14 l/s**	**15 l/s**	**16 l/s**
	W/M	150 W	168 W	187 W	204 W	222 W	241 W	257 W	274 W	293 W
	Throw	0.4-1.0-1.7	0.4-1.1-1.9	0.5-1.2-2.1	0.5-1.3-2.3	0.6-1.5-2.5	0.6-1.6-2.7	0.7-1.7-2.9	0.7-1.8-3.1	0.7-1.9-3.3
	Static Pa	41	52	64	77	92	108	125	144	164
	dB(A)	22	25	28	30	32	33	35	37	38
	Water W	426 W	475 W	527 W	574 W	620 W	671 W	715 W	758 W	809 W
	Water Flow	122.2 l/h	136.0 l/h	151.2 l/h	164.5 l/h	177.6 l/h	192.4 l/h	205.0 l/h	217.3 l/h	231.8 l/h
	Water ΔP	3.0 KPa	3.8 KPa	4.7 KPa	5.5 KPa	6.4 KPa	7.6 KPa	8.6 KPa	9.6 KPa	11.0 KPa
	Heating W	235 W	262 W	291 W	316 W	342 W	370 W	394 W	418 W	446 W
	Total Air l/s	40 l/s	45 l/s	50 l/s	55 l/s	60 l/s	65 l/s	70 l/s	75 l/s	80 l/s
	Primary Air W	102 W	115 W	128 W	141 W	154 W	167 W	179 W	192 W	205 W
	Total W	451 W	504 W	562 W	613 W	665 W	722 W	772 W	821 W	878 W

Recommended maximum heating capacity for the above beams is equal to 50% of the indicated cooling potential.
The return air to the beam is taken as 0.5 °C above the average room for the values above.

Notations

W/M	Cooling capacity per linear meter
Throw m	Throw values are to 0.75 - 0.5 - and 0.25 m/s respectively.
Static Pa	Static pressure in beam plenum chamber Pascal's
dB(A)	Air regenerated sound power level
Water W	Cooling output of coil Watts
Water Flow	Water flow rate l/h
Water ΔP	Coil pressure drop kPa
Total Air l/s	Total discharge air volume from beam l/s
Primary Air W	Cooling capacity of the primary air Watts
Total W	Total cooling capacity of the chilled beam Watts

Correction Table	
K	Water W
11	1.22
10.5	1.17
10	1.11
9.5	1.06
9	1.00
8.5	0.94
8	0.89
7.5	0.83
7	0.78

The thermal data is based on 9.0 K between mean water and return air to the beam.
For example - If the room temperature of the design in question is 25 °C the K is increased to 10 as the data above is based on a room of 24 °C.

dB(A)	m/s
40	4
35	3.5
30	3
25	2.5
20	2

The sound power dB(A) levels are achieved by limiting the primary air spigot velocity as per the table above.

Active Chilled Beams

Beam performance Nozzle B - 1 way discharge

Performance Parameters

Return Air 24.5 °C Room Air 24.0 °C Primary Air 14.0 °C Supply Water 14.0 °C Return Water 17.0 °C
Supply Water Heating 45.0 °C Return Water Heating 35.0 °C

Beam Length (mm)	Primary Air l/s	6 l/s	8 l/s	10 l/s	12 l/s	14 l/s	16 l/s		
1200	W/M	244 W	322 W	399 W	475 W	548 W	621 W		
	Throw m	0.6-1.6-2.8	0.8-2.2-3.7	1.0-2.7-4.6	1.2-3.2-5.5	1.4-3.7-6.3	1.6-4.2-7.2		
	Static Pa	36	64	100	144	196	256		
	dB(A)	28	34	40	44	49	53		
	Water W	216 W	284 W	351 W	416 W	479 W	540 W		
	Water Flow	61.9 l/h	81.5 l/h	100.6 l/h	119.2 l/h	137.2 l/h	154.8 l/h		
	Water ΔP	0.4 KPa	0.7 KPa	1.0 KPa	1.4 KPa	1.9 KPa	2.4 KPa		
	Heating W	119 W	157 W	193 W	229 W	264 W	298 W		
	Total Air l/s	25 l/s	34 l/s	42 l/s	50 l/s	59 l/s	67 l/s		
	Primary Air W	77 W	102 W	128 W	154 W	179 W	205 W		
	Total W	293 W	387 W	479 W	570 W	658 W	745 W		
1800		**10 l/s**	**12 l/s**	**14 l/s**	**16 l/s**	**18 l/s**	**20 l/s**	**22 l/s**	**24 l/s**
	W/M	279 W	332 W	387 W	438 W	488 W	538 W	591 W	639 W
	Throw m	0.7-1.9-3.2	0.9-2.2-3.8	1.0-2.6-4.4	1.1-2.9-5.0	1.3-3.3-5.6	1.4-3.6-6.2	1.6-4.0-6.8	1.7-4.3-7.4
	Static Pa	44	64	87	114	144	178	215	256
	dB(A)	32	37	40	45	48	51	53	56
	Water W	374 W	444 W	518 W	584 W	649 W	711 W	782 W	842 W
	Water Flow	107.3 l/h	127.2 l/h	148.4 l/h	167.4 l/h	185.9 l/h	203.9 l/h	224.3 l/h	241.4 l/h
	Water ΔP	1.5 KPa	2.1 KPa	2.8 KPa	3.6 KPa	4.5 KPa	5.4 KPa	6.5 KPa	7.5 KPa
	Heating W	206 W	245 W	285 W	322 W	357 W	392 W	431 W	464 W
	Total Air l/s	42 l/s	50 l/s	59 l/s	67 l/s	76 l/s	84 l/s	92 l/s	101 l/s
	Primary Air W	128 W	154 W	179 W	205 W	231 W	256 W	282 W	307 W
	Total W	503 W	597 W	697 W	789 W	879 W	968 W	1064 W	1150 W
2400		**16 l/s**	**18 l/s**	**20 l/s**	**22 l/s**	**24 l/s**	**26 l/s**	**28 l/s**	
	W/M	344 W	387 W	426 W	468 W	506 W	548 W	584 W	
	Throw m	0.9-2.3-3.9	1.0-2.6-4.4	1.1-2.9-4.9	1.2-3.1-5.4	1.3-3.4-5.8	1.4-3.7-6.3	1.5-3.9-6.7	
	Static Pa	64	81	100	121	144	169	196	
	dB(A)	40	44	45	48	50	54	58	
	Water W	620 W	697 W	765 W	842 W	906 W	982 W	1044 W	
	Water Flow	177.7 l/h	199.9 l/h	219.3 l/h	241.2 l/h	259.8 l/h	281.5 l/h	299.2 l/h	
	Water ΔP	5.3 KPa	6.7 KPa	8.1 KPa	9.8 KPa	11.4 KPa	13.4 KPa	15.1 KPa	
	Heating W	342 W	384 W	422 W	464 W	500 W	541 W	575 W	
	Total Air l/s	67 l/s	76 l/s	84 l/s	92 l/s	101 l/s	109 l/s	118 l/s	
	Primary Air W	205 W	231 W	256 W	282 W	307 W	333 W	359 W	
	Total W	825 W	928 W	1021 W	1124 W	1214 W	1315 W	1402 W	
3000		**20 l/s**	**22 l/s**	**24 l/s**	**26 l/s**	**28 l/s**	**30 l/s**	**32 l/s**	
	W/M	375 W	412 W	445 W	482 W	519 W	551 W	588 W	
	Throw m	1.0-2.5-4.3	1.1-2.8-4.7	1.2-3.0-5.1	1.3-3.2-5.6	1.4-3.5-6.0	1.5-3.7-6.3	1.6-4.0-6.8	
	Static Pa	64	77	92	108	125	144	164	
	dB(A)	43	46	49	51	54	58	60	
	Water W	868 W	955 W	1028 W	1114 W	1200 W	1269 W	1354 W	
	Water Flow	248.8 l/h	273.7 l/h	294.8 l/h	319.3 l/h	343.9 l/h	363.7 l/h	388.0 l/h	
	Water ΔP	12.6 KPa	15.3 KPa	17.7 KPa	20.8 KPa	24.1 KPa	27.0 KPa	30.7 KPa	
	Heating W	478 W	526 W	567 W	614 W	661 W	699 W	746 W	
	Total Air l/s	84 l/s	92 l/s	101 l/s	109 l/s	118 l/s	126 l/s	134 l/s	
	Primary Air W	256 W	282 W	307 W	333 W	359 W	384 W	410 W	
	Total W	1124 W	1237 W	1336 W	1447 W	1558 W	1653 W	1764 W	

Recommended maximum heating capacity for the above beams is equal to 50% of the indicated cooling potential.
The return air to the beam is taken as 0.5 °C above the average room for the values above.

Notations

W/M	Cooling capacity per linear meter
Throw m	Throw values are to 0.75 - 0.5 - and 0.25 m/s respectively.
Static Pa	Static pressure in beam plenum chamber Pascal's
dB(A)	Air regenerated sound power level
Water W	Cooling output of coil Watts
Water Flow	Water flow rate l/h
Water ΔP	Coil pressure drop kPa
Total Air l/s	Total discharge air volume from beam l/s
Primary Air W	Cooling capacity of the primary air Watts
Total W	Total cooling capacity of the chilled beam Watts

Correction Table	
K	Water W
11	1.22
10.5	1.17
10	1.11
9.5	1.06
9	1.00
8.5	0.94
8	0.89
7.5	0.83
7	0.78

The thermal data is based on 9.0 K between mean water and return air to the beam.
For example - If the room temperature of the design in question is 25 °C the K is increased to 10 as the data above is based on a room of 24 °C.

dB(A)	m/s
40	4
35	3.5
30	3
25	2.5
20	2

The sound power dB(A) levels are achieved by limiting the primary air spigot velocity as per the table above.

Active Chilled Beams
Beam performance Nozzle C - 1 way discharge

Performance Parameters

Return Air 24.5 °C Room Air 24.0 °C Primary Air 14.0 °C Supply Water 14.0 °C Return Water 17.0 °C
Supply Water Heating 45.0 °C Return Water Heating 35.0 °C

Beam Length (mm)	Primary Air l/s	10 l/s	13 l/s	16 l/s	19 l/s	22 l/s	25 l/s		
1200	W/M	339 W	441 W	537 W	630 W	705 W	783 W		
	Throw m	0.9-2.3-3.9	1.2-3.0-5.1	1.4-3.6-6.2	1.7-4.3-7.3	1.9-4.8-8.1	2.1-5.3-9.0		
	Static Pa	44	75	114	160	215	278		
	dB(A)	31	37	42	48	53	57		
	Water W	279 W	363 W	439 W	513 W	564 W	619 W		
	Water Flow	80.0 l/h	104.0 l/h	125.9 l/h	147.0 l/h	161.7 l/h	177.3 l/h		
	Water ΔP	0.6 KPa	1.1 KPa	1.6 KPa	2.2 KPa	2.6 KPa	3.1 KPa		
	Heating W	154 W	200 W	242 W	283 W	311 W	341.0 KPa		
	Total Air l/s	34 l/s	44 l/s	54 l/s	65 l/s	75 l/s	85 l/s		
	Primary Air W	128 W	167 W	205 W	243 W	282 W	320 W		
	Total W	407 W	529 W	644 W	756 W	846 W	939 W		
1800		**16 l/s**	**19 l/s**	**22 l/s**	**25 l/s**	**28 l/s**	**31 l/s**	**34 l/s**	
	W/M	372 W	441 W	505 W	574 W	636 W	688 W	746 W	
	Throw m	1.0-2.5-4.3	1.2-3.0-5.1	1.3-3.4-5.8	1.5-3.9-6.6	1.7-4.3-7.3	1.8-4.7-7.9	2.0-5.0-8.6	
	Static Pa	51	71	96	123	155	190	228	
	dB(A)	45	42	45	50	52	55	60	
	Water W	464 W	551 W	628 W	714 W	786 W	841 W	907 W	
	Water Flow	133.1 l/h	158.0 l/h	180.0 l/h	204.6 l/h	225.3 l/h	241.2 l/h	260.0 l/h	
	Water ΔP	2.3 KPa	3.2 KPa	4.2 KPa	5.4 KPa	6.6 KPa	7.5 KPa	8.7 KPa	
	Heating W	256 W	304 W	346 W	393 W	433 W	464 W	500 W	
	Total Air l/s	54 l/s	65 l/s	75 l/s	85 l/s	95 l/s	105 l/s	116 l/s	
	Primary Air W	205 W	243 W	282 W	320 W	359 W	397 W	436 W	
	Total W	669 W	795 W	910 W	1034 W	1145 W	1239 W	1343 W	
2400		**22 l/s**	**25 l/s**	**28 l/s**	**31 l/s**	**34 l/s**	**37 l/s**	**40 l/s**	**43 l/s**
	W/M	396 W	450 W	504 W	552 W	598 W	651 W	696 W	739 W
	Throw m	1.0-2.7-4.6	1.2-3.0-5.2	1.3-3.4-5.8	1.5-3.7-6.4	1.6-4.0-6.9	1.7-4.4-7.5	1.9-4.7-8.0	2.0-5.0-8.5
	Static Pa	54	69	87	107	128	152	178	205
	dB(A)	42	47	50	52	56	58	61	64
	Water W	669 W	760 W	852 W	928 W	1001 W	1089 W	1158 W	1223 W
	Water Flow	191.8 l/h	217.9 l/h	244.1 l/h	265.8 l/h	286.8 l/h	312.1 l/h	331.8 l/h	350.6 l/h
	Water ΔP	6.2 KPa	8.0 KPa	10.0 KPa	11.9 KPa	13.9 KPa	16.4 KPa	18.6 KPa	20.7 KPa
	Heating W	369 W	419 W	469 W	511 W	551 W	600 W	638 W	674 W
	Total Air l/s	75 l/s	85 l/s	95 l/s	105 l/s	116 l/s	126 l/s	136 l/s	146 l/s
	Primary Air W	282 W	320 W	359 W	397 W	436 W	474 W	512 W	551 W
	Total W	951 W	1081 W	1210 W	1325 W	1436 W	1563 W	1670 W	1774 W
3000		**28 l/s**	**31 l/s**	**34 l/s**	**37 l/s**	**40 l/s**	**43 l/s**	**46 l/s**	**49 l/s**
	W/M	437 W	484 W	531 W	571 W	618 W	656 W	702 W	739 W
	Throw m	1.1-2.9-5.0	1.3-3.3-5.6	1.4-3.6-6.1	1.5-3.9-6.6	1.6-4.2-7.1	1.7-4.4-7.6	1.9-4.7-8.1	2.0-5.0-8.5
	Static Pa	56	68	82	97	114	131	150	171
	dB(A)	46	50	54	54	58	60	63	65
	Water W	954 W	1056 W	1158 W	1240 W	1340 W	1417 W	1516 W	1588 W
	Water Flow	273.3 l/h	302.6 l/h	331.9 l/h	355.4 l/h	384.2 l/h	406.2 l/h	434.6 l/h	455.2 l/h
	Water ΔP	15.2 KPa	18.7 KPa	22.5 KPa	25.8 KPa	30.1 KPa	33.7 KPa	38.5 KPa	42.3 KPa
	Heating W	526 W	582 W	638 W	683 W	739 W	781 W	836 W	875 W
	Total Air l/s	89 l/s	104 l/s	119 l/s	135 l/s	152 l/s	169 l/s	187 l/s	206 l/s
	Primary Air W	359 W	397 W	436 W	474 W	512 W	551 W	589 W	628 W
	Total W	1312 W	1453 W	1594 W	1714 W	1853 W	1968 W	2105 W	2216 W

Recommended maximum heating capacity for the above beams is equal to 50% of the indicated cooling potential.
The return air to the beam is taken as 0.5 °C above the average room for the values above.

Notations

W/M	Cooling capacity per linear meter
Throw m	Throw values are to 0.75 - 0.5 - and 0.25 m/s respectively.
Static Pa	Static pressure in beam plenum chamber Pascal's
dB(A)	Air regenerated sound power level
Water W	Cooling output of coil Watts
Water Flow	Water flow rate l/h
Water ΔP	Coil pressure drop kPa
Total Air l/s	Total discharge air volume from beam l/s
Primary Air W	Cooling capacity of the primary air Watts
Total W	Total cooling capacity of the chilled beam Watts

Correction Table	
K	Water W
11	1.22
10.5	1.17
10	1.11
9.5	1.06
9	1.00
8.5	0.94
8	0.89
7.5	0.83
7	0.78

The thermal data is based on 9.0 K between mean water and return air to the beam.
For example - If the room temperature of the design in question is 25 °C the K is increased to 10 as the data above is based on a room of 24 °C.

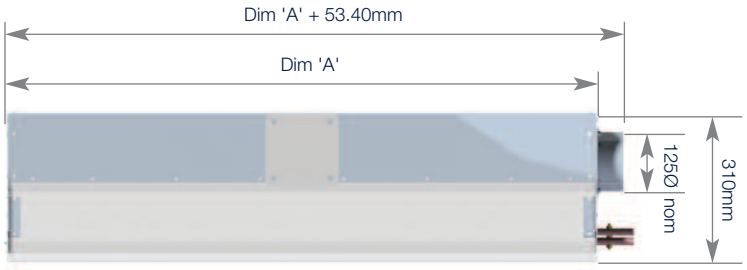
dB(A)	m/s
40	4
35	3.5
30	3
25	2.5
20	2

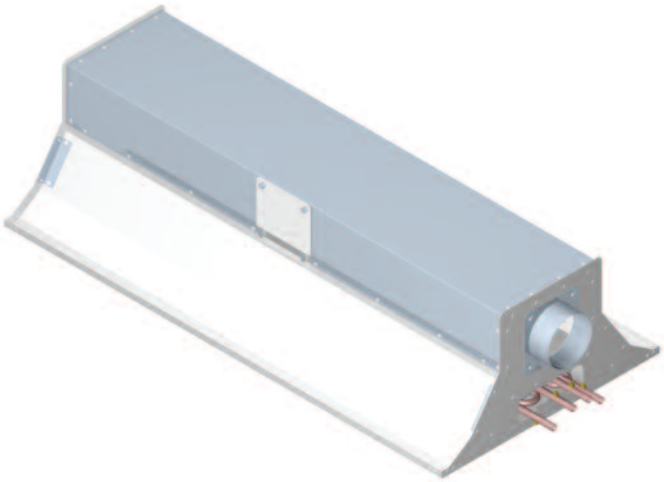
The sound power dB(A) levels are achieved by limiting the primary air spigot velocity as per the table above.

Active Chilled Beams - Dimensional Data

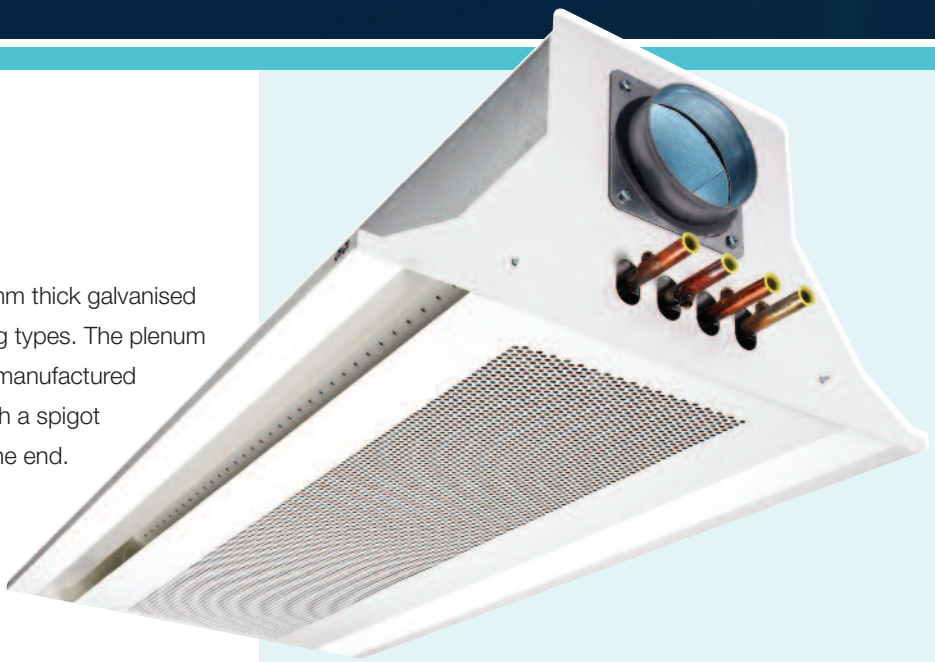
Active Chilled Beams

Nominal Size	Dim A (mm)	Wet Weight (Kg)
1200	1196.2	32
1800	1796.2	44
2400	2396.2	57
3000	2996.2	69





Active Chilled Beams - Specification



Frame & Casing

The frame is manufactured from 1.6mm thick galvanised mild steel and suitable for most ceiling types. The plenum section is fitted to the top of the unit manufactured from 1.0mm galvanised mild steel with a spigot connection mounted on the side or the end.

Fixed hanger supports brackets are mounted on the top of the unit as standard. Adjustable sliding brackets are available as an option.

The unit is supplied with a powder coated finish RAL 9010 Semi Gloss as standard other colours are available as an option.

Access Panel

Access panel is manufactured from 1.0mm thick galvanised mild steel.
The free area of the perforated sections are 50% & the whole size of the perforations is approx. 4.8.mm.
The access panel has safety wires that are attached to the main body of the unit. These are designed to stop the panel falling & can also be used to suspend the panel for access to the coil for maintenance.

Coil

Manufactured from copper tubes with mechanically bonded aluminium fins. Available in both 2 pipe, cooling only & 4 pipe, heating & cooling. The coil is supported at either end of the unit, on longer units the coil is also supported in the middle. Coils are supplied as standard with vent & drain points.

Controls

Controls, including water valves can be factory fitted as required on individual projects. Free issue components can be fitted and/or full control packages can be supplied.

Other products from Advanced Air

Air Distribution Equipment

- Grilles and diffusers including louvre face diffusers
- Linear slot diffusers
- Linear bar grilles
- Eggcrate grilles and door transfer grilles
- A variety of finishes, powder coated to RAL9010 as standard, with other colours available
- Floor swirl diffusers which supply a low velocity, helical discharge air pattern
- “Twister” ceiling swirl diffuser
- External weather louvers suitable for most wall configurations

Air Control Products

- Low leakage fire smoke dampers, tested to BS ISO 10294
- Smoke and high temperature smoke dampers, which can be used up to 300°C for 120 minutes
- Curtain fire dampers provide a wide range of models suitable for most applications
- Control dampers from value solutions to a low leakage, low pressure drop, airfoil blade type

VAV Terminal Units

- Single duct and dual duct units for different types of variable air volume systems
- Fan Powered VAV units that use advance Brushless DC motors to give lower energy consumption and simpler commissioning

Control Panels

- Fire smoke damper control panels are available to provide solutions to suit all requirements
- Bespoke units, which can be manufactured to suit specific customer requirements

For more information on these products, please contact Advanced Air Sales

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