

AQUILO

Concealed air supply with building mass connection



QUICK FACTS

- Thermal comfort according to EN ISO 7730
- Very high heating and cooling capacity: heating up to 110 w/m^2 (15 K), cooling up to 121 w/m^2 (8 K)
- Free of draught air according to EN ISO 7730, classes A/B
- Superior acoustic properties: α_w up to 0,90
- Sound power level L_w : < 25 dB (A)
- Functions
 - Cooling
 - Heating
 - Acoustics
 - Supply and exhaust air
 - Integral components

Technical description

General

The radiant metal ceiling sail A11 + Aquilo is a powerful climate ceiling system with integrated supply air and superior acoustic effectiveness. The integrated supply air element create a high ventilation efficiency. At the same time, the supply air jet on the back of the ceiling panel increases the convective output, which enhances the heating and cooling effect in the room without any risk of draughts. In addition, the system allows the use of Convector Wings, which were developed by Barcol-Air to increase performance.

Activation

Water system: The radiant ceiling is a passive system that in the case of cooling absorbs heat from the room via the ceiling surface, transfers it to the water, which is conducted in activation registers, and dissipates it, respectively emits heat in the case of heating.

The activation of the radiant metal ceiling system A11 consists of meandering copper pipes (outside diameter 12 mm) and aluminum heat-conducting rails (width 80 mm), which are connected by laser spot welding and glued into the ceiling panels.

Optional performance plus: Convector Wings

Convector Wings are matt black anodized aluminum profiles with slotted «wings» on both sides. With the profile that opens downwards, the Convector Wings can be attached to the straight sections of a pipe meander. This multiplied the heat exchange surface of the radiant ceiling sail, which leads to an increase in water capacity.

Functions

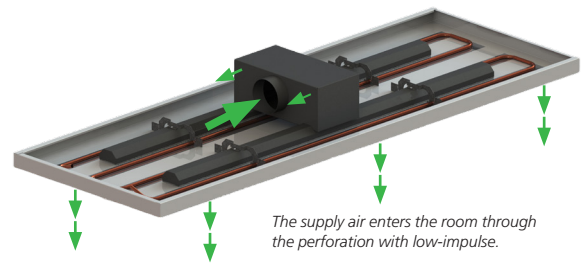
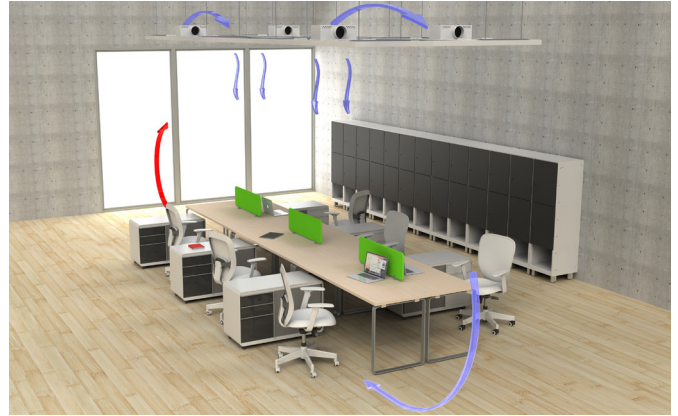
The radiant metal ceiling sail A11 + Aquilo is multifunctional. In addition to the thermal functions of cooling/heating, there is the possibility of further integration: acoustically effective inserts or baffles (Archisonic®), various built-in components (e.g. smoke detectors, lighting).

Combinations

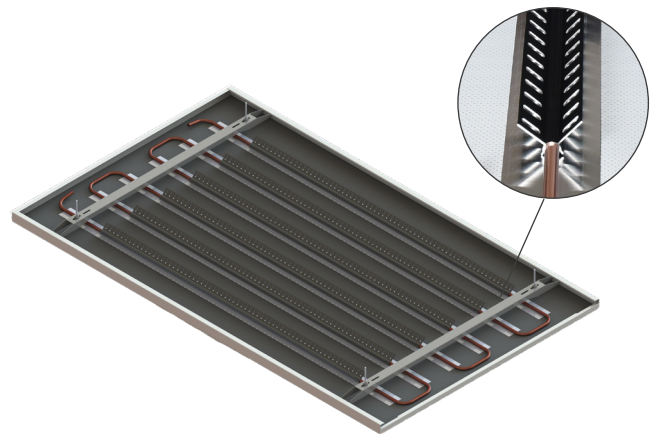
- Radiant Metal Ceiling System A11 + Archisonic®

Hygiene conformity

- Hygiene conform to VDI 6022 / SWKI VA104-01



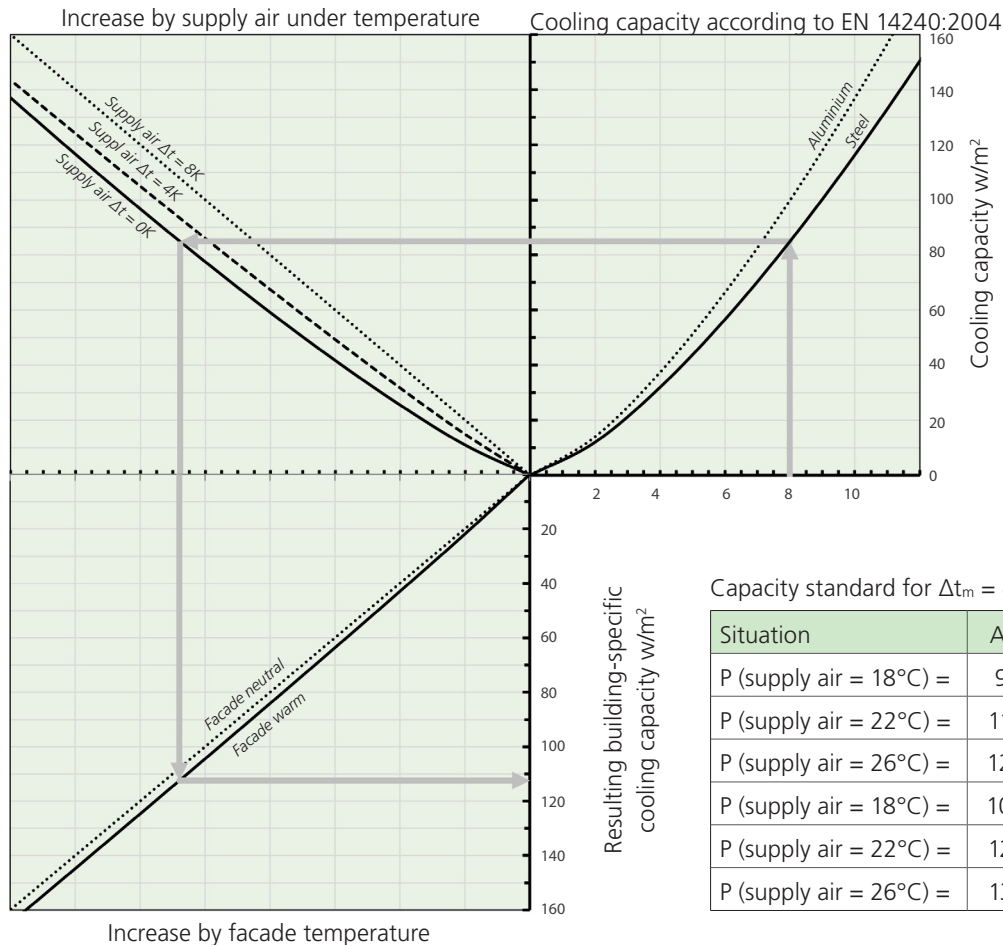
Type 2 channel with flow characteristic of the supply air.



Activated ceiling panels without Aquilo supply air elements are suitable for the use of Convector Wings.

Technical data

Capacity Cooling



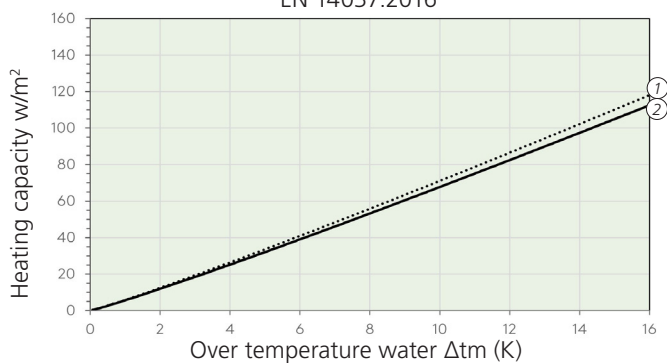
Capacity standard for $\Delta t_m = 8 \text{ K}$

Situation	Aluminium	Steel	Facade
P (supply air = 18°C) =	97,1 w/m ²	82,6 w/m ²	neutral
P (supply air = 22°C) =	113,6 w/m ²	96,7 w/m ²	
P (supply air = 26°C) =	124,3 w/m ²	105,7 w/m ²	
P (supply air = 18°C) =	104,9 w/m ²	89,2 w/m ²	warm
P (supply air = 22°C) =	121,4 w/m ²	103,3 w/m ²	
P (supply air = 26°C) =	132,1 w/m ²	112,3 w/m ²	

Heating

Initial data: Ceiling panel aluminium with fleece, distance heat conducting rails 150 mm.

EN 14037:2016



-① Water heating capacity with supply air operation; Supply air $\Delta t: \geq 2 \text{ K}$ under temperature
- ② Water heating capacity without supply air operation

Operation

Supply air volume flow maximum per linear meter

Aquilo	6 K	8 K	10 K	12 K
Type 1 channel	35 m ³ /h	34 m ³ /h	32 m ³ /h	30 m ³ /h
Type 2 channels	70 m ³ /h	68 m ³ /h	64 m ³ /h	60 m ³ /h

Water (recommendations)

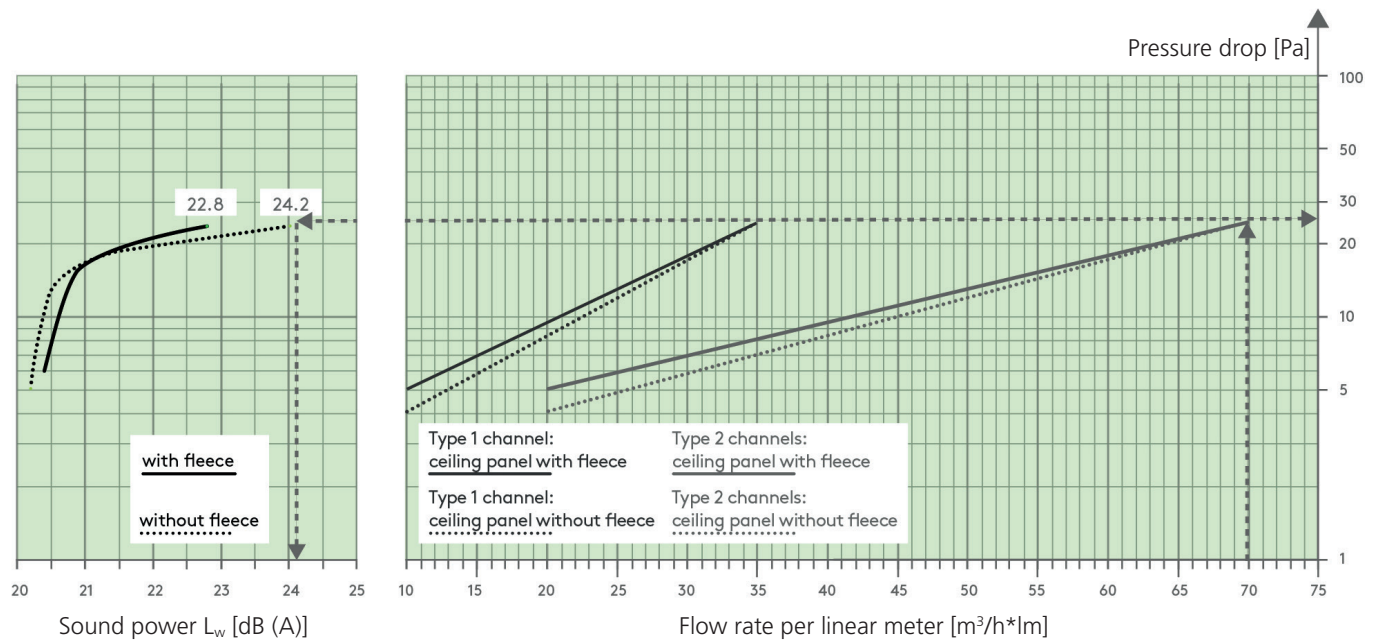
- Temperature
 - Cooling 16 – 18 °C
 - Heating 28 – 37 °C
- Pressure drop: 20 – 25 kPa
- Water flow: 80 – 150 l/h
- Max. operating pressure up to 9 bar
- Water quality according to: SWKI BT 102-01, BTGA 3.003, VDI 2035

Notice

- SN EN 14240: The cooling capacity is related to the active area according to SN EN 14240:2004. The active area is calculated according to SN EN 14240 from the number of heat-conducting rails x length of heat conducting rail x distance between heat conducting rails.
- SN EN 14037: The heating capacity is related to the active area according to SN EN 14037:2016. The active area is calculated according to SN EN 14037 from the length of the ceiling panel x the width of the ceiling panel.

Acoustics

Diagram for calculating sound power level L_{WA} and pressure drop



Insertion attenuation D_t in octave band

Centre frequency f in [Hz]	63	125	250	500	1000	2000	4000	8000
D_t with fleece in [dB]	25,9	17,6	13,7	13,7	10,7	10,6	7,2	6,7
D_t without fleece in [dB]	26,9	17,8	13,9	14,0	10,6	11,3	7,6	7,6

All sound insertion attenuation tests were carried out by the Fraunhofer Institute for Building Physics in accordance with EN ISO 7235 (IBP Report P-TA 26/2016). The relevant insertion attenuation is calculated from the sound power values with and without Aquilo radiant sails.

Sound absorption according to EN ISO 11654

Ceiling panel	Soundabsorption value a_w	Sound absorption class
with acoustic fleece without acoustic strips	0,65	C
with acoustic fleece with acoustic strips version 1	0,80	B
with acoustic fleece with acoustic strips version 2	0,85	B
with acoustic fleece with acoustic strips version 3	0,90	A

Initial data: values at installation high 200 mm.

System

Ceiling system

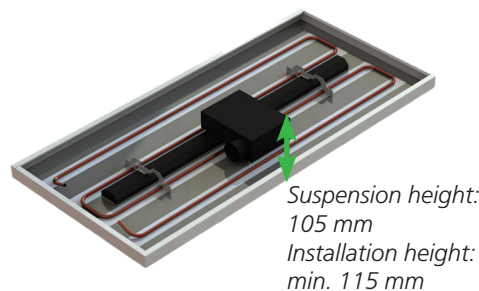
- Sail
 - Rectangular panels

Installation systems

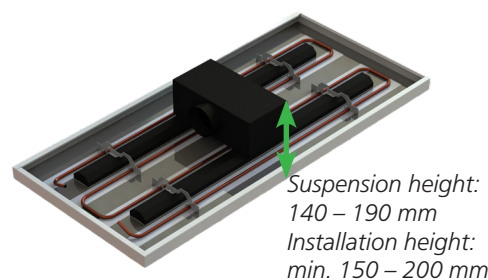
- Installation height:
 - Type 1 channel min. 115 mm
 - Type 2 channels min. 150 – 200 mm
- Hook-on system
- Threaded rods or ropes

Types Aquilo

- Type 1 channel



- Type 2 channels



Materials, weight and dimensions

Materials and weight

Material ceiling panel	Weight ceiling panel (incl. activation, water)	Weight supply air element Aquilo (Steel sheet)
Aluminium 1,00 mm	4,0 – 6,5 kg/m ²	4,0 – 6,0 kg/piece
Steel 0,70 mm	6,5 – 9,0 kg/m ²	

Building material class: A2-s1, d0, EN 13501-1 (depending on the acoustic solution).

Dimensions ceiling panel construction

Dimensions standard	Type 1 channel	Type 2 channel
Panel width	310 – 1200 mm	600 – 1200 mm
Panel length	1000 – 2500 mm	1000 – 2500 mm
Panel height ⁽¹⁾	50 – 120 mm	50 – 120 mm
Suspension height (Minimum height 50 mm ceiling panel edge)	105 mm	140 – 190 mm ⁽²⁾

¹⁾ Standard: Panel edge height 50 mm, angle of bend right angle / ²⁾ Special versions possible from 105 mm.

Dimensions supply air connection

Air channel (mm)	800	900	1000	1100	1200	1300	1400	1500
Type 1 channel Ø DN (mm)	80	80	80	80	80	100	100	100
Type 2 channels Ø DN (mm)	100	100	100	125	125	125	125	125

Surface

Versions

- Powder coating
- Digital printing on request

Colors

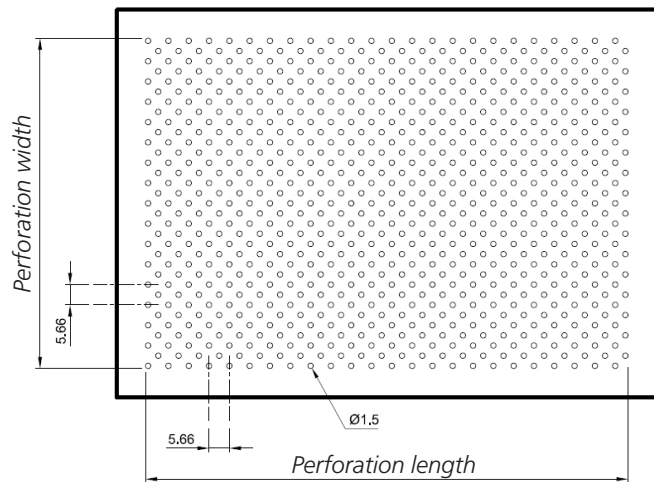
- Standard RAL 9010
- Other RAL / NCS colors on request

Perforations

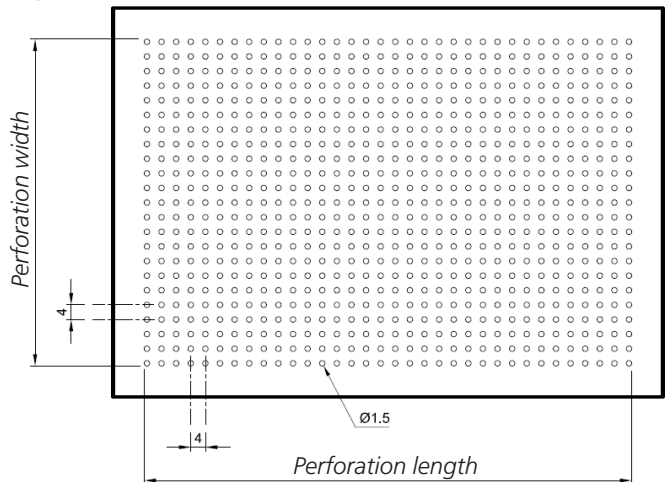
- Standard perforations
- Other perforations on request

Standard perforations:

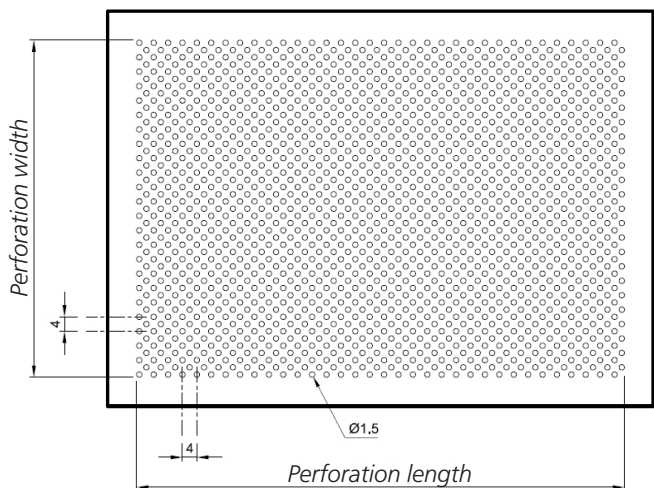
Rd 1,5 – 11 %



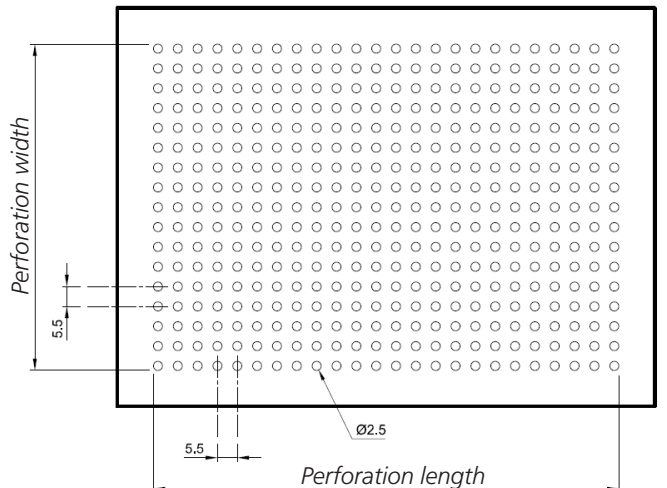
Rg 1,5 – 11 %



Rd 1,5 – 22 %



Rg 2,5 – 16 %



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