BARCOL-AIR RADIANT WAVE (BRW)

Your Wave Radiant Cooling or Heating

BARCOL-AIR
RADIANT WAVE

Barcol-Air Ltd
115 Hurley Road
Oxford, CT 06478
P. 203-262-9900

Table of Contents

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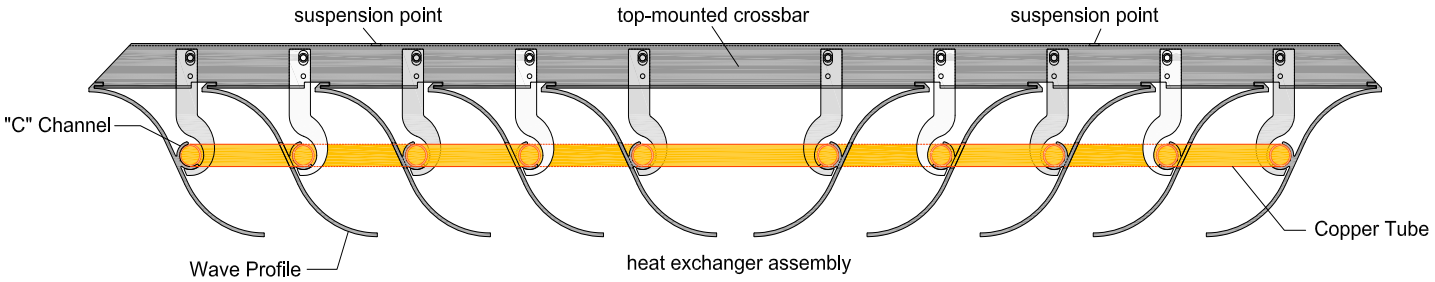
General Description

The BRW is a unique system that is energy efficient, but also effective in tempering its surrounding. It has an innovative, distinctive and visually appealing design, like no other in the market. It provides thermal comfort by radiation and acts as a heat exchanger.

The assembly consists of two components; an aluminum profile shaped as a “wave” and a seamless precision drawn copper tube. The aluminum profile also has a “C” channel embedded in the center, which holds the copper tubing. The copper tubing does not reach beyond the vertical edges of the sail, thereby, remaining concealed. Hot or cold water runs in the copper tubes, by which, heat is transferred via conduction to or from the sails, and via radiation to the surrounding area. The connections to the water mains are located on the top of the sail.

The profiles are fixated with top-mounted crossbars, which also serve as suspension points, typically from the ceiling. The heat exchanger assembly can be custom manufactured to accommodate various sizes. Sail lengths range from1800 mm to 3600 mm, in increments of 300 mm. The sail width is defined by the number of extrusions mounted in parallel, ranging from 8 to 14 profiles, in increments of 2 (refer to page 4 for more detail). There are no restrictions in length and/or width combinations, provided the water-side pressure drop does not exceed 45 kPa (recommendation Barcol-Air), or another threshold specified by the engineer.

The sails are available in slotted and non-slotted versions. The BRW heat exchanger is manufactured and assembled at a certified location, as approved by Barcol Air Ltd. The sail is then powder coated in a color selected by the architect or customer.



Materials

The embedded “C” channel in the “wave” profile comes in contact with at least 55% of the outer diameter of the copper tube. Thereby, a consistent thermal contact is achieved between the profile and the copper, without the use of any heat transfer pastes.

The tolerances of the “C” channel together with the tolerances of the copper tube result in the ability to clamp or snap the tube in the profile when it is pressed together. This enables an optimal heat transfer area and heat transfer rate.

The copper tube is a precision drawn 15.0 mm OD, seamless and semi-hard drawn copper tube. To ensure a high precision fit in the “C” channel, the copper is calibrated and hardened. The tolerances of the OD are within ± 0.02 mm. The copper tubing is tested with the “Eddy Current Method” and proofed for any hairline cracks.

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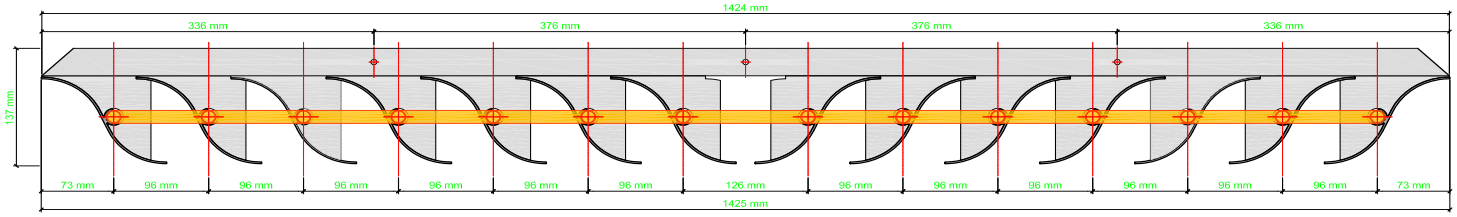
Areas of Application

1. Commericial or residential buildings
2. Office buildings
3. Schools
4. Manufacturing facilities
5. Other

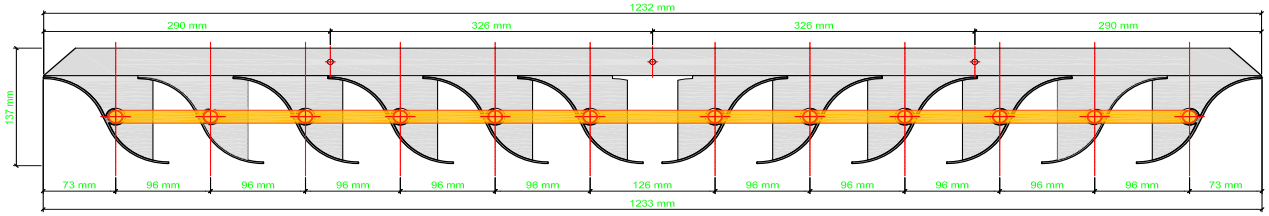
Dimensions

The sail lengths range from 1800 mm to 3600 mm, in increments 300 mm. The sail width is defined by the number of profiles mounted in parallel, ranging from 8 to 14 pieces, in increments of 2 extrusions. This results in a combined width of 762mm for 8 profiles, 914 mm for 10 profiles, 1067 for 12 profiles and 1219 mm for 14 profiles. Please note drawings below.

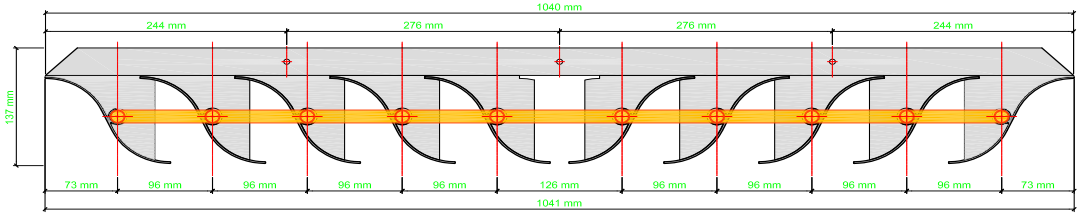
BRW with 14 Profiles



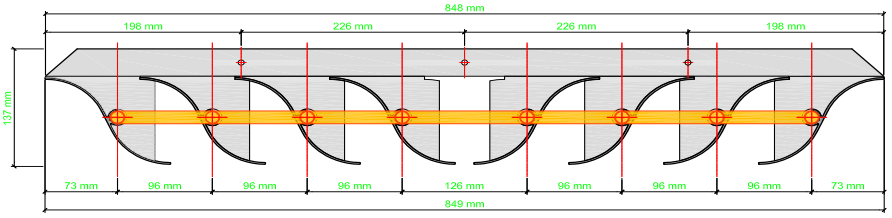
BRW with 12 Profiles



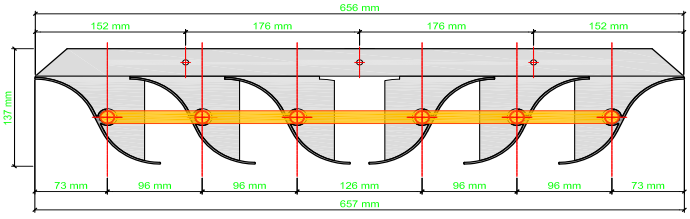
BRW with 10 Profiles



BRW with 8 Profiles



BRW with 6 Profiles



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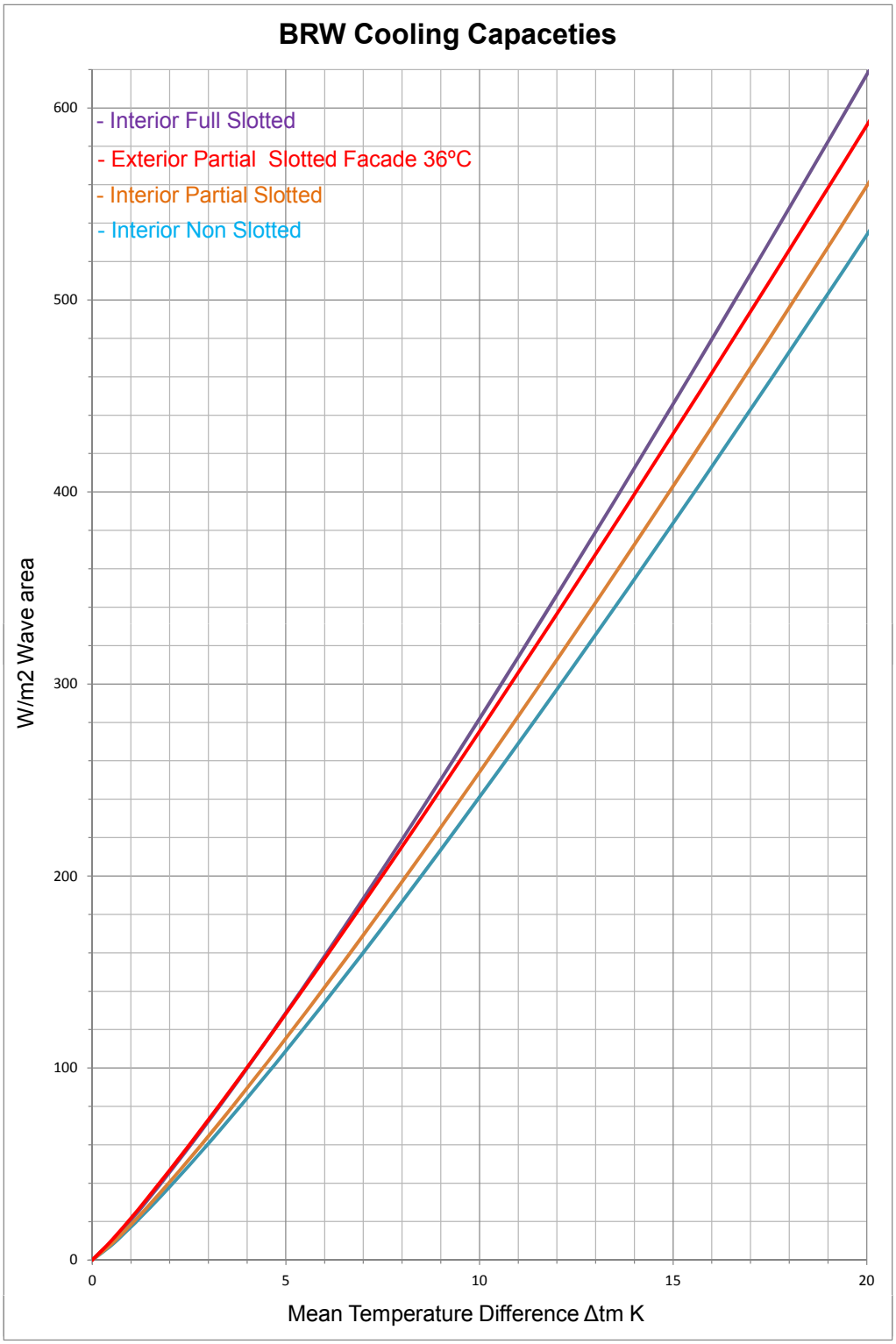
Cooling Capacities



The mean temperature difference (Δtm ºC) for cooling is calculated as follows:

Δtm (ºC) = Room Temp. (ºC) - [(Supply Water Temp. (ºC) + Return Water Temp. (ºC))/2]

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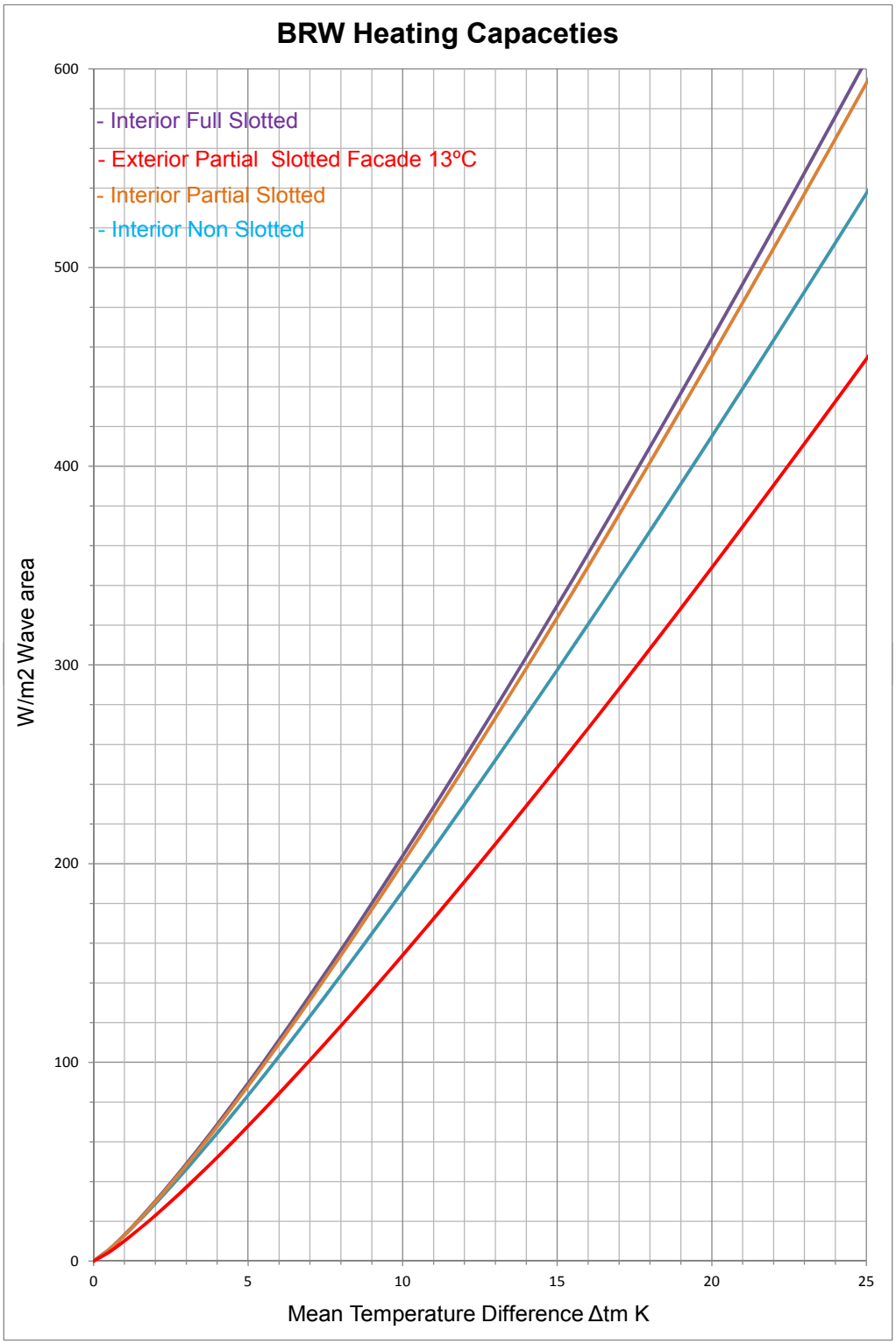
Heating Capacities



The mean temperature difference (Δtm ºC) for heating is calculated as follows:

Δtm (ºC) = [(Supply Water Temp. (ºC) + Return Water Temp. (ºC))/2] - Room Temp. (ºC)

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BRW with Standard Slots

The BRW comes in three standard slot patterns:

1. None slotted,
2. Partial slotted
3. Fully slotted.

Note: The partially slotted wave will have partially slotted profiles in the interier part of the wave and fully slotted profiles at the perimeter of the wave.

Standard No Slots

Standard Partial Slots

Standard Full Slots

Standard Partial Slots, perimeter profiles are fully slotted and interior profiles are partly slotted

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BRW with partial slot pattern

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Contacts

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Your partner for radiant cooling and heating, chilled beams and VAV systems.