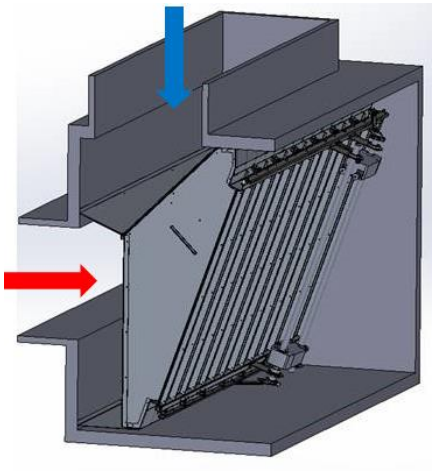
Introduction

The Channel Blender by Blender Products® is an economizing damper module that contains both OA and RA dampers integrated into a frame that channels OA and RA into adjacent paths that are mixed into a homogenous air stream by the control dampers.

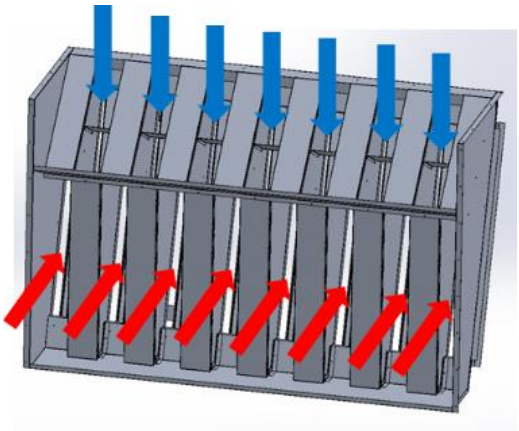
In 8-12" downstream from the trailing edge of the module, the product provides the same mixing as an Air Blender section.

The Channel Blender can be provided as a component to be installed in an AHU OEM supplied mixing box, or supplied from Blender in a mixing box designed to match any air handling unit (AHU) plenum.

How it Works



① Outdoor air and return air enter the mixing box through designated openings. The Channel Blender is installed to align to these openings. Each air stream flows into the corresponding compartment in the Channel Blender.



② Outdoor air and return air flow into adjacent channels, so there are alternating slices of outdoor air and return air flowing toward the dampers. Turning vanes in the channels distribute air evenly throughout each channel.

How it Works

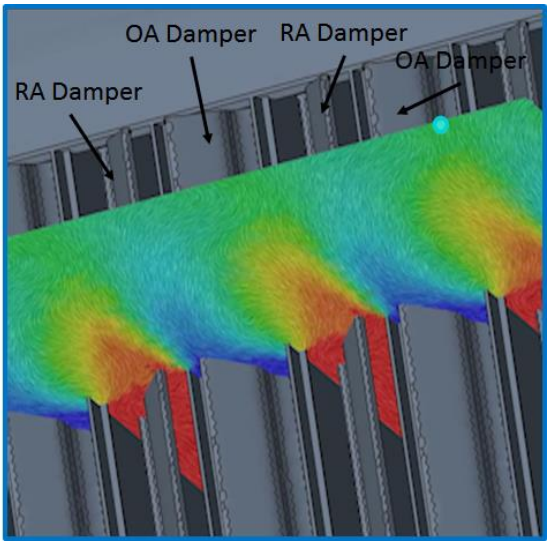
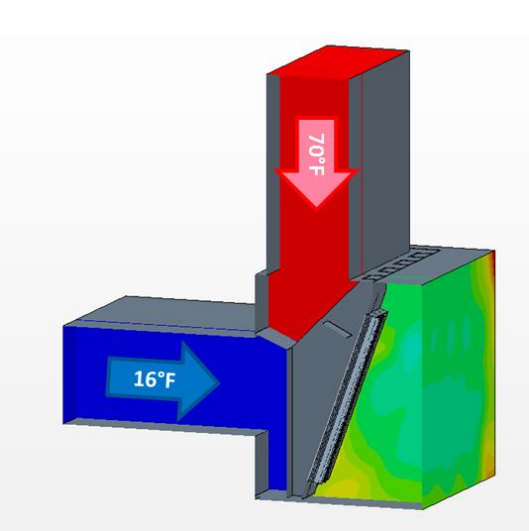
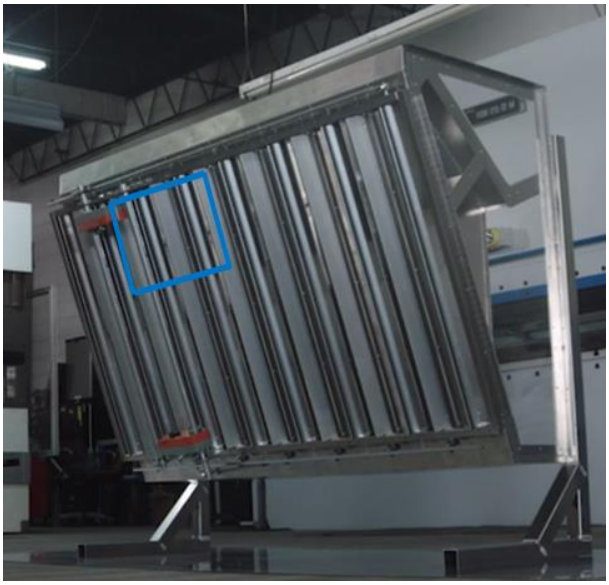


Fig. A

This arrangement addresses the volume and proximity problems that prevent outdoor air and return air damper banks mounted in the mixing box openings from providing adequate mixing.



③ Lastly, dampers at the end of each outdoor air and return channel are positioned so the air streams discharging from the adjacent channels collide and mix as they exit the economizer.



The result is an economizing mixing box that provides the airflow control for ventilation & economizing and the performance of a Blender section often used to eliminate freeze stat trips and protect heat exchanger coils, all within the mixing box.

Economizer & Damper Control:

The OA and RA dampers in the Channel Blender are intended to work like the dampers you would use in your AHU mixing box to control the ventilation rate and provide economizer control (see Fig. C below). However, the OA and RA damper blades also serve the purpose of aiding with air mixing in the Channel Blender. For the dampers to provide good mixing they must be "controlling" the air flow and be partially closed such that the RA and OA are being directed toward each other (see Fig. A on Pg. 4). In other words, the product does not provide the necessary mixing when the dampers are in a full open position. At ambient conditions that could trip a freeze stat, damper control algorithms for economizer control will position both the RA and OA dampers partially closed to control the mixed air temperature, as a precaution when operating at ambient temperatures that are below the freeze-stat setting, controls contractors should include in their algorithm operating the Channel Blender a voltage limit such that the supply signal to the OA or RA dampers should not position the dampers more than 70% open.

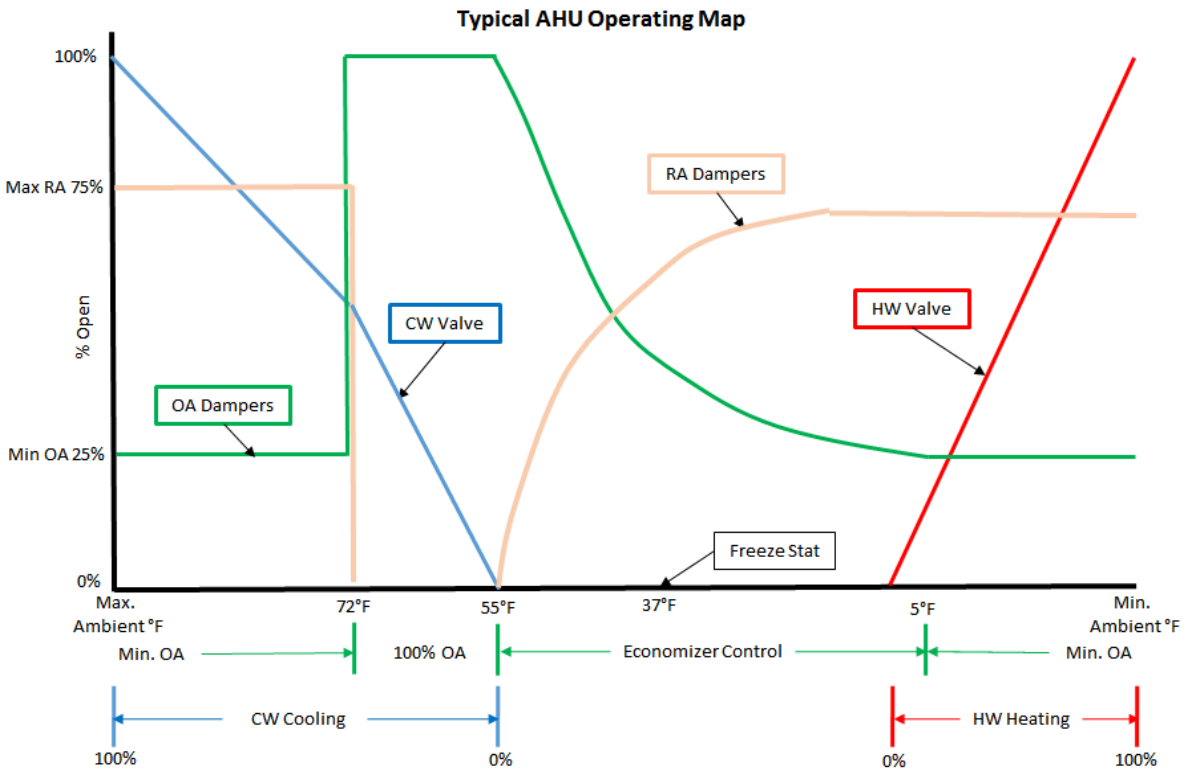


Fig. C