Holding Pen Positive Pressure Tubes
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During hot, humid summers, cows have a hard time getting comfortable during the heat of the day, especially when they are packed into the holding pens waiting to get into the parlor.

In the past, fans were installed to blow air across the top of the cows. While this is a huge improvement over no fans, it has its drawbacks. The first is that as it blows across the top of the cows, the air doesn’t reach their sides or legs and these areas remain hot. The second issue occurs when a tall cow is standing in the airstream and blocks it from shorter cows that are standing next to her. As these are circulation fans, they are recirculating air in the barn that is already warmer and moister than outside air.

A system that has been used in holding pens with more frequency involves Positive Pressure Tubes or PPT’s. PPT’s are tubes or bags that are connected to a fan and have holes in them to discharge air when needed. In the 1970’s, PPT’s were used but their effectiveness was limited by being used to recirculate stale air from inside the barn instead of discharging fresh outside air into the buildings. By drawing fresh air from the outside, air is cooler and has lower concentrations of moisture and manure gases, making it more effective at improving air quality in the barn.

PPT’s have been used regularly in calf facilities to provide the proper amount of air exchange at an air velocity (50-60 feet per minute at calf level) that will not cause a draft during cold weather. While a slower air velocity is important for calves, a higher velocity is needed to properly regulate air flow. 300 feet per minute is the minimum velocity recommended while an air velocity of 400-500 feet per minute at the back height of the cows is considered more effective. With the higher velocity air blowing on top of the cows, every cow will be in the air stream. The air will travel over the top of the cow, down her sides, and around her legs, providing some relief to all parts of her instead of just across her top as with circulation fans.

The tubes can be made out of non-perforated drainage tile that will last almost indefinitely or from bag type material available from several suppliers. The drain tile will cost around $20 per foot while the bags are considerably cheaper with a shorter life.

Tubes are spaced about 10 feet apart over the holding pen and at a height that will not interfere with cow movement, crowd gates, or pen clean up. Most holding pens will require 3 or more fan and tube systems. A person trained in designing PPT’s should be used to design the holding pen system. The fan capacity needs to be matched to the tube size, hole size, and number of holes to get the proper air velocity at cow level.

By providing better distribution of air than circulation fans, positive pressure tubes can make the holding pen one of the better places for a cow to cool off.