



FLAP DUCT® the industry's most versatile calf barn ventilation system. Delivering an unmatched level of control.



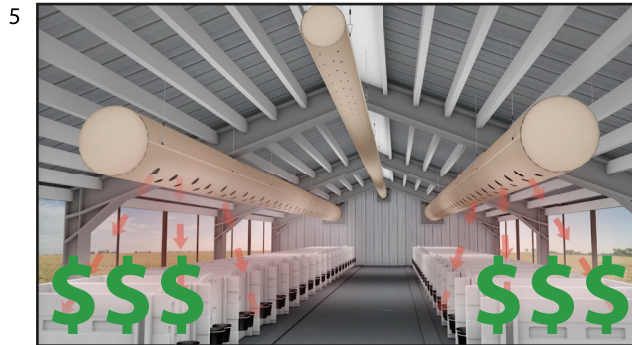
Currently every calf barn ventilation system on the market has a key limitation, single season use.



Many of these systems use low output fans connected to small diameter ducts to deliver low-volume, slow air for winter ventilation. They work well for winter but they lack the ventilation power needed for warmer weather conditions.



Some farms are now adding high output fans connected to large ducts to deliver more ventilation power during warm weather.



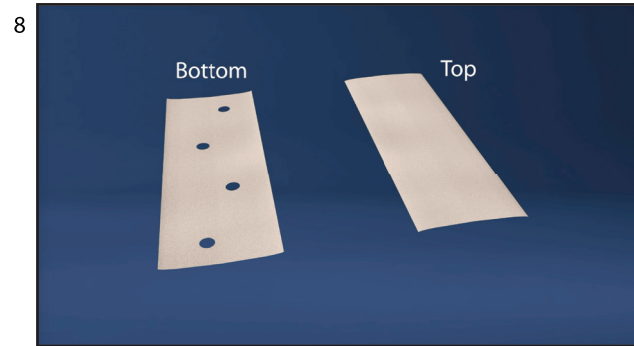
These systems work well yet require more fans, ducts, controllers and electricity. Resulting in increased costs for a system used only 3 or 4 months each year.



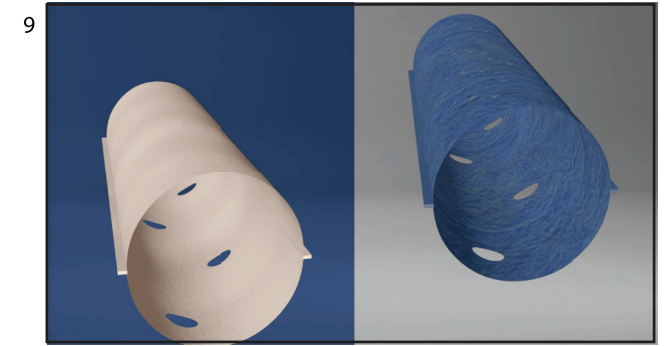
These limitations were the inspiration for FLAP DUCT®. The only single duct ventilation system engineered for both warm and cold weather seasons.



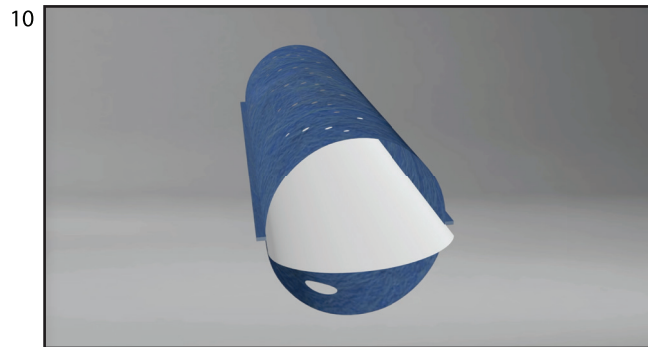
The key difference between FLAP DUCT® and conventional systems can be seen in the manufacturing process.



Conventional fabric ducts are made by sewing together two flexible fabric sheets.



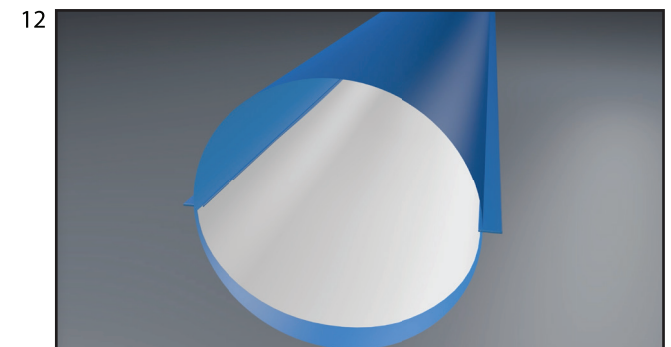
The bottom sheet contains holes allowing air to be discharged on the calves once the duct is inflated.



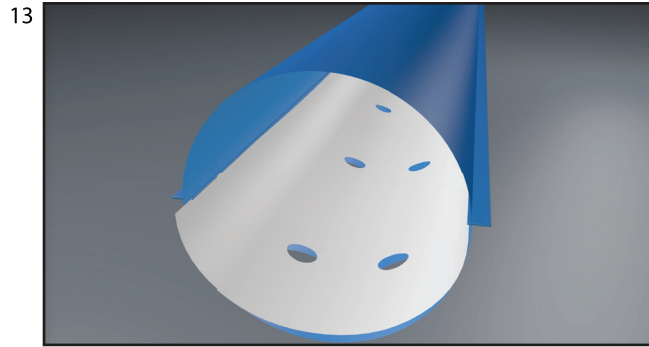
FLAP DUCT® is manufactured with a patented internal liner membrane sewn into the middle of the duct.



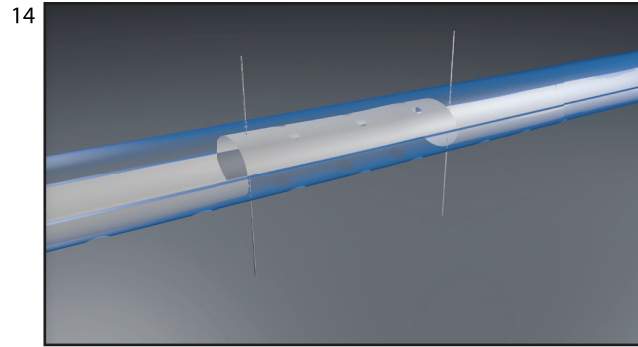
The liner allows a cold weather hole pattern to be placed on one side of the duct and a warm weather hole pattern on the opposite side.



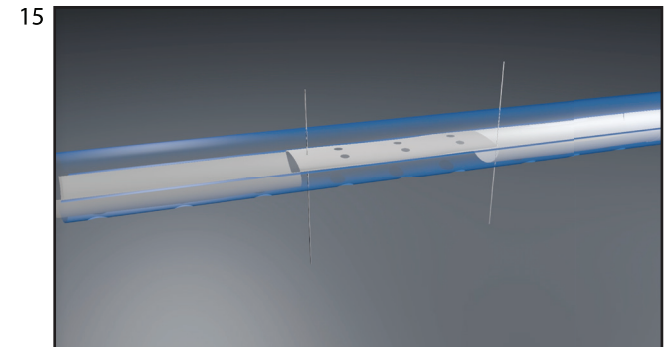
Featuring an internal membrane that can be airtight.....



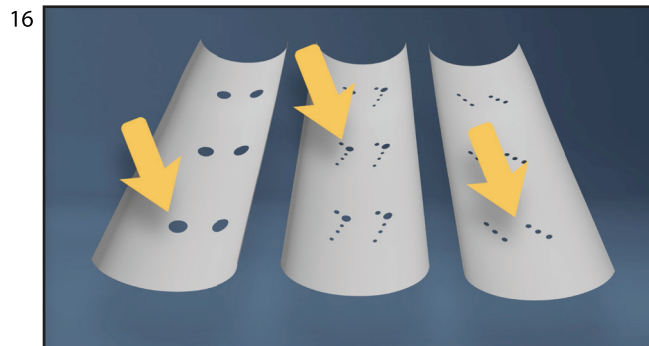
perforated....



layered...and segmented.



These internal membranes, or flaps, can be moved up or down to control air flow based on seasonal need.



FLAP DUCT's external hole patterns and internal membranes are customized to each barn's unique pen layout.

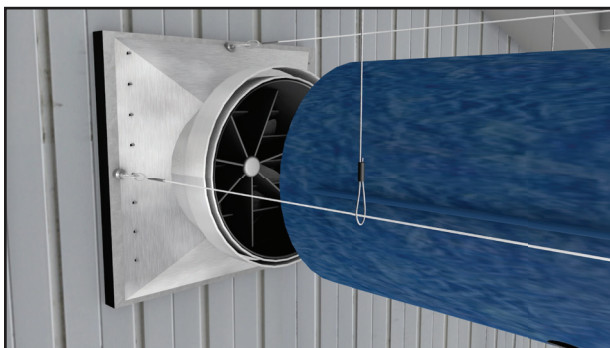


This single duct system combines a cold weather duct with a warm weather duct providing proper calf barn ventilation all year round.



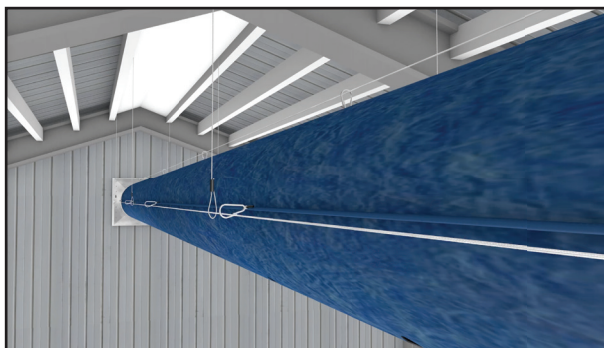
Let's look at how easy it is to install FLAP DUCT®, then see it in action.

19



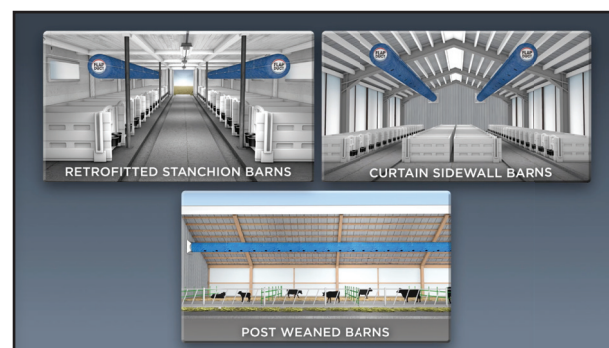
Horizontal cables span the length of the barn and attach to eye bolts at each end. FLAP DUCT's lightweight, inflatable material easily slips over the barn's ventilation fan shroud. A clamp secures it to the fan.

20



Metal snaps securely sewn into the sides and top of FLAP DUCT® attach to the cables at 12, 3 and 9 o'clock. Vertical cables suspended from the barn roof attach to the horizontal cables, preventing sag. FLAP DUCT® can be designed to perform at any height or location in a barn.

21



Watch how each of these patented membrane technologies can be applied to different calf barn housing situations.

22



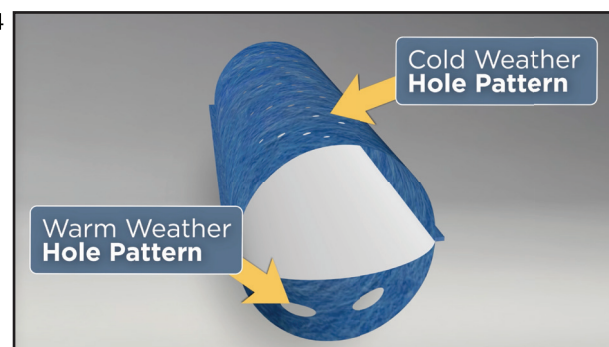
Many stanchion barns have been retrofitted into housing for calves. These barns often present challenges, such as low ceiling height and a lack of natural ventilation; making it difficult to achieve good air quality at calf level.

23



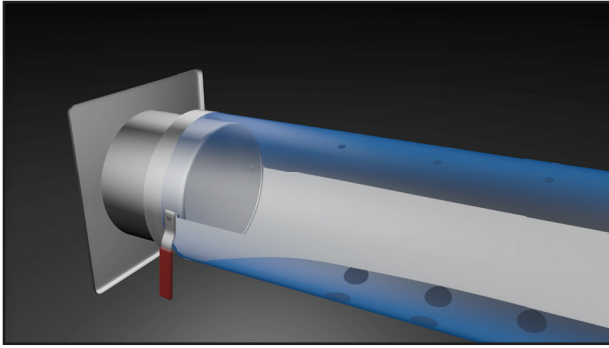
FLAP DUCT's airtight membrane is an ideal solution for this type of calf housing, as it can direct and control the fresh air exiting the duct based on seasonal need.

24



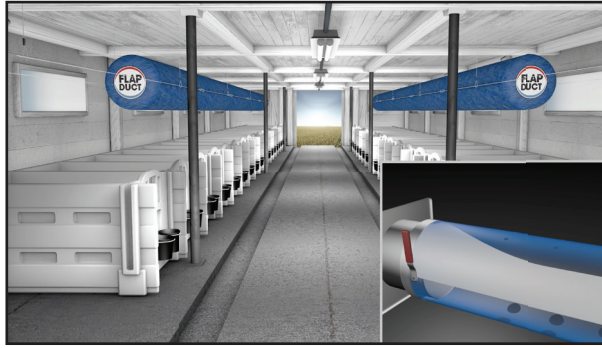
A cold weather hole pattern is placed on the top of the duct and a warm weather hole pattern is placed on the bottom of the duct.

25



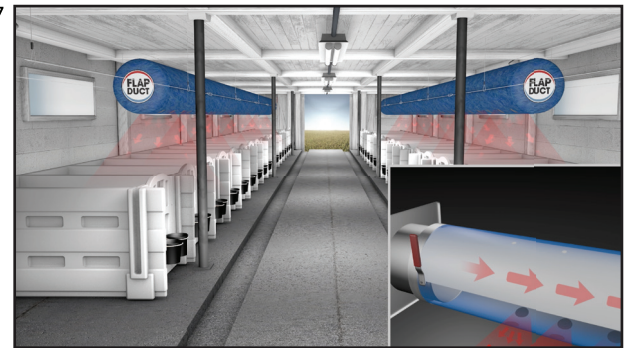
The end of the membrane is first attached to a lever control mechanism. Then, the duct is attached to the fan shroud.

26



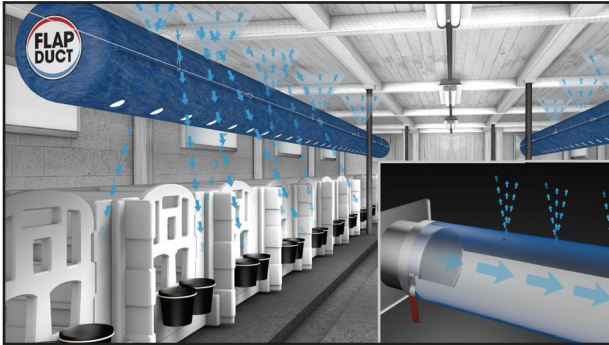
In warm weather, turn the variable speed fan to high, increasing air flow and position the internal membrane to the top of the duct using the lever control mechanism.

27



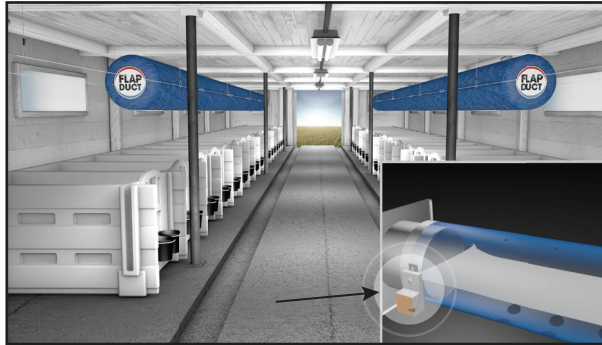
Air from the fan will force the airtight internal membrane to the top of the duct, blocking the holes on the top and forcing air through the series of large-diameter holes at the bottom of the duct...showering calves with high speed, cooling air. This high-speed air also blows away annoying flies and helps to keep bedding dry.

28



In cold weather, turn the variable speed fan to low and use the lever control mechanism to position the airtight internal membrane to the bottom of the duct, blocking the large diameter holes. This diverts the fresh air through multiple small holes in the top of the duct, causing it to deflect off the ceiling and gently fall into the calf pen.

29



The optional automation kit can be added to any system. Automatically repositioning the internal membrane based on temperature inputs from a thermostat and controller located in the barn.

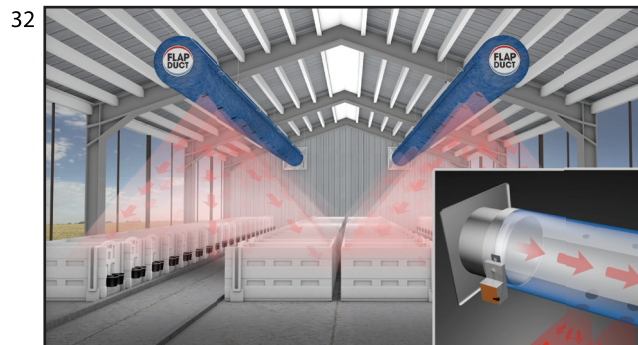
30



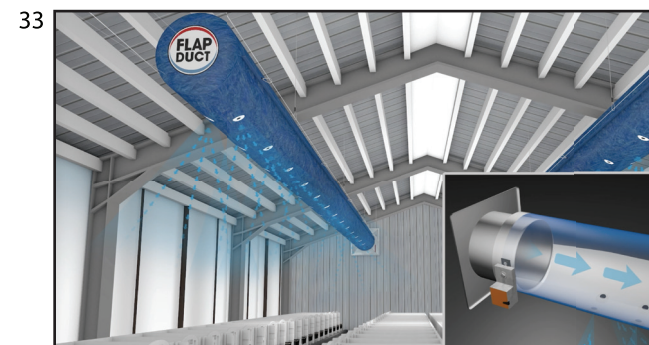
Now let's see how FLAP DUCT® works in naturally ventilated barns with curtain sidewalls.



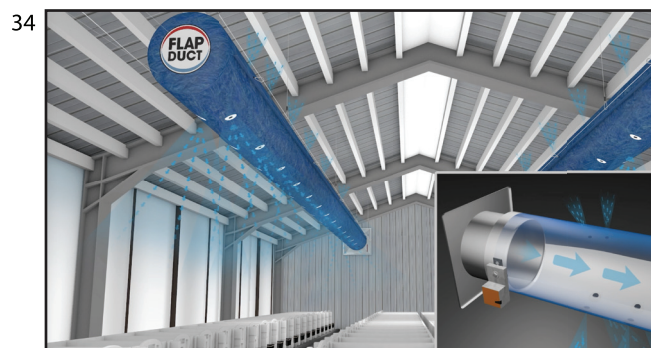
In this barn setting, FLAP DUCT's perforated membrane allows for quick and easy changing between cold weather and warm weather ventilation systems.



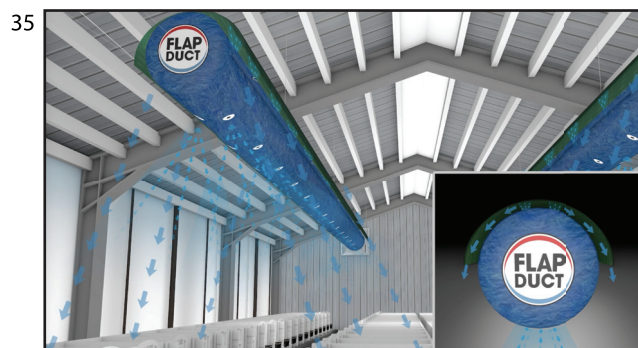
During summer, the variable speed fan is set to HIGH and the membrane is in the up position, allowing the large diameter holes in the bottom of the duct to discharge high volumes of fast cooling air to the calves.



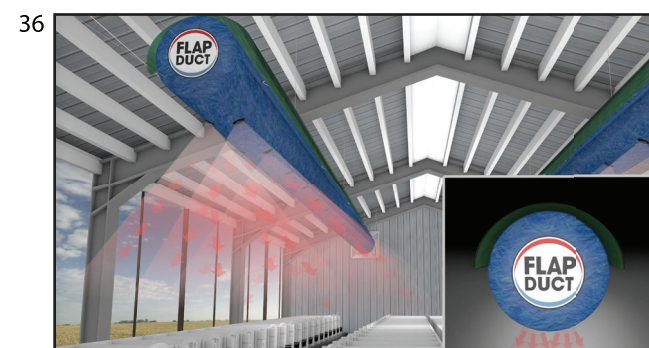
In the winter, turn the variable speed fan to low and move the membrane to the down position, overlapping the large diameter exterior holes with the smaller holes in the membrane, creating weak, thready air jets that gently deliver slow, non-drafty, fresh air to calves.



Additional "relief" holes can be added to the top of the tube.

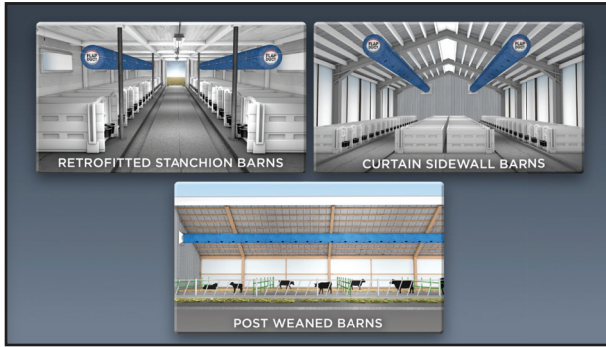


For barns with high ceilings or open rafter systems the optional deflector shield can be installed to gently redirect this additional airflow downward, increasing the amount of fresh air delivered to the calf.



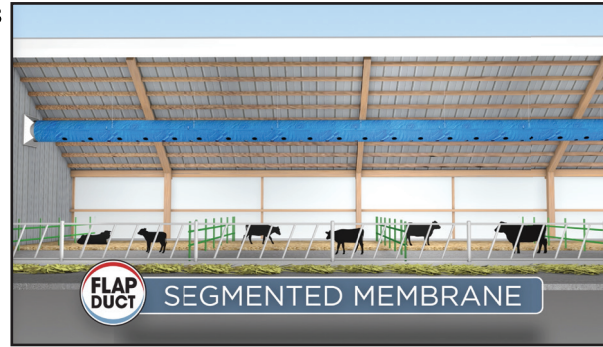
Being able to rapidly switch between a cold weather and warm weather system is particularly useful in the spring and fall when the nights are cold and the days are warm.

37



Next, lets see how FLAP DUCT® works in this post weaned barn where calves are grouped in pens by age.

38



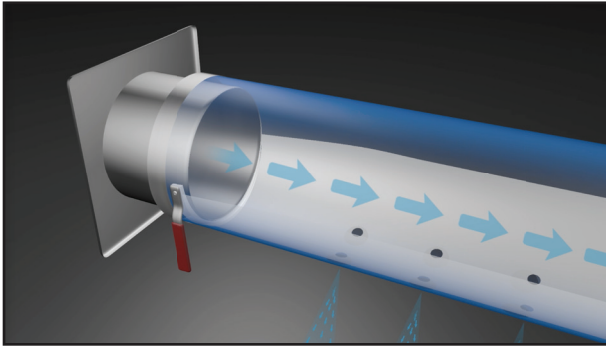
Many post-weaned calf barns have pens containing groups of different sized animals along their length. As the size of the calves in each pen increases.... the ventilation requirements for them increase as well. The versatility afforded by FLAP DUCT's segmented membranes allows those varying ventilation requirements to be met.

39



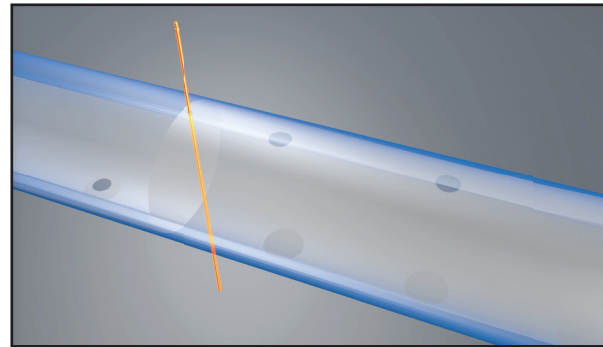
A clear duct is used in this illustration to show the independently functioning membranes in action. When it's time to change from the warm weather setting to the cold weather setting, all the membranes can be easily adjusted.

40



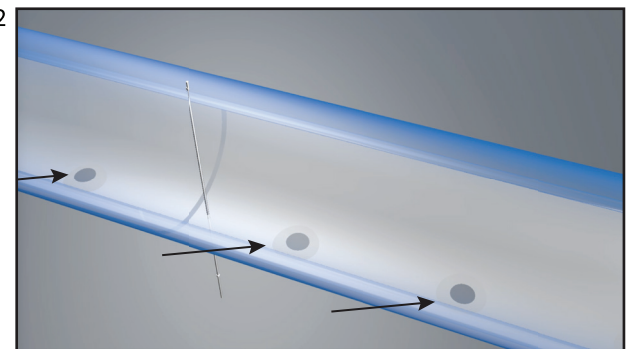
Use the lever control mechanism to move the first segment of membrane over the first group of calves.

41

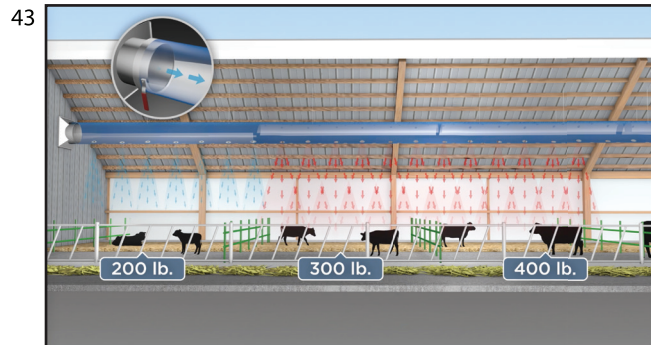


Vertical rods are attached to the remaining segments of membrane. Pulling down on a rod will move the leading edge of its membrane, allowing air to flow over the top, forcing it to the bottom of the duct.

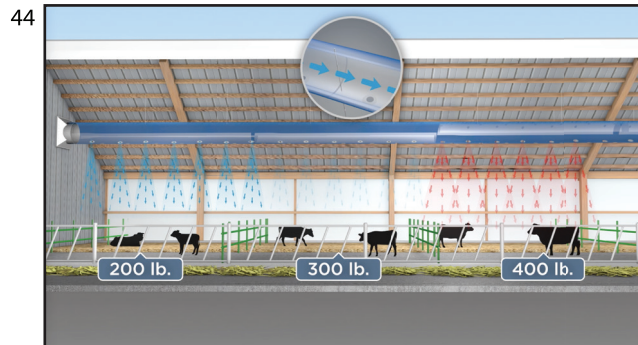
42



The smaller holes in the membrane will overlap the larger exterior holes in the bottom of the duct, reducing air speed to calves.



The calves in the first pen are the youngest and smallest calves in the barn. As such, they require the least amount of fresh air and are the most susceptible to a draft in cold weather. As fall approaches and the temperatures get to 50 degrees Fahrenheit, use the lever control mechanism to adjust the first segment of the internal membrane down, reducing the air speed delivered to that first pen.



The other pens have larger, hardier animals that can handle more air flow, but as fall temperatures drop, air speed should be reduced accordingly. Use the vertical rods to adjust the internal membranes to the down position so that each pen is ventilated appropriately.



With FLAP DUCT® the ability to regulate air speed is virtually limitless. Regardless of the calf housing setup, the requirements for delivering fresh air at safe speeds can always be met.



Our patented systems and customizable designs afford a level of versatility not found anywhere else in the market. Count on Crystal Creek® to provide practical, innovative solutions that help calves become healthy, productive cows. For more information, contact us at Crystal Creek®. We'd be happy to discuss how FLAP DUCT® can work in your calf barn. Call 888-376-6777.