CALF BARN VENTILATION SYSTEMS

CRYSTAL CREEK®

1.888.376.6777

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WHY CRYSTAL CREEK?

Crystal Creek is a family owned livestock nutrition and animal health company that has been serving the farming community since 1997. We provide high quality livestock minerals, nutritional supplements and animal health aids, along with consulting services from a knowledgeable and friendly staff. In 2015, Crystal Creek introduced the first multi-season positive pressure ventilation system; FLIP DUCT. Since then, Crystal Creek has continued to revolutionize calf barn ventilation designs with the release of FLAP DUCT, a ventilation system that gives calf barn managers even greater seasonal control.

Dr. Ryan Leiterman

Dr. Ryan Leiterman is a dairy veterinarian experienced in calf barn ventilation design and analysis. He holds degrees in both Agricultural Engineering and Veterinary Medicine. During his time in practice, Dr. Leiterman has experienced first-hand how properly designed ventilation systems can improve calf health and calf raising profitability. He began designing calf barn ventilation systems in 2009 and has since designed systems across the United States and Canada in both new and retrofitted barns.

Commonly Asked Questions

? How do these systems work?

Positive pressure systems use a fan located at the end of the barn to deliver fresh outside air along a heavy duty fabric tube. The tube carries fresh air the length of the barn and discharges it through holes located above each pen. Every tube is custom designed to each barn's unique pen layout.

? What are these positive pressure tubes made of?

Two materials are available based on the application required. Most commonly, the tube is made of a durable, rip stop high-density polyethylene. If the tube will be exposed to direct sunlight, a vinyl material is available.

? How long can the tube be?

Experience has shown an operating length of 200 feet for a single fan system is possible. Longer runs can be accomplished but will require specialized fan equipment and advanced design considerations. In most situations, a tube can ventilate a width of 20-25 feet.

? Won't this added ventilation make it too cold in the winter?

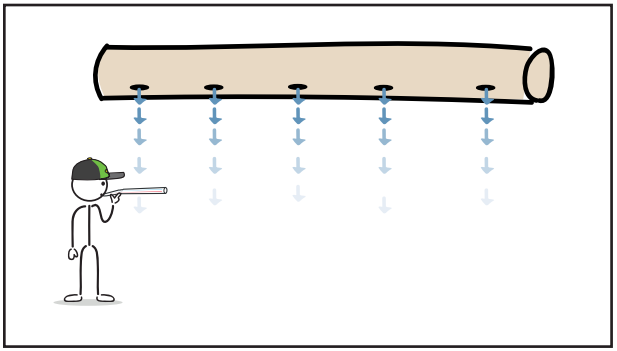
Great care is taken in the design of each ventilation system to ensure that fresh air is delivered to the calf WITHOUT CREATING A DRAFT in cold weather. A properly designed ventilation system delivers a blanket of fresh air that gently settles over each calf. The use of variable speed fans and the internal membrane technology found in FLIP DUCT and FLAP DUCT offer unmatched air speed control.

? I have fans in my calf barn already, isn't that enough?

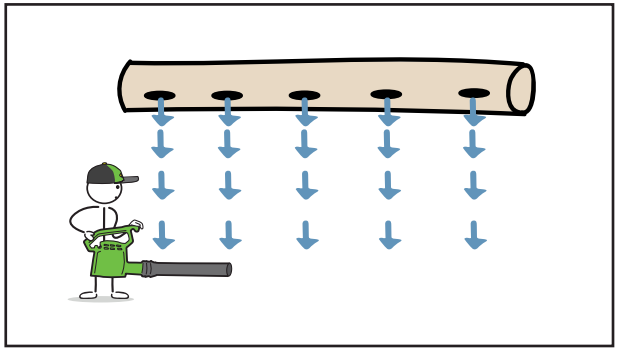
Having fans in a barn does not mean the calf pens are adequately ventilated. Often the air inside the calf pen is poorly ventilated despite having numerous fans throughout the barn. If you are unsure about the ventilation status of your calf barn, call and schedule a calf barn ventilation evaluation with Dr. Leiterman.

? Are these systems easy to install?

Yes! The positive pressure tube system comes complete from the manufacturer with everything necessary for installation along with an installation diagram.



Small holes produce weak, “thready” jets of air that quickly lose momentum, much like air blown through a small-diameter straw. This results in slow, gentle air reaching the calves. Small diameter holes in a ventilation duct are ideal for cold weather use.



Large holes produce robust jets of air with more momentum, much like a leaf blower with a large-diameter nozzle, delivering fast, cooling air over longer distances. Large diameter holes in a ventilation duct are ideal for warm weather use.

Visit our website to view a short educational video that introduces the basic principles of calf barn ventilation.

Proper calf barn ventilation is more than just having fans in the barn. Crystal Creek has the equipment and expertise to bring creative, effective calf barn ventilation solutions to any calf raising operation.

INNOVATIVE MULTI-SEASON VENTILATION

FLIP DUCT is a truly unique, easy to use calf barn ventilation system. It is the first positive pressure tube ventilation system to offer calf raisers a single fan and duct system for multi-season use. The fast, cooling air speeds delivered by FLIP DUCT during hot weather helps alleviate fly stress and has shown to keep bedding drier. When the weather changes, FLIP DUCT is easy to operate. Simply rotate the system and turn the fan to its low setting, delivering a blanket of gentle, non-drafty fresh air into calf pens for cold weather ventilation.

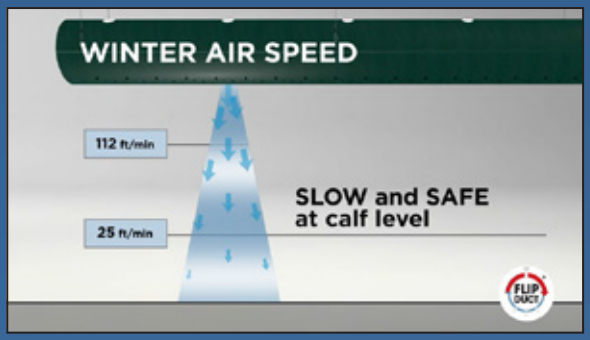
See the rotating collar
system in action on our website.

The development of the rotating collar system provides a quick and easy way to adjust airflow based on seasonal need. It is a must have for busy calf raisers looking to save time.

Visit our website to view an animated
video and learn more about how
the FLIP DUCT system works.

Multiple aspects of FLIP DUCT are patented with additional U.S. and foreign patents pending.

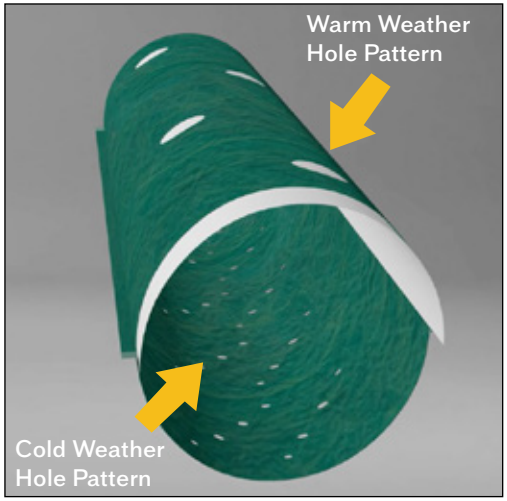
Winter Ventilation



In cold weather, a variable-speed fan set to low pushes air through the series of small diameter holes at the bottom of the duct, gently delivering slow, non-drafty fresh air to calves.

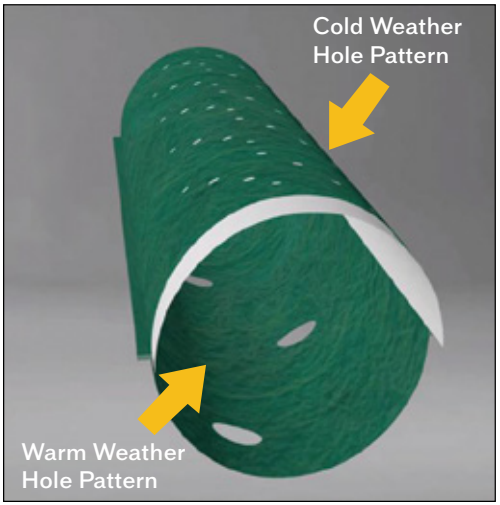
How FLIP DUCT Works:

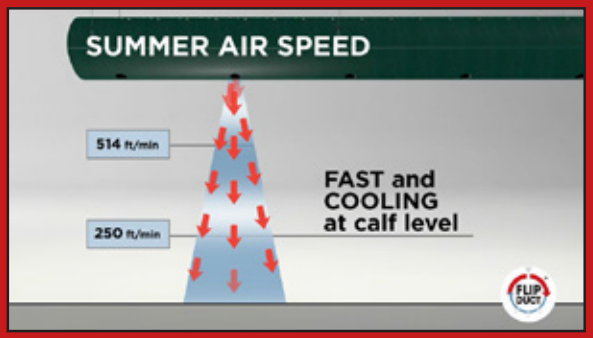
For cold weather ventilation, place the small hole pattern facing down and turn the variable speed fan to low. This system will deliver the minimal air exchanges needed to keep the barn fresh in the winter without creating a draft.



Summer Ventilation

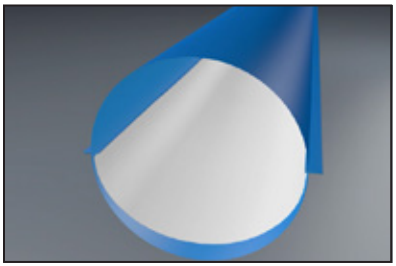
To switch to warm weather ventilation, rotate the duct 180˚ so the large hole pattern is facing down. Lift the internal, lightweight membrane and place it over the top of the fan shroud, then attach the duct to the fan. Turn the fan to the high speed setting, increasing airflow. Air pressure will force the lightweight membrane to the top of the duct, blocking the cold weather hole pattern at the top.



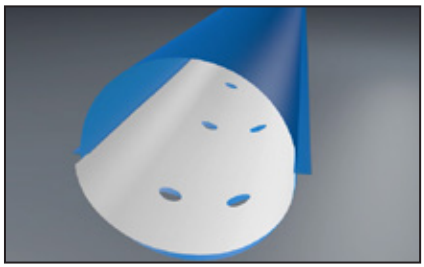


In warm weather, the variable speed fan is set to high and air flows only through the series of large diameter holes at the bottom of the duct; allowing high speed air to shower calves with cooling comfort. This high speed air blows away annoying flies and helps to keep the bedding dry.

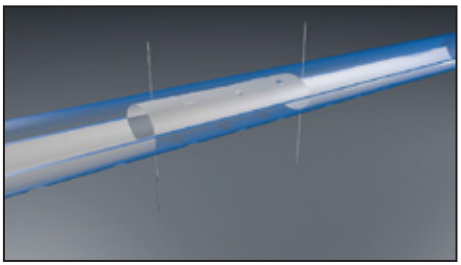
UNMATCHED VERSATILITY



AIRTIGHT MEMBRANE



PERFORATED MEMBRANE

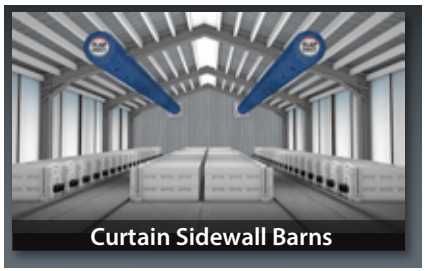


SEGMENTED MEMBRANE

In 2016, Crystal Creek raised the bar again with FLAP DUCT, taking ventilation to an entirely new level. This technology builds on the innovation of FLIP DUCT, with an internal membrane that can be airtight... perforated... segmented... and layered. These internal membranes, or flaps, can be moved up or down to control air flow based on seasonal needs.

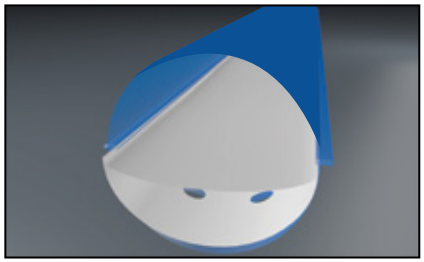
FLAP DUCT Applications

Retrofitted Stanchion Barns



Curtain Sidewall Barns

Post Weaned/Group Housed Barns



LAYERS OF MEMBRANE

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 the desired speed can always be met.

Visit our website to see how FLAP DUCT raises the bar in calf barn ventilation.

Our patented systems and customizable designs afford a level of versatility not found anywhere else in the industry. This unique technology can be successfully implemented by any calf raiser regardless of calf barn style or farm size.

RETROFITTED STANCHION BARNS

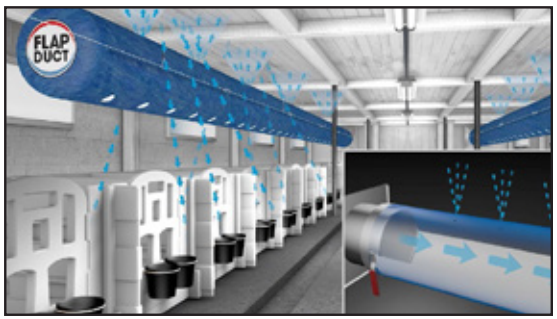
*FLAP DUCT's **airtight membrane** is an ideal solution for this type of calf housing, as it can direct and control the fresh air exiting the duct based on seasonal need.*

WARM WEATHER

In warm weather, turn the variable speed fan to high, increasing airflow and position the internal membrane to the top of the duct using the lever control mechanism. 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; blowing away annoying flies and keeping bedding dry.

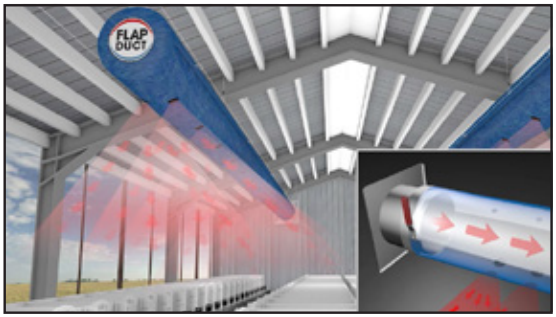
COLD WEATHER

In cold weather, turn the variable speed fan to low, decreasing airflow 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 away from the calves through multiple small holes in the top of the duct, causing it to deflect off the ceiling and gently fall into the calf pen.



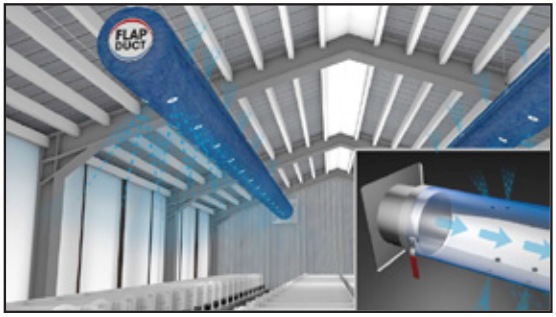
CURTAIN SIDEWALL BARNS

In naturally ventilated barns with curtain sidewalls, FLAP DUCT's ***perforated membrane*** *allows for quick and easy changing between cold weather and warm weather ventilation systems.*



WARM WEATHER

During warm weather, the variable speed fan is set to high and the internal membrane is in the up position, allowing the large diameter holes in the bottom of the duct to discharge fast air onto the calves. Being able to rapidly switch between a cold weather and warm weather system, with just the flick of a lever, is particularly useful in the spring and fall when the nights are cold and the days are warm.



COLD WEATHER

During cold weather, the variable speed fan is set to low and the internal membrane is in the down position, overlapping the large diameter exterior holes with the smaller holes in the membrane, creating weak, thready air jets that deliver slow, non-drafty air to calves. Additional "relief" holes can be added to the top of the duct to discharge excess air safely away from calves in cold weather.

POST WEANED BARNS

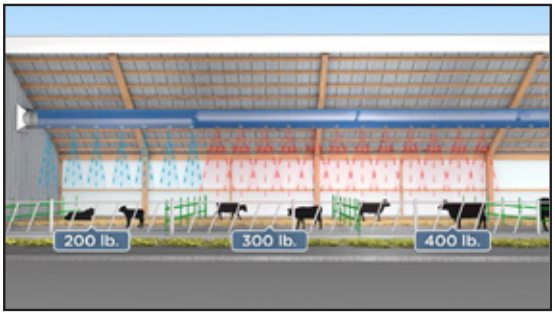
Many post-weaned calf barns have pens containing groups of different sized animals. As the size of the calves in each pen increases, the ventilation requirements for them increase as well. The versatility afforded by FLAP DUCT's ***segmented membranes*** *allows those varying ventilation requirements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

WARM WEATHER

During warm weather, the internal membrane segments are in the up position, allowing high volumes of fast, cooling air to be discharged onto the calves through the large diameter holes located on the bottom of the duct. When it is time to change from the warm weather ventilation setting to the cold weather setting, each membrane can be easily and independently adjusted.

COLD WEATHER

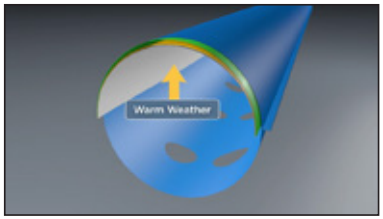
In the diagram to the right, the calves in the first pen are the youngest and smallest calves in the barn. As such, they require the least amount of fresh air and are the most susceptible to a draft in cold weather. As fall approaches and the temperature reaches 60˚F, use the lever control mechanism to adjust the first segment of the internal membrane down, reducing the volume and air speed delivered to the first pen.



The remaining pens contain larger, more robust animals than can handle more air flow, but as fall continues and temperatures drop to 50˚F, air speed and volume should be reduced to these pens as well. Use the vertical rods to adjust the internal membranes to the down position so that all the calves are now receiving the correct amount of fresh, non-drafty air.

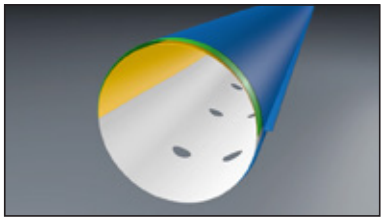
CUSTOMIZATION

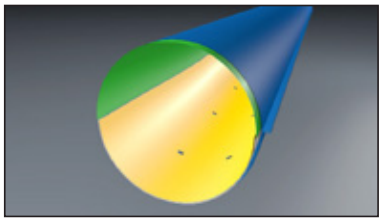
FLAP DUCT can be customized with the addition of multiple ***layers of membrane****. These additional membranes are adjusted based on seasonal weather changes.*

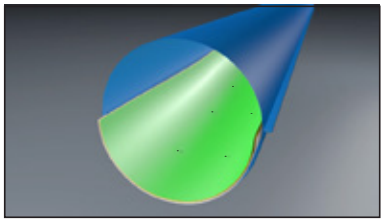


WARM WEATHER

The three internal membranes are positioned at the top of the duct during warm weather, allowing large volumes of high speed air to be discharged out the large diameter holes at the bottom.







COLD WEATHER

At the first sign of cooler weather, disconnect FLAP DUCT from the fan shroud. Pull down the first membrane and reattach FLAP DUCT. Air flow will ensure the adjusted membranes remain in the appropriate position, thereby reducing the hole size and air speed.

As weather gets cooler, repeat the same step with the next membrane, further reducing the hole diameter and subsequent air speed. When the coldest weather dictates slower air speeds, adjust the last membrane to the down position.

The final membrane contains the smallest hole size and delivers the slowest rate of air.

Crystal Creek offers a full line of calf care products and calf barn ventilation services. Call our toll free number or visit our website to learn more.

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