

## Air Out Your Milking Facility

### A well-ventilated facility contributes to milk quality

by  
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Stale, contaminated, odorous air was once a major culprit of tainted milk prior to the adoption of pipeline milking systems. Harvested milk was hand-carried in milk cans to a dumping station where it was transported to a holding tank. Milk had many opportunities to contact barn air during this process resulting in high incidences of less than flavorful milk. Fortunately, milk is no longer harvested in this fashion and the incidence of fowl air/milk contact has been minimized.

However, like in the past, ventilation of the milking area can still influence milk quality today. Microorganisms that adversely affect udder health thrive in warm, moist environments where organic matter is prevalent. Poor udder health results in compromised milk quality.

In any production dairy facility, the dry-bulb temperature within the microclimate of the cow will be at best about the same as that of the ambient dry-bulb temperature. Since we can't economically control temperature beyond that point, we are limited to controlling moisture in order to minimize microorganism populations.

Proper ventilation consists of exchanging fresh outside air with mildly contaminated inside air. This air exchange will result in the removal of excess moisture from the milking area thus helping to minimize microbe concentrations.

Proper milking center ventilation is difficult to achieve without proper design and management. It doesn't happen haphazardly! Ideally, both cows and people are comfortable which can prove difficult due to the differences in their respective thermoneutral zones, with winter being the most challenging time. Surplus heat generated from milk harvesting and cooling equipment can be transferred to the operator's pit via air ducts to assist with ventilation and help enhance operator comfort.

Ventilation rates for milking areas depend on the number of cows being milked. Summer rates (75 degrees and above) are 1,000 cfm of fresh air per cow while winter rates drop to 100 cfm per cow. Transition periods require intermediary rates as appropriate to maintain desired air parameters. In mechanically ventilated facilities, fans can be staged or varied in speed to maintain air quality at the proper rate. Doors, panels, baffles, and curtains can be adjusted automatically or manually as needed to provide air exchange in naturally ventilated structures.

Providing appropriate ventilation rates helps to maintain cow health and comfort in stall barns where milking takes place. In addition to removing moisture, proper ventilation removes gaseous odors, pathogens, dust, and excess heat. All of these variables can adversely effect cow health and comfort either individually or cumulatively. Providing uniform air distribution is the key to successful ventilation in animal housing barns and can be difficult to achieve in retrofit situations. However given careful consideration, a suitable system can usually be worked out.

### **Target Ventilation Rates**

Ensure the following design ventilation rates for these different areas within your milking center:

Cow Decks:	1,000 cfm summer, 100 cfm winter
Mechanical Room:	equip. dependent, min. of 1 air exchange per minute in summer, less in winter
Milk Room:	800 cfm min.
Basement:	10 air exchanges per hr.
Bathroom:	100 cfm min.

### **Trouble Shooting Your Milking Center Proper Ventilation**

Evaluate your milking center for ventilation shortcomings. If you observe any of these situations in your milking center, than additional ventilation is needed.

- ✓ Moisture condensation on ceilings, walls, or windows.
- ✓ Moisture stains on ceilings, walls, or windows.
- ✓ Rusting of milking stalls or other ferric-based equipment.
- ✓ Detachment of ceramic tiles or glazed blocks from their substrate.
- ✓ De-lamination of fiberglass reinforced panels.
- ✓ Fog developing at or near the holding area/milking area interface.
- ✓ Wet floors or equipment 30 minutes or more after the conclusion of milking shift clean-up (for milking centers operating less than about 20 hrs./day).