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Stocking Density, Group Size and Cow Comfort Considerations

The following is taken from a lecture by Richard J Grant at the 2026 National Mastitis Council meeting.

Balancing cow well-being with economics is fundamental for sustainable dairy herd management. Focus has often been on cow comfort economics, but one cannot ignore cow welfare and the social license to produce milk. Is efficient, economical use of labor, feed, housing, and other resources at odds with a cow's ability to produce well, feel well and act naturally? Research and observation of well-managed dairy farms tell us that the choice between cow well-being and herd profitability does not need to be either/or. Easy access to comfortable stalls enhances both cow well-being and profitability.

Research has identified the factors most highly associated with both cow welfare and performance, adequate feed and water, clean and comfortable stalls, avoiding excessive competition for resources, ready access to exercise, and the human-cow relationship. Adequate time each day within the pen to rest, eat, and drink results in greater milk yield and less lameness. Approximately 70% of the cow's day is spent eating and resting, these two behavioral needs must be satisfied. Ensuring feed availability and minimizing overcrowding increases average milk production by approximately 4-8 lbs per day. Cows that are not rushed while eating, have the freedom to lie down and ruminate, and can strike the correct balance between eating and recumbent rumination, will have optimal rumen conditions for fiber digestion, microbial growth, and healthy production of more milk components within any social and physical environment.

Studies conducted in the past decades have demonstrated that overcrowding, especially beyond 120% of free stalls, hampers lying time, boosts lameness, reduces milk yield, encourages undesirable feeding behavior and elevates somatic cell counts. Time outside the pen interacts with stocking density.

The diversity of herd response to overcrowding seems puzzling. Some herds appear to be immune to the negative consequences of overcrowding. One possible explanation would be to consider overcrowding a subclinical stressor. The extent to which the biological reserves are expended by the subclinical stress of overcrowding in any specific herd is a function of the quality of the housing and management routines. How many stressors may be successfully managed on a specific dairy helps to explain the diversity of on-farm responses to overcrowding.

Managing overcrowded herds is associated with more injuries, more accidents, and high employee stress. We may be misled by observing the seeming ability of cows to adapt to high stocking densities. It is possible that the cows that are unable to adapt to overcrowding have left the herd.

The upper limit of group size is dictated mainly by parlor capacity, time spent in the holding pen, and length of time that cows have access to resources. From the cow's perspective, cows need to spend no more than 3.5 hours per day away from feed, water, and stalls or else they will inevitably lose resting and/or eating time. The Dairyland Initiative website recommends a maximum group size of 3.8 turns per hour.

When managing overcrowded pens, the following must be adhered to consistently. Management that enhances resting and recumbent rumination, time outside the pen less than 3.5 hours per day, bunk stocking density greater than or equal to 24 in./cow-stall stocking density less than or equal to 120%, feed available on demand 24/7 and bunk empty < 3 hours per day, consistent feed quality/quantity/delivery time at bunk, TMR fed 2 times per day with 3% feed refusal target, push-ups focused on 2 hours post-feeding, group parity, and deep bedding and stall comfort.

The Importance of Routinely Checking Pulsators in Milking Systems

Proactive Maintenance of Pulsators is Critical for Farm Profitability

By Dr. Mark Sosalla
of Waupun Veterinary Services

Efficient, cow-friendly milking depends on many components working together, but few are as critical as the pulsator. Often overlooked because of its small size and simple appearance, the pulsator plays a central role in maintaining udder health, milk quality, and milking system performance. Routine inspection and maintenance of pulsators are essential for preventing avoidable herd health issues and costly equipment failures.

A pulsator's job is to alternate vacuum and atmospheric pressure to the teat cup, creating the rhythm that allows milk to be extracted safely and comfortably. This pulsation cycle typically runs between 60–70 pulses per minute, with a precise ratio of milking phase to massage phase.

When pulsators operate correctly: Milk flows efficiently, teat ends receive adequate massage, liners open and close consistently, and cows remain comfortable and calm.

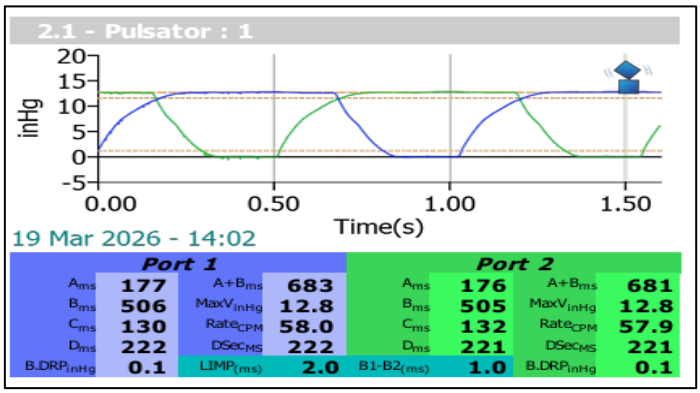
Over time, pulsators can drift out of adjustment or become partially obstructed with dirt, moisture, or oil. Even small changes can reduce milk flow, damage teat ends, cause cow discomfort, and lead to liner performance issues.

Routine inspection helps detect problems early. Daily observation, weekly airline and filter checks, scheduled pulsation testing, and annual component replacement all support optimal system function.

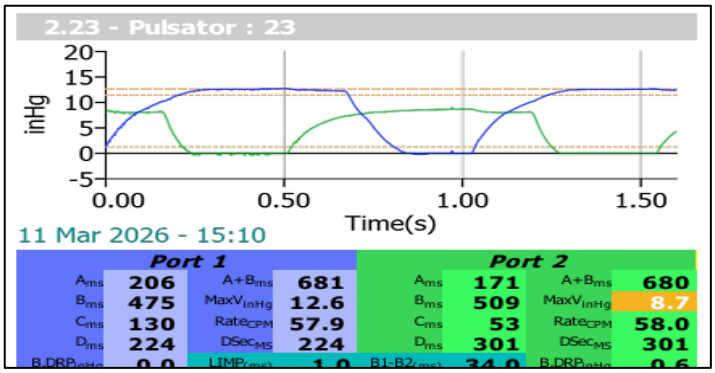
Proactive maintenance improves udder health, reduces SCC, shortens milking times, enhances cow comfort, and prevents costly equipment failures — supporting both animal welfare and farm profitability.

To properly check pulsators the teat cups should be plugged and graphed.

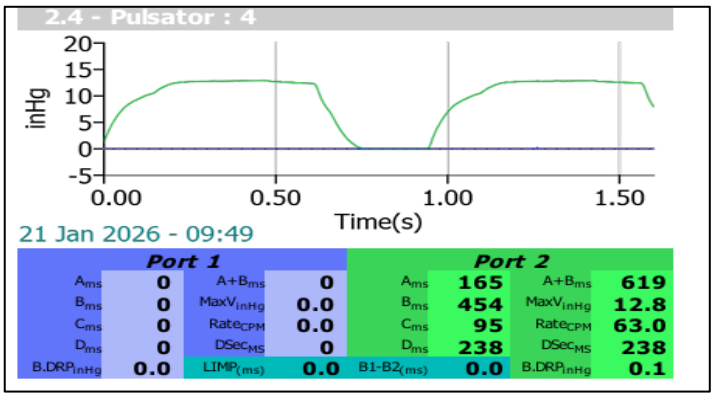
Pictured below is an example of a graph from a normal pulsator.



Graphing the pulsators helps to show the pulsators that are not functionally properly. The following examples are some abnormal graphs.



The graph above is showing the results from a cracked pulsation hose.



The graph above is of a pulsator with one side not working.