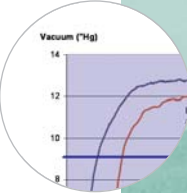


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# The Green Liner File

*Promoting healthy dairy products and practices.*

## Pulsation and Liners

by Chuck Laney, President

A dairyman recently told me that Lauren is not just selling an inflation, Lauren is selling a concept of how to milk cows. I couldn't agree more. To us the milking concept is about the total system and not the individual components. Pulsation is one factor that can make a tremendous impact on total system performance.

Most dairymen know about rate, ratio and individual phases. However, making sure that the pulsation is giving your system the best performance is a little more

complicated. It is very important to note that pulsation is the actual movement of the liner wall, not the movement of air, and that there is no magic setting for every farm.

How liners impact pulsation is simple. Higher touch point liners like the Lauren Tri-Circle liner will open sooner and close later giving more open time. Liner ratios for higher touch point liners can be closer to or even higher than pulsator ratio settings. As the open time of the liner increases, it is more important to have a good massage to maintain teat health.

The impact of hoses and fittings on pulsation should not be underesti-

mated. Having clean hoses of an adequate diameter are key to providing consistent pulsation. Adding tee's or other restrictions to pulsation lines can dramatically change air movement and adjust pulsation graphs. Pulsation should always be checked at the cow for the most accurate results.

In this issue we will address some of the more important aspects to the interaction of liners and pulsation.

Thank you,



# Pulsation Settings: Critical to Milking

by Rich LeViere

Correct and consistent pulsation is a must in getting today's high performance cows to milk out comfortably. Pulsator ratio through all its phases and rate are directly related to how a liner affects the teat of a cow. Adjusting pulsation for the best performance is critical to the success of your milking performance. Consistent pulsation from pulsator to pulsator is the first step.

## Inconsistent pulsation can come from several things:

1. Dirty pulsators
2. Pulsators with leaking gaskets
3. Faulty pulsation master controllers
4. Pulsators with weak solenoids
5. Pulsation vacuum lines with liquid or build up in them
6. Holes in short air tubes
7. Different size tees, shells or hoses

Having a good maintenance program, including regular checks by your dealer, will help ensure your pulsation is performing the way it should.

**What is the correct ratio for your dairy?** This is not a one answer question. Your goal should be to get the milk out of every cow as efficient and as comfortable as possible; which, can be 64/36, 65/35, 68/32, 70/30, etc. The important thing is finding out how your liner is reacting to your pulsation. Vacuum level does play a role in this equation as each liner does have a specific touch point. Setting up your pulsation to perform well is the key.

## The four phases of pulsation:

1. A phase = the opening phase of the liner, milking begins during this phase.
2. B phase = the open phase of the liner, the milking phase.
3. C phase = the closing phase of the

liner, milking ends during this phase.  
 4. D phase = the closed phase of the liner, no milk during this phase.

Fine tuning your phases and knowing when your liner is open and closed during the A and C phases are important. Looking at teats within 10 seconds from when the milking unit is removed tells you a lot. (see table below for teat conditions) These are a few more details that help high performance systems milk today's high performance cows.

TEAT	CONDITION
White/Pink	• Good
Red	• Too high vacuum
Blue	• Lack of Pulsation • Too low vacuum • Too long B, not enough D
Wedging	• Excessive vacuum Too long D
Congestion	• Too long B

## EFFECTS OF LINER TPPD ON MILK REST RATIO

by Aaron Kochman, R&D

One area of pulsation that is widely misunderstood is pulsation ratio. Pulsation is the cyclic opening and closing of the liner. Most dairy technicians use a TriScan, VPR, or other vacuum monitoring device to measure the pulsator ratio. They are simply measuring air flow without taking into consideration the liner. Another misconception is that the actual pulsator ratio is equal to the setting in the system. In order to evaluate and understand how a milking system

interacts with the teat, a better understanding of the actual liner movement (pulsation) is needed. One method suggests using the TPPD (Touch Point Pressure Difference) to calculate the **milk to rest ratio** to gain this understanding. TPPD is the pressure difference across the walls of the liner needed for the liner to close. For instance, a liner with a TPPD of 5 "Hg in a milking system set at 13 "Hg is closed when the pulsation vacuum is equal to 8 "Hg.

In order to demonstrate the concept discussed above, Lauren AgriSystems collected data on various liners in our lab. The test equipment consisted of a laser to monitor the position of the liner wall, a vacuum gauge to monitor pulsation chamber vacuum, and

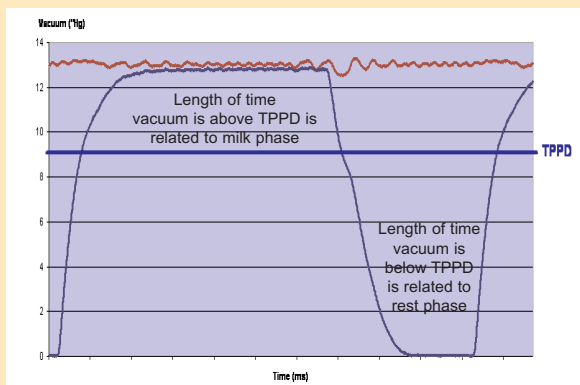


Figure 1: 3.5" Hg TPPD Liner

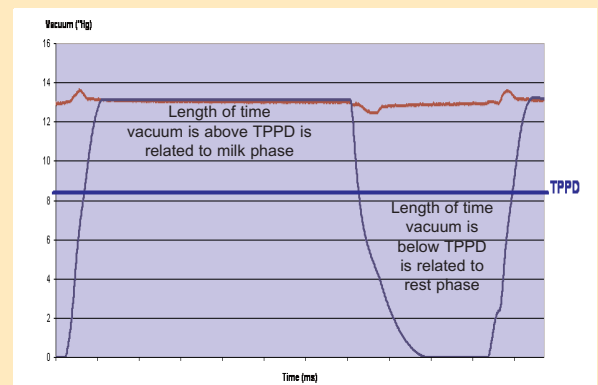


Figure 2: 5.3" Hg TPPD Liner

# Dairy Spotlight: Bergen Farms

Odessa, NY – 1700 Milk Cows,  
50 Stall Rotary

Bergen Farms is a third generation farm owned and operated by Skip, Mike and Jim Bergen. In 1990 Bergen Farm milked 100 cows, the farm has grown and today consists of 2200 mature cows and the farming of 4000 acres. Built in 2003, the 1700 cows are milked three times a day, in a 50 stall rotary parlor. The dairy has a 25,600 pound herd average and a 160,000 somatic cell count.

In February of 2006, Lauren Liners were added to improve liner slips and fall offs. Vacuum level, pulsator ratio, and end of milking threshold were all changed as the milking system was set-up. Immediately fewer cows were kicking and less squawking was noticed.



Pictured in photo: Bergen Farms Parlor (L) and owners Jim and Skip Bergen (R)

Today Bergen Farms is satisfied with the way the cows are being milked; 4.2 minutes per cow milk out time, 6.8 to 7.0 pounds per minute flow rates and good teat end health.

As they continue to expand their herd, Bergen Farms looks forward to working with Lauren AgriSystems and the field service that is provided!

Glenview Dairy was purchased in May of 2006 by Bergen Farms and immediately had the Lauren Liners installed in the older Double 14 Herringbone with no takeoffs.

## We want to feature your dairy!

We have seen many success stories throughout the dairy industry over the last year and are looking for more. If you have a success story about your dairy, let us share it! Contact us to see how we can shine the spotlight on your dairy.

**Call Toll Free - 800.683.0676**

a standard pulsator. Line vacuum (13 “Hg), pulsator rate (60 cpm), and ratio (65:35) were kept constant through the evaluation. Data was collected every millisecond for pulsation vacuum, liner wall position, and milk line vacuum. Four liners were chosen based on their TPPD (3.5, 5.3, 6.0, 10.0 “Hg). The following graphs show the data that was collected and depict how the relative milk to rest ratio is calculated for each of the liners.

The data collected clearly demonstrates that individual liners can have a significant impact on pulsation. It is evident that using a higher touch point liner will increase the milking phase using milk to rest ratio. While this data is true for a lab setting, it can be used to

better understand how a particular liner may work in a milking system. Milk hose diameter, claws, cow variability, and other settings and equipment can affect the way a liner reacts under certain circumstances. However, the relationships shown here should remain relatively the same and predictions on performance can be made.

TPPD (“Hg)	Pulsator Ratio	Milk to Rest Ratio
3.5	65:35	62:38
5.3	65:35	67:33
6	65:35	69:31
10	65:35	72:28

Figure 5

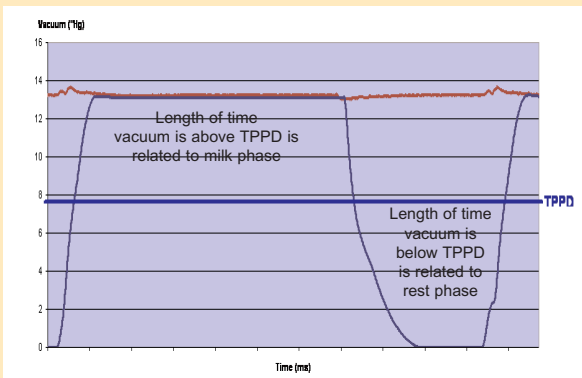


Figure 3: 6” Hg TPPD Liner

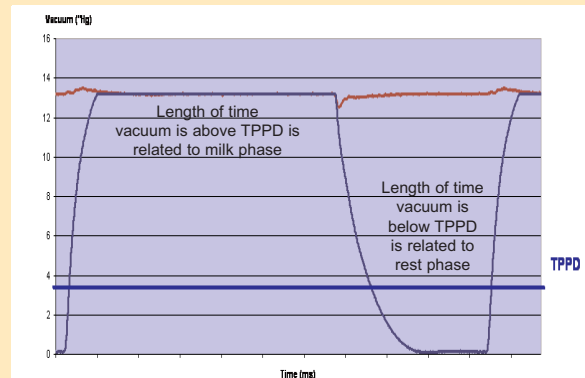


Figure 4: 10” Hg TPPD Liner

## Show updates and recent news

### NMC 46th Annual Meeting, Jan. 21-24, San Antonio, TX

This year our poster presentation was titled *Silicone Liner-Effects on Teat End Hyperkeratosis*. Our subject matter was right in line with what the Teat Health Committee was discussing. It was a great time for discussion with many of the dairy industry professionals. We look forward to next year's meeting and continued research within the industry.

### World Ag Expo Wrap-up Feb. 13-15, Tulare, CA

This year's show had over 100,000 attendees from 66 different countries and showcased over 1600 exhibitors. It was an exciting year for us at World Ag Expo as we moved into the Dairy Center and unveiled a new show booth. We also introduced the National Teat Health Database to enable dairymen to track and benchmark teat health. Results for database were great, as well as the new booth, they both helped to demonstrate our commitment to continued product and process inno-

vation in the dairy industry. We look forward to seeing everyone in Tulare again next year!

### New additions:

We would like to welcome three new dealers to the Lauren AgriSystems family:

#### **Conestoga Agri Systems Inc.**

– Alma Ontario, 519-638-3022

#### **Dairy Lane Systems**

– Komoka, Ontario, 519-666-1404

#### **Tarryk Dairy Systems**

– Dayville, CT, 860-774-1933

We look forward to continue success with the help of our new dealers!

### Dealer Updates:

Thanks to our dealers who have been busy promoting the Lauren Liners:

**Stearn's Veterinary Outlet Store** of Melrose, MN attended two shows recently: Central Minnesota Farm Show, St. Cloud, MN, and Central Plains Dairy Expo, Sioux Falls, SD

**Dairy Lane Systems** of Komoka, Ontario, attended the Western Fair Farm Show, London, Ontario.

**Lancaster Dairy/Tri-State Farm Automation** recently continued their ProfitMax Seminars in six locations throughout Pennsylvania. The seminars focused on milking system performances.



## June Issue:

### Application of Vacuum

Vacuum level is a hot topic these days. In our next issue, we will address the theory of vacuum application and how the Lauren Tri-Circle liner increases the dairymen's options.

