

CoPulsation Milking System Reduces Cow-to-Cow

by Paris Reidhead

LR Gehm LLC markets a patented milking system designed to reduce intra-mammary infections (mastitis) in dairy cows, while providing a “unique humane milking action not duplicated by any other product.” It is called the CoPulsation Milking System (LR Gehm LLC’s trademark). This system may very well be the man-made device which comes closest to duplicating the natural nursing action of a calf on its own mother.

A Cornell University study has reported that the CoPulsation Milking System (LR Gehm LLC’s trademark) essentially eliminates new contagious *Staphylococcus aureus* mastitis infections when compared to a conventional milking system (single-pulsation electric pulsators from Babson Bros-Surge,

Naperville, IL). Reduced *S. aureus* infections of nearly 94% (comparing CoPulsation benefits to conventional milking) were “statistically significant.”

LR Gehm LLC has recently brought legal action against Cornell University. The complaint, filed February 23, 2009, alleges that Cornell continues to propagate false information based on a published university study that contained fraudulent information. The complaint further alleges that Cornell’s actions are harmful to LR Gehm LLC, dairy farmers, and dairy product consumers.

This study was titled “Evaluation of an Experimental Milking Pulsation System for Effects on Milking and Udder Health.” The author is D.J. Wilson *et al.*, Quality Milk Promotion Services, College of Veterinary Medicine, Cornell University, Ithaca,

NY. The study was published March 26, 2000 in Vol. 83, *Journal of Dairy Science*: 2004-2007. Despite the documented udder health benefit attributed to CoPulsation in the body of the research paper, the abstract and the discussion differed, with both stating, “differences in pulsation characteristics apparently have little effect on milking and udder health.”

I met with Lanny and Bill Gehm on March 25 at their Lisle, New York, business location. There I found that the research paper, which basically ignored its own findings, proved detrimental to the Gehms’ business. The paper had a little more tainted background than was evident at first glance.

Research: Default by Design

Back during the 1990s, Cornell showed, on behalf of utilities, that the stray voltage threshold for causing cow health issues was 5-6 volts. This finding was in contrast to other research that showed that shocks in the 1-2 volt range negatively impacted dairy cow health and performance. Utilities had been forking over lots of money from losing stray voltage injury lawsuits levied by farmers. Utilities provided the bulk of the funding to help determine the “truth” (according to Cornell) about dairy cattle sensitivity to stray voltage. The way Cornell handled the stray voltage issue turned out to be similar to how manipulated research data would later bash the CoPulsation Milking System.

Michael Behr, PhD, is a forensic economist whose primary job is assessing financial loss suffered by accident victims. Behr found out about Cornell’s fraudulent research against CoPulsation Milking System (CMS). Behr reviewed published data, but not raw data, which was unavailable. He tried to get the raw data released under an open records request, but N.Y.S. Ag and Markets wouldn’t give up the information; Ag and Markets claimed not to have the data, and would **not** try to get it from Cornell.

When the Gehms contacted Cornell directly, the university would not release the raw data, which had been generated through collaboration with the Quality Milk Promotion Service (QMPS). QMPS claimed to be a private part of Cornell, and, therefore, not subject to open records laws. But millions of dollars of QMPS’ budget come from Ag and Markets. This fact definitely makes QMPS taxpayer-funded. QMPS was started under Governor Tom Dewey in 1948 (originally called NYS Mastitis Lab). QMPS is partially funded by private farmers, and provides milk quality monitoring services to both New Yorkers as well as to people living outside the state.

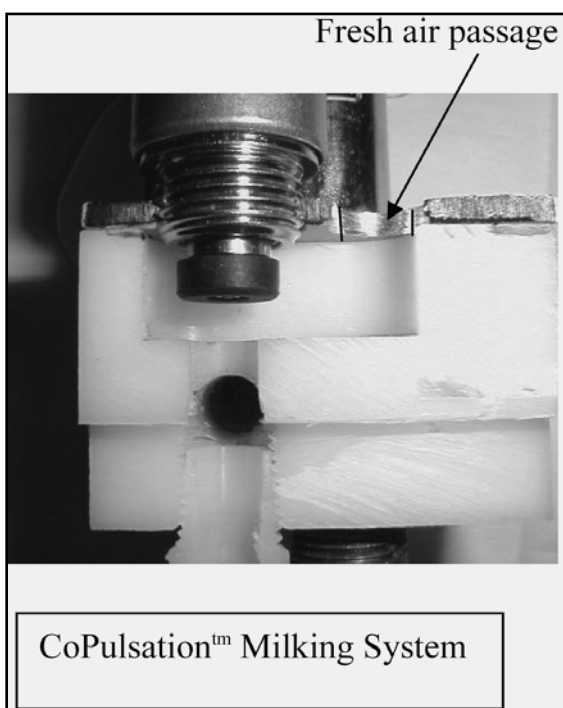
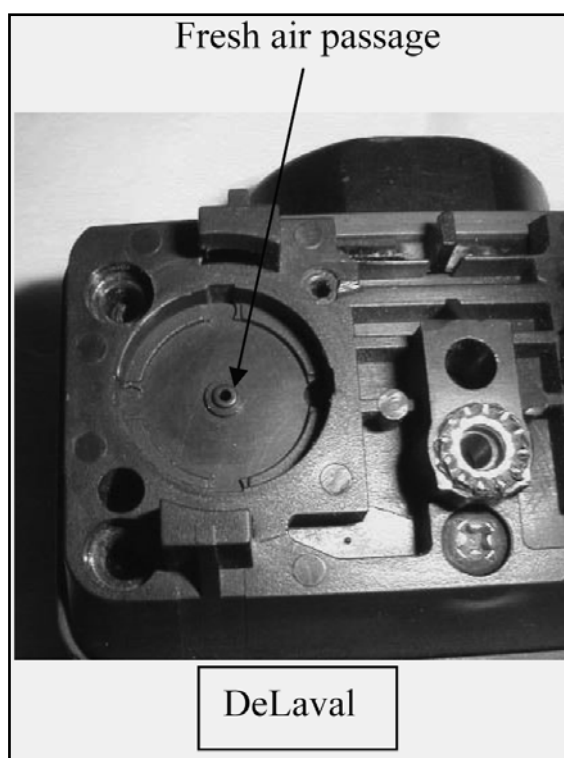
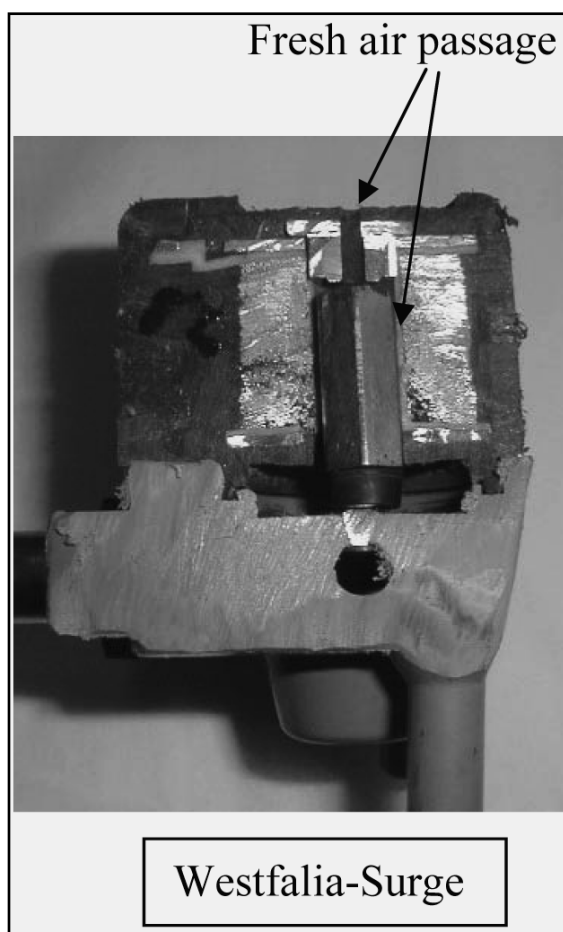
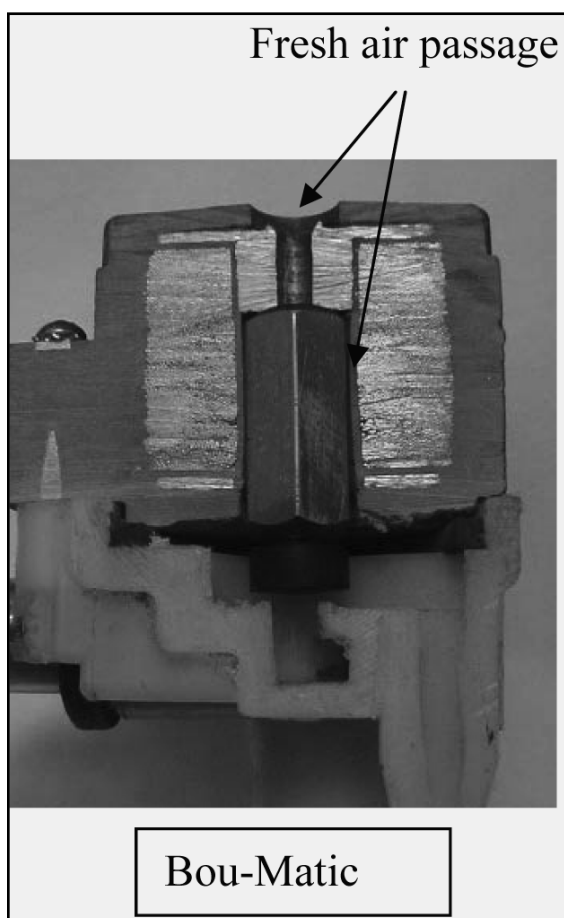
According to Lanny Gehm, the CMS equipment used in the Cornell study was old, jerry-rigged to make it work. When asked by Bill Gehm exactly what modifications were made, David Wilson, DVM, working with QMPS (and lead writer of the above research paper), simply told him, “Ingenious modifications were made.” Bill then asked: “What were they?” Wilson said, “I won’t tell you.” Bill then asked for raw data on Cornell’s CMS evaluation, and Wilson refused.

The *Journal of Dairy Science* article dealing with CMS has an abstract and discussion which do not properly align with the body of the text. Cornell stressed that CMS failed to cure *Staphylococcus aureus*, but omitted the fact that CMS prevents new cases of *Staphylococcus aureus*. No other research on CMS has been done at any American university, but there has been extensive field experience on individual dairy farms.

Enter Irish Research

Sometimes it’s necessary to leave the country to find the truth. There have been numerous published studies documenting the effect of milking action on the cow’s teat. A study published in the Irish Veterinary Journal documents such injury occurring when cows are milked with typical modern milking machines. (Refer to “Machine Milking,” *Irish Veterinary Journal*, Volume 56, January 2003.)

Pulsator Design Comparisons Fresh air supply features



The fresh air path for a conventional pulsator is extremely restrictive and small. The Bou-Matic and Westfalia-Surge pulsators have a small-diameter opening at the top of the coil for the fresh air entrance. The fresh air must then squeeze around the plunger to get to the base of the pulsator. The DeLaval pulsator has an intricate series of passages and very small diameter holes, one of which is shown above. The CoPulsation™ Milking System pulsator has a very large-diameter fresh air hole entrance with no restrictions for the flow to get out of the pulsator. The conventional designs are so restrictive that the fresh air supply to the shell is grossly inadequate and results in an incomplete liner rest action that simply pinches the teat. The CoPulsation’s Milking System pulsator provides proper fresh air flow to enable the liner to fully massage the teat and provide a true resting of the teat canal by fully removing the sucking action during the rest phase.

Information supplied by CoPulsation™ Milking System

Transfer of *Staph. aureus* Infections

Continued from page 10

This study evaluates the changes in the teat structure after being milked with conventional wide- and narrow-bore liners, and the associated typical U.S.-style conventional pulsation, as well as the Irish Dairy-Master pulsation.

Cows milked with conventional systems (both U.S. and Irish) experienced teat swelling. Cows milked with the CoPulsation Milking System consistently experienced a reduction in teat size, because there is no swelling, and therefore the teat and teat canal are not stressed or damaged by the milking process. (Refer to "Effect of liner design, pulsator setting, and vacuum level on bovine teat tissue changes," *Irish Veterinary Journal*, Volume 57, May 2004.)

Stress reduced by higher vacuum ratio

CMS is about liner action ... the liner is soft, and massages the teat. With CMS, teats are smaller after milking; with other systems (Surge, etc.), teats remain somewhat swollen. With CMS, units do not fall off; there is enough vacuum during the rest phase to keep the inflations in place. The Irish research cited above refers to teat sinus injury, which is less with CMS. With CMS, the inside of the teat canal does not swell. The standard ratio of vacuum to rest with a CMS milking system is 60:40. (Many of the conventional systems, according to the research paper, use a 55:45 ratio.) CMS still employs that 60:40 ratio, but the rest phase is, basically, more restful. Bill likened it to numbers in a blood pressure reading.

Milking machine vacuum is, granted, negative pressure... while blood pressure readings are positive pressures. With milking machines, the likelihood of teat sinus injury increases with inadequate rest during the rest phase of the vacuum cycle.

Published data involving (university) herds show that their animals do not experience the success rate, in terms of freedom from mastitis, which the colleges recommend and have determined to be attainable. CMS opens the teat 40% less and milks 20% faster. The vent hole on the CMS claw is .062" vs. .040" on a conventional claw; the greater diameter opening enhances air volume movement. Air intake is significantly less restricted with the CMS claw than with conventional pulsators. The larger diameter opening permits the flow of approximately 140% more air!

How CoPulsation' Milking Works

Let me briefly discuss the unique features of the Copulsation Milking System. (Refer to www.CoPulsation.com.) The basis of the CoPulsation™ Milking System performance is the unique pulsation design. This pulsator has two independent solenoids for controlling fresh air and vacuum supply to the shell. The one solenoid controls the fresh air admittance and the other the vacuum. The one solenoid must be closed prior to the other being opened. This design prevents the mixing of fresh air and vacuum such as occurs with conventional pulsation. The design also enables the fresh air port to be substantially larger than other pulsators' air ports. This allows the fresh air to enter the pulsator without squeezing around the solenoid plunger. The net result is to move air and vacuum in and out of the shell two to three times faster than conventional pulsators.

The rapid movement of fresh air into the shell during the rest phase causes the liner to collapse differently than with conventional systems. The liner collapses in a manner that results in a compressive massaging action on the full length of the teat; it also relieves the teat canal from the milking vacuum. A conventional pulsator is only capable of causing the liner to pinch the end of the teat and fails to relieve the milking vacuum.

CMS is farmer friendly – very little outside maintenance is required. Competing equipment companies (Surge, DeLaval, etc.) have told their dealers, "If you take on CMS, we'll shut you down." Thus it is fairly evident that existing milking equipment companies are very concerned about the real possibility of their products being upstaged by CoPulsation. CMS



Missouri Dairy Couple Embraces CoPulsation

Cory and Beth Stacey of Ash Grove, MO milk 150 cows, two-thirds of them Jerseys, the rest Jersey/Holstein cross-breeds. Until February 2008 they were plagued with high somatic cell counts (SCC), most due to *Staphylococcus aureus* bacteria. During the summer of 2007 their veterinarian made a custom vaccine in an attempt to immunize against the *S. aureus*. This effort proved unsuccessful. During February of last year, on a long-shot bet, and out of frustration, he "Googled" (i.e., ran an Internet search on their computer), using the term "staph mastitis." One or two "links" later, Cory stumbled into the CoPulsation Web site, and began studying what LR Gehm LLC had to offer.

On March 1, 2008 the Staceys installed the CoPulsation Milking System. Although cows immediately seemed more comfortable being milked, it took about six weeks before SCC actually dropped from 500,000 to 250,000. Cows that were infected with *S. aureus* never entirely get over it and continue to drag the herd SCC higher than it should be. But, Cory is adamant: no new *S. aureus* cases have appeared since March 1, 2008. He admits that problem cows will have to be weeded out. But up till this change-over in milking systems, they were running cull rates around 40%, and buying expensive replacements. With that level of turn-over, Cory says, "we were headed for train wreck." As they weed out the last of the *Staph. aureus* cows, SCC continues to drop, and both cows and people enjoy the milking operation now. Cory says that before CoPulsation they always worried, as cows walked into the barn, that "we'd spot another animal with a blown-up quarter." Those worries are gone.

has evolved from over 25 years of experimentation. The Gehms sold their dairy herd in 1993, and have since then devoted their energies to the research, development, and marketing of CoPulsation.

The Bigger Picture: *S.A.* to MRSA

Let me close by spotlighting a health issue which encompasses livestock and humans:

At the time the Cornell study was published (March 2000), *Staphylococcus aureus* was already a very difficult microbial nemesis plaguing dairy farmers attempting to fight mastitis. Dummying down research which proved that there exists a management tool which virtually eliminates new cases of *S. aureus* was intolerable.

In the U.S. more antibiotics are used on livestock than on people. Over-reliance on antibiotics in livestock, dairy cattle included, has forced pathogens (like *S. aureus*) to genetically mutate so as to develop resistance to antibiotics, such as methicillin. These organisms survive in liquid manure systems which are increasingly common in feedlot situations, where hogs, beef cattle, and dairy cattle are managed; antibiotics in liquid manure degrade only minimally. *S. aureus* is not very heat sensitive, and therefore the endotoxins, produced by *S. aureus*, are not all destroyed by the high-temperature short-time pasteurization process. So if a cow is infected with *S. aureus*, some of this pathogen will make it into her milk.

In more recent years, a mutated form of *S. aureus* has become a human medicine concern, commonly called MRSA (methicillin-resistant *S. aureus*). It is now known that this pathogen can move between humans and cows, with both species now serving as hosts. The immunity of *S. aureus* to antibiotics has proven fatal to thousands of sick people. The federal Centers for Disease Control documents that over 18,000 Americans died from *S. aureus* infections during 2005. Because of the new

human health threats, continuing to suppress research documenting the anti-staph trait of a milking system is not just intolerable and unethical ... it's unconscionable.

NFDM Lawsuit Amended: All FMMO Producers Now In

The March 2009 issue of *The Milkweed* featured an article on the legal complaint filed regarding the misreporting of price data to National Agricultural Statistics Service (NASS) by DairyAmerica.

Two years earlier, in the March 2007 issue, *The Milkweed* revealed the details, which were later confirmed by USDA, of illegal low-ball pricing of nonfat dry milk used in the NASS survey. DairyAmerica had illegally included low, long-term prices, costing farmers millions upon millions of dollars.

The lawsuit, filed in U.S. district court, Fresno California by the Washington, DC-based law firm Cohen, Milstein, Sellers and Toll Pllc, is a class action case covering dairy farmers in 25 states. The original legal complaint stated:

"This class action is brought on behalf of dairy farmers located in Wisconsin, Pennsylvania, New Mexico, Minnesota, Texas, Michigan, Washington, Ohio, Iowa, Arizona, Vermont, Colorado, Kansas, Florida, Illinois, Missouri, Georgia, Kentucky, South Dakota, Tennessee, Nebraska, North Carolina, Oklahoma, Maine and California who sold raw milk that was priced according to a Federal Milk Marketing Order ("FMMO") during the period January 1, 2002 through April 30, 2007."

Since the original filing the complaint has been amended and now will cover all dairy farmers in all states which operate under the federal milk market orders. Additionally, three more, virtually identical, lawsuits have also been filed in Fresno District Court.