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## Greeley Company's Dairy Device Attracts Worldwide Interest

By Bill Jackson

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Holstein cows at the Shelton Dairy southeast of La Salle walk through a DVM Systems scanner on their way to the feed bunk. The scanner records the temperature of a cow each time it walks through one of the eight scanners on the farm.

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Rob Stanley of DVM Systems LLC of Greeley shows a bolus given to a dairy cow.

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Bud Stanley has been involved in the communications industry locally for more than 50 years.

But while most of his counterparts have long since retired, Stanley has started a new business that has grown to be internationally known in just a year and is exporting product, from its southwest Greeley headquarters, worldwide.

DVM Systems LLC helps dairy farmers – from the United States to Australia and New Zealand, and from the United Kingdom to Saudi Arabia and Russia – keep better health records on their animals, which in turn results in more milk production needed to supply a growing world population.

In addition, the company, in just the past few months, has become involved with research projects with Colorado State University, the University of Northern Colorado, the University of Pennsylvania and the Nova Scotia Agriculture College. Another research project is being developed with the University of Kentucky at its dairy farm, and in the past month, a doctoral student in statistics at UNC has joined in the research efforts.

And the work it is doing with dairy cows may well have applications for humans, said Dr. Wade Webster, a Greeley native who, in addition to being involved with DVM Systems, has practiced emergency medicine in Seattle for 17 years.

DVM Systems utilizes a wireless, battery-free temperature-sensing bolus – a capsule about 4 inches long – that is given to a cow much like she would take a pill. But the bolus settles into the cow's second stomach – they have four – and because of its weight, that is where it stays. Before she is milked or goes to the feed bunk, she walks through a panel system, which reads the data collected by the bolus. DVM developed all of the software, both for use by dairy producers and for researchers.

Stanley, now the chief financial officer of DVM, said the interest his company has received in the past year “amazes me as much as the exports we are involved in.”

His son, Rob, who has 30 years experience in telecommunications, is the chief operating officer and, as such, is deeply involved in developing new customers and exports. As interest in the company grew rapidly, Kevin Wild of Denver was brought on as DVM's CEO. He has had director and vice president positions with Mountain Bell, US West and Qwest Communications. Webster serves as DVM's chief science officer.

The technology, Stanley said, was invented by engineers with the Goodyear Tire and Rubber Co., who developed a device that is put in tires to warn of hot temperatures, air pressure and the such.

“It was designed specifically for airplane and heavy construction tires, that can cost upwards of \$40,000. But they are now used in car tires, as well,” Stanley said. Goodyear, he said, then told the engineers they could come up with other uses as long as they didn’t involve tires.

They came up with a radio frequency identification device, which is the heart of the bolus used by DVM, which bought the rights to the technology.

Wild said the temperature of a dairy cow is critical because a rise in body temperature is an early indication of disease problems, ranging from mastitis to pneumonia. Mastitis is particularly dangerous in that it involves the inflammation of a cow’s udder, which results in an immediate reduction of milk production and, if not treated, can be fatal.

DVM has started a temperature baseline on the 2,400 head Shelton Dairy southeast of La Salle that has already collected more than 650,000 temperature readings, which Wild and the Stanleys said represent the largest repository of such data in the world. It is stored at DVM’s data center with backup storage at CSU.

Dave Smith is the operations manager of Shelton Dairy and said the equipment was installed about a year ago and has already proven to be very effective.

“It allows us to be proactive,” Smith said. While not privy to the research being conducted, Smith said the system has already indicated early problems with some of their cows, indicating the early onset of pneumonia, for example.

“It’s just like you being diagnosed with cancer six months early. I hate to use the C word, but it’s the same result,” Smith said. “The quicker you can diagnose something, the quicker you can treat it. It improves the recovery rate and limits the loss of production.”

The data is being used for research by three animal scientists at CSU and by Julie Small, a veterinarian at the Agriculture College of Nova Scotia, who is using it to improve breeding in dairy cows.

Bill Wailes, head of the animal science department at CSU and a former extension dairy specialist, said Small spent a few days at CSU last summer conferring with the CSU specialists.

“This tool allows us to look at different issues relating to a cow’s daily activities,” Wailes said. “The key is to help people with the dynamics of various aspects of a dairy cow and how to respond quickly to any health problem that might arise.”

Mastitis and respiratory problems are main health problems dairy producers face, he said, and reacting to them more quickly results in a healthier cow.

“The animal’s temperature is an early indication of problems, so that’s vital,” Wailes said. At the same time, it is also an indicator when a cow may be ready for breeding. That’s the focus of Small’s research, he added, with a goal of improving pregnancy rates, which would result in reduced costs for dairy operators.

Webster grew up in Greeley before going to the same military school his father, Bill, attended. That was when he was 15. From there, he obtained his medical training in upstate New York followed by internships and residencies in Colorado and Virginia. He has been an emergency physician at Evergreen Hospital Medical Center in Seattle for the past 17 years.

Webster worked with the engineers who developed the technology for use in cows to take it to the next level – for use in human health.

That, he said in a telephone interview, involves a small patch worn by chronically ill patients – particularly those in long-term care facilities – which allows the monitoring of temperature on a 24/7 basis.

“It’s my feeling that we are redefining fever,” Webster said. “Fever is unique to all mammals, whether that be dairy cows or humans. Everyone has their own baseline temperature, so to say this person or that person has a fever may not necessarily be correct.”

So it is important, he said, to determine a baseline temperature, particularly for those with chronic diseases.

Once established, any spike in that baseline is an indication of an impending infection or other problems. And just like dairy cows, early detection can lead to quicker treatment, which in turn cuts down the cost of medication that patient may require and hopefully, Webster said, healthier and longer lives.

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