



MARK VELASQUEZ PHOTO

Mason Medizade holds the marginal expense oil well wireless monitoring system. Developed by San Luis Obispo-based Petrolects, the system remotely monitors oil pumps and can help independent producers maximize petroleum production.

Petrolects detects oil flows

SLO firm helps producers maximize output

BY BILL LASCHER
Staff Writer

If a well pumps in the Tri-Counties, does anybody hear it—or better yet—feel it?

Mason Medizade is trying to answer that question with a new technology that senses vibrations in oil pumping units to determine if anything is out of the ordinary. The technology, devel-

oped as part of a U.S. Department of Energy grant in collaboration with Bakersfield-based Vaquero Energy, could help independent oil producers squeeze the last drops of profit from the ground.

In today's tightening oil market, underperforming wells are sometimes abandoned to prevent operating at a loss. Medizade's company, San Luis Obispo-based Petrolects, offers a system that the Department of Energy said

could cause a 3 to 10 percent jump in oil output, a 10 percent drop in electricity costs for well operators and a 10 percent gain in pump system life.

Privately held Petrolects was established in 1993 as a petroleum engineering consulting firm. Now Medizade, who teaches petroleum and mechanical engineering at California Polytechnic State University, San Luis Obispo, is

See **PETROLECTS** on page 21

PETROLECTS

Continued from page 3

looking for venture capitalists and other investors who believe there is money to be made investing in a system like Petrolects' marginal expense oil well wireless monitoring system, or MEOWWS.

Within days of Feb. 6, Medizade said, three pilot partnerships between Petrolects and wireless technology providers were scheduled to begin.

The system consists of wireless sensors placed on the flow line check valves of sucker rod pumps, the insect-like machines seen pecking at the earth in oil fields throughout the Tri-Counties and beyond. The small devices detect variations in vibrations on the check valves to determine oil-flow conditions at the well and relay the data to a central operator.

Petrolects began its work on MEOWWS with Vaquero and the Department of Energy in 1999. The system is intended to insure that wells—particularly independently operated ones—are not abandoned before they are fully tapped, and to make sure they are working at their utmost efficiency.

According to Medizade, the average

flow rate of oil from the Middle East is about five to 6,000 barrels per day.

"In the U.S., unfortunately, that's not the case and we need to put out a lot of wells," he said.

Nationwide, there are upwards of 600,000 wells overall. Many of these wells are referred to as "stripper" wells, or wells that only produce 10 to 15 barrels of oil a day.

Bob Poole, coastal coordinator for the Western States Petroleum Association, said these stripper wells typically produce up to 300 barrels of oil each month.

"About one-seventh of California's oil production comes from over 26,000 wells that are stripper wells," Poole said. "Primarily, it's just all they can produce given whatever technology they have available; they used to pump more; or given how much oil is left in them."

A Jan. 2005 article issued by the Department of Energy after the MEOWWS test was completed said that more than 75 percent of all oil wells in the United States are stripper wells. Combined, these wells produce almost one million barrels of oil each day, it said. It also reported that between 1993 and 2000, nearly 150,000 such wells were abandoned at a cost of \$3.5 billion and 150 million barrels of untapped oil.

Medizade said that despite there being so many stripper wells, there is no low-cost method to monitor their production.

"If we could come up with a low-cost method that a lot of people, not just the big operators, could use, there will be a lot of savings; a lot of savings on electricity; a lot of savings on pump life," he said. "What I see as noble in it is it is going to be a solution for a lot of these wells which are ignored. Operators are not going to abandon these wells and maybe the U.S. is going to gain another 5 to 6 percent [of oil production]. It's a technology that could make a difference for thousands of wells."

Production could be increased so much, Medizade said, because the sensors would detect downtime at the wells. Under the current paradigm, if an independent operator wants to check on production at a well, he or she must drive out to a well and find out if it is actually pumping oil or just going up and down. Not only does that take time, but it is expensive and could produce safety concerns.

Some larger producers already use some sort of wireless monitoring system, but these are often quite expensive. Poole said that in Kern County, Chevron is exclusively using a remote switching system to monitor production, but he wasn't

aware of such a system being used by independent producers.

The Department of Energy report said that these commercially available systems were expensive and involved high tech equipment that only higher volume operations had access to.

"The challenge in this project was to develop 'off the shelf' wireless surveillance devices and sensor technology," the report said.

Medizade said that he was unwilling to be specific about the cost of the sensors because of non-disclosure agreements for the upcoming pilot projects. However, he said Petrolects was aiming for costs between \$700 and \$750 dollars per unit.

"We're trying not to go beyond \$1,000 in our business model and everything looks very good right now," he said.

Medizade said that Petrolects had found major companies interested in providing wireless solutions for the MEOWWS system. Units are already being manufactured for the next pilot projects, he said.

"I don't want to bring something to the industry in 10 years, I want to bring it now," Medizade said. "This technology is needed. Actually, it's needed yesterday. Mom and pop oil operators don't have a lot of help in terms of technology."