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Eagles helped open oil and gas market to PixController technology

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Bob Donaldson/Post-Gazette

Bill Powers is president and CEO of PixController, the company behind the live streaming images of the bald eagle nest in Pittsburgh's Hays neighborhood.

By John Hayes / Pittsburgh Post-Gazette

The Environmental Protection Agency is expected this summer to require oil and gas companies to limit methane gas emissions to between 40 and 45 percent of the level of 2012 releases by 2025.

And in a curious twist of technology applications, live video images of bald eagles have helped a small Westmoreland County company win a \$50,000 grant to develop a real-time remote wireless sensor monitoring system that would enable oil and gas companies to comply with the EPA order.

The bald eagle wildlife camera, located on a bluff overlooking the Monongahela River in the Pittsburgh community of Hays, is part of a public-private partnership that links a state agency, a private company and a nonprofit conservation organization. It has generated more than 5.5 million page views.

"The eagle webcam project and media attention it brought to our company has allowed us to test our technology in an environment where we had no access to fix anything if something went wrong," said Bill Powers, president and CEO of Murrysville-based PixController.

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“With the added pressure of millions of people watching, there was a huge amount of pressure on us to not fail.”

For PixController, environmental change and technological development intersected in unexpected ways.

For more than a century, the Monongahela River ran orange with industrial waste. Now, 43 years after the expansion of the federal Clean Water Act, the river is biologically diverse and filled with fish. In 2013, a pair of bald eagles nested nearby — the first eagles to nest within Pittsburgh city limits in 150 years.

Last year, the state Game Commission entered into the public-private partnership with PixController, accepting Mr. Powers’ donation and maintenance of a \$5,000 remote control camera system.

“Bald eagles are doing well in Pennsylvania and were removed from the state’s endangered and threatened species lists. But they’re still protected by the federal government,” said Game Commission spokesman Tom Fazi. “We don’t let anyone get too close to the nest.

“PixController’s equipment allows them to control the camera and its power source remotely so it doesn’t bother the birds. Last year was a pilot program to see if it worked.”

By any standard, the test was a success.

The eagles accepted the camera and fledged three eaglets. The live feed at www.PixController.com and embedded at the websites of environmental groups and media, including the Post-Gazette, generated millions of page views. People worldwide watched the hatching of eggs, a late-night raccoon attack, daily feedings and the chicks’ first flights. The website generated a buzz in schools and business offices throughout Pittsburgh.

All the while, PixController was testing its innovative remote monitoring technology with designs on other applications.

Parts of the system, said Mr. Powers, including a cellular gateway provided by Verizon and a video server run by South African company WildEarth, are prone to technical difficulties that would ordinarily require a physical presence on-site to reboot them.

“The Pennsylvania Game Commission would not permit that to happen. This is where our technology came into play,” said Mr. Powers.

“[Our developments] allowed us to remotely reboot the system. Furthermore, our hardware allowed us to monitor the battery level and power down these servers at night to conserve battery power until we had longer days to supply enough solar power to charge the batteries.”

PixController is no stranger to making wildlife cameras, often used by hunters to scout an area before the hunt. In 2001, Mr. Powers entered the market with a high-end innovation that helped drive the “deer cam” industry from 35mm photography to motion-activated digital cameras.

Marketed under the brand Penn’s Woods Products, the cameras were designed and manufactured in Murrysville and priced at \$600 — expensive at the time. Some 3,000 units sold in the first year, and PixController was incorporated in 2004.

“At the same time we started developing webcam technology, we got into covert systems, making custom streaming video cameras for law enforcement and the military,” said Mr. Powers.

“The main innovation was a hardware platform that was battery-efficient — you wouldn’t have to go

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out and change the battery — and modular construction — you can add in a camera, modems and sensors to trigger it. They get real-time video without having to revisit it for long periods of time.”

Domestic law enforcement agencies, including the federal Bureau of Alcohol, Tobacco, Firearms and Explosives, have discreetly used PixController battery, video camera and live-feed systems to monitor marijuana fields and meth labs without the need to revisit them for long periods. Military and police clients from the United States, the Thai army and Royal Canadian Mounted Police have used them for border control.

Mr. Powers said that following PixController’s \$5,000 donation of equipment and maintenance of the Pittsburgh eagle cam, and the worldwide viewership and media coverage it attracted, sales of his security cameras rose by about 20 percent.

Wildlife agencies, conservation organizations and media including the World Wildlife Federation, Discovery Channel and National Geographic have used PixController technology to find rare elusive animals. Successes include the first videos of a Sumatran tiger and cubs, Burmese tiger and baby Sumatran rhinoceros.

In February, thousands of eagle watchers linked to PixController technology as the Hays eagles laid two eggs. In March, one egg cracked and was no longer viable. Viewers observed a dark side of nature when the male scooted the mangled, lifeless egg out of the soft nest lining on March 14. The remaining egg also failed to hatch and also was deemed no longer viable at the end of the month.

In the eagle camera’s second year, the Game Commission has mandated the addition of a new educational program managed by the Western Pennsylvania Audubon Society, intended to bring PixController’s images and a work study program into K-12 classrooms.

The \$50,000 grant won by PixController is part of \$750,000 in seed money allotted for shale gas-related innovations and technologies awarded by the state Department of Community and Economic Development through the Penn State-associated Ben Franklin Shale Gas Innovation and Commercialization Center.

Mr. Powers said the grant is important to a small company with five employees and \$600,000 in annual sales. With adaptations, PixController technologies could enable shale gas providers to efficiently comply with pending EPA methane regulations.

The agency lists carbon dioxide as the most abundant of human-produced greenhouse gases, accounting for 82 percent in 2012. But as the natural gas industry grows, methane, which can escape incidentally during oil and gas extraction, is a growing concern for the EPA.

“Methane is a serious greenhouse gas 20 times more potent than carbon dioxide,” said Mr. Powers. “Under the new rules and with current technology, [gas and oil companies] would have to go out to every wellhead and pump station and manually check methane sensors.”

Among products manufactured by CSE Corp. of Monroeville are methane sensors built for the underground mining industry. Adapting the CSE sensors to link to solar-powered PixController systems, cellular data transfer could greatly improve cost effectiveness as shale gas companies try to comply with the pending regulations.

“We’re developing a methane sensor and cover that PixController would be able to plug in to their control device,” said CSE president Steve Swanson. “The cellular system, powered by the solar battery, would report sensor data from every wellhead and pump station. The camera could be turned on if an alarm sounds to see what’s going on.”

Mr. Swanson said the collaboration of the local companies could be beneficial to both.

“God knows how many well sites are out there. And it’s applicable to existing wells, not just new

wells,” he said. “There may also be a market for property owners around well sites who are interested in monitoring for methane in basements and water wells.”

CSE has built prototype sensors that link to PixController systems. No sales have been made to date, but Mr. Powers said a pilot program with Chesapeake Energy is expected to be launched this year.

“It’s a niche market. We’re a small, unique company that still develops its core technologies in the U.S. and hires American people,” he said. “That’s really important for government sales — they don’t purchase overseas products of this kind. For us, it’s a pride thing to have that American stamp on your product. That goes a long way, especially today.”

John Hayes: 412-263-1991, jhayes@post-gazette.com.

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