

Dustin Sharber

Flying High: How One Man's Love Of Drones Helped GE Build A Better Inspecting Tool

By Bruce Watson

Research engineer Dustin Sharber built his first drone out of wood ten years ago when he was in college studying geographic information systems. A remote-control enthusiast, he moved on to more complicated models teaching himself the programming needed to build and fly a drone. But until recently, his drone enthusiasm was something he enjoyed outside of his work as a research engineer at GE Oil and Gas in Oklahoma City.

That changed two years ago when he overheard some of his colleagues talking about the high cost of monitoring GE's methane facilities. "They were looking for an inspection method that would be more accurate, and less expensive than what they were doing, which is a guy on the ground walking around with a survey tool," he says.

The team was considering drones but Sharber could tell they didn't have deep knowledge about the small planes based on the fact that they were using a cheap off-the-shelf drone with a methane sensor attached to it. "It had a really nice camera, but that was about it," Sharber says. "They took something that flies for about twenty minutes, bare-bones, and put a heavy sensor on it that made it fly for five minutes, at most."

The experiment proved that the concept could work, but the team would need a much more rugged system. "One day, I just kind of popped my head up and was like, 'Well, I can tell you a few things,'" says Sharber. Before long, he was giving them advice on everything from the basic drone components to the best software programs to use. Nasr Alkadi, the head of the drone program, formally asked him to join what was now dubbed the Raven project.

With Sharber's help, the Raven project improved quickly. The current version of Raven is a hex, or six-rotored helicopter, with a carbon fiber frame. It can fly for 40 minutes and comes equipped with a camera, laser-guided sensors and an advanced communications system that enables it to stream high-definition video to its controller from up to eight miles away.

It's also easy to use. Sharber's team in Oklahoma City partnered with GE software programmers in San Ramon, Calif., to build the Raven user interface from scratch. Much of its work is pre-programmed and can be controlled with an iPad, so that inspectors don't have to learn too much about drones in order to fly them. The data automatically streams to Predix, GE's cloud-based platform for the Industrial Internet.

This isn't the first time that Sharber's outside interests have helped him with his work. In the early days of Predix, he tested the system out using his own Raspberry Pi computers — inexpensive, Linux-based computers that were originally designed to teach people how to code, but which have been embraced by hobbyists. Sharber even convinced GE to use Raspberry Pi computers to send data from the drones to the cloud. "We needed a Linux

machine that was small, somewhat rugged, and could handle being outside in extreme temperatures,” he explains. “Given that I’ve put these things just about everywhere, I know that they’re reliable.”

The Raven team is now handing off the drone program to Avitas, a GE Ventures group that will turn it into a commercial project, but Sharber expects to continue working with drones at GE. “I work on a lot of things, and it seems like my hobby stuff always comes back in to help me,” he says.
