INSPECTION DRONES SAFEGUARD OIL AND GAS INDUSTRY

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by Matt Alderton
Writer

NEWSLETTER SIGN-UP

Commercial drones capture visual data of hard-to-reach, dangerous equipment in the oil and gas industry, so inspectors can stay safely on the ground.

When his career began two decades ago, Chris Fleming used ropes and harnesses to inspect oil and gas facilities. He scaled up and rappelled down refinery equipment like a gravity defying mountain climber.

“I would abseil off the side of a platform, or I would climb to the very top of a derrick or a flare stack on an offshore platform,” said Fleming. “Then I would carry out my inspection, usually with a team of two other people.”

He said refinery inspectors had to work at precarious heights, in remote locations, often near hazardous flames and noxious chemicals.

When his business partner, Malcolm Connolly, got the idea to use a drone to conduct inspections, Fleming knew it could revolutionize the oil and gas industry.

That idea led Fleming and Connolly to co-found Cyberhawk, a Scotland-based company that provides aerial inspection and survey services to oil and gas companies across the globe.

Intel Falcon 8+ Drone transforms inspections conducted in the oil and gas industry | Intel Business
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Fleming said drones make inspections safer for inspectors, but they also digitize the process so inspection data can be tracked and analyzed more efficiently than manual inspections.

Drones equipped with cameras can capture visual information without putting people at risk. Inspection drones can quickly capture visual or thermal images of flare stacks, underdecks, cooling towers and chimneys, and confined spaces. They allow inspectors to examine equipment without shutting down the facility, according to Fleming.

“Any time you can reduce or stop a plant from shutting down, you’re saving the customer millions of dollars,” said Fleming.

Without drones, it can take days to weeks to bring the plant offline and make it accessible for workers, who rely on harnesses and cable equipment to hang midair while manually collecting information on the structure, said Fleming.

Drone Inspectors

Fleming believes drone inspections can save oil and gas companies $1 million to $5 million per day in recovered production costs.

Oil and gas inspections in the past have required inspectors to use harnesses to climb rigs.

Recently, Cyberhawk teamed up with Intel to inspect a gas terminal in St. Fergus, Scotland using an Intel Falcon 8+ commercial drone.

Over the span of two days, the drone captured 1,100 images, translating to 12GB of data. Fleming said this would have typically taken a three-man team three days to achieve.

The inspection drone had to contend with potential hazards when flying above the gas terminal to survey the condition of the refinery equipment.

“Flying in Scotland, the devices have to withstand strong winds,” Fleming said.

Powered by eight motors and propellers, the V-shaped drone is designed to withstand strong winds in challenging environments. Using real-time air compensation, the Falcon 8+ used built-in automated redundancies that keep the drone balanced and functioning safely, even if one or two motors stop.

Commercial drone innovation is advancing rapidly. These flying robots are mature and simple enough for industries to use drones now, according to Anil Nanduri, vice president and general manager within Intel’s New Technology Group.

[Read: Drones: Flying Data Machines Digitizing the World from Above]

An inspection drone can easily survey a flare stack at a gas terminal.

“Drones make inspection workflows faster, cheaper and safer,” said Nanduri.

Looking Ahead for Safety

Innovations in artificial intelligence and cloud computing capabilities will make drones even smarter and more capable.

“They’re going to be able to detect defects and issues on the fly, and notify us in real time to take action,” Nanduri said.

[Read: Drones Answer the Call of Duty for Silicon Valley Firefighters]

Inspection drones that can plan their own flight paths, self-navigate around obstacles, and automatically find and flag information of interest are attractive not only to the oil and gas industry, but also to construction, manufacturing, agriculture and even emergency response, said Fleming.

“In the last 20 years that I’ve worked in the inspection industry, drones are the biggest single change we’ve seen to date,” said Fleming.

“It will revolutionize the way that we do asset inspection.”

Mapping Data to Cut Costs

Airscope, a Perth, Australia-based inspections and asset visualization company, has used the Intel® Falcon™ 8+ drone to develop computer-generated 3-D models of entire hydrocarbon processing facilities off the North West shelf of Australia and in the Cooper Basin. It allows those companies to better manage their physical assets.

“When people think of drones operating in industrial applications, they think of inspections collecting data from hard-to-reach places,” said Chris Leslie, director of Airscope. “Our business has evolved beyond this where the real efficiencies and return on investment for the client come from providing a digital 3-D representation of their physical assets.”

Intel Drone Captures Data for 3-D Models at Oil and Gas Facilities

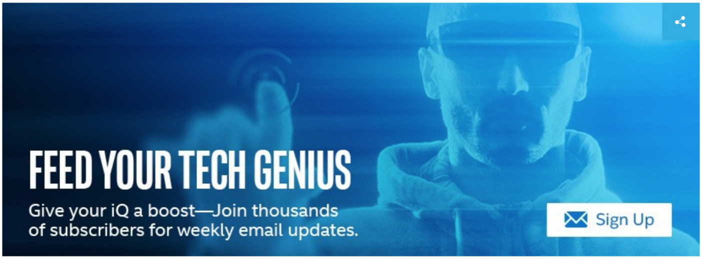
Airscope uses airborne photogrammetry, ground photogrammetry and laser scanning creates a virtual canvas of the entire site.

“Once the virtual canvas is created, you can paint any operational or planning data on it, to serve as a human medium to access and interact with big data,” said Leslie.

He said clients are seeing day-to-day cost reductions between 3.6 and 10 percent, depending on industry.

“We are entering a period where decisions are being determined by the data at hand and companies that haven’t started their transformation towards digitization will be left behind,” he said.

Editor’s note: Learn more about commercial drone innovation by Intel.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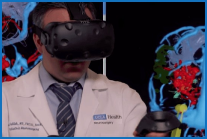
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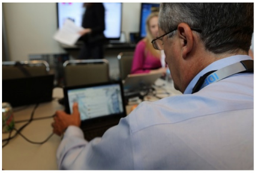
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