

Visuals and Visualization

Atlantic Canada innovation makes it easier to operate underwater, capture high definition visual proof

By: Stephanie Porter

As a pilot of remotely operated vehicles (ROVs), Chad Collett had first-hand experience with the quality of still photographs and videos which he, and others in his job, were gathering undersea—and he was far from impressed.

These images were used to conduct research, monitoring, repairs, and other important tasks, but Collett didn't think they were up to the task. In fact, he thought he could make something better.

Today, Collett is president of SubC Control, a three-year-old company gaining international recognition as a manufacturer of high-end underwater imaging solutions. All products are manufactured in Clarendville, N.L., about 180 km from St. John's.

"Most underwater camera providers take a commercially available or stock camera and simply drop it in waterproof housing," says Ron Collier, SubC's director of sales and marketing.

"We go out and get the best technology available and incorporate that into our cameras—we can offer features and functions you won't find anywhere else in the market." (Features like integrated lasers which are, not surprisingly, very popular.)

The marketplace is noticing the difference. SubC's products and services have been sold in 30 countries; they are used in a range of applications by oil and gas companies, universities, environmental research and monitoring firms, and others. SubC recently won a three-year contract with the University of Washington to supply cameras for their ocean observatory; they have sold to the University of Victoria for a similar use.

One of SubC's underwater cameras, mounted on an ROV, is being used to gather high-definition video and high-resolution digital stills from potential sites of Amelia Earhart's plane wreck.

With sales increasing locally and internationally, SubC plans to expand its staff from five to eight in the next year. "The word is out now," says Collier. "We're getting a lot of buy-in; the future looks promising."

3D—without the goggles

The co-founders of Whitecap Scientific Corporation are working on cutting-edge vision-related technology that is quite different from, but not unrelated to, SubC's product line.

The goal of Whitecap's intelligent vision technology is to make it easier and more effective for ROV pilots (among others) to "see" what they are doing.

Currently, most ROV pilots monitor a number of screens or displays while at work, constantly looking from camera to camera to gauge distances or check different angles.

"A lot of mistakes are made," says Sam Bromley, the company's co-founder and chief technical officer. "The operator may think something is closer than it is; I've seen operators reaching for something and miss it. Or there would be collisions. Depth perception is an

issue." One solution is 3D goggles, however, they bring side effects like fatigue and headaches.

St. John's-based Whitecap is working on an alternative.

"We use head tracking. If I want to look around the side of my robot arm, I can simply look around it," Bromley moves his head to demonstrate. "I shift, and the scene shifts accordingly. It makes it easier for users to actually look around a scene without having to reach for a joystick or mouse. It's completely hands free."

Whitecap's technology uses camera feeds to build a 3D model of a scene, which then responds to the user's body movements. The software is geared toward increasing productivity and safety, and reducing fatigue and frustration.

A little over a year since concept development, Whitecap is well into the demonstration and testing phase. Early feedback has been positive.

Looking ahead, together

SubC Control and Whitecap Scientific both enjoy the support of Memorial University's Genesis Centre, a business incubation facility for technology companies. Although in different stages of development—SubC's products are commercially available, while Whitecap's are in the demonstration phase—the two companies are already planning to work together.

"It's very complementary," says Collier. "We build the cameras and they provide the software to render 3D imagery and to be able to pilot the ROV. It's almost a perfect marriage." | ABM



SubC Control's 1Cam takes 12.3 megapixel stills and 1080p video and records them to its internal memory. It also offers live high definition images. Shown here, a HD image of an underwater cleaning operation and a sea slug in the Gulf of Mexico.

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