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Micro-ROV Provides Cost-Effective Way To Inspect Infrastructure

DTG2 ROV Enables Florida Company to Examine Stormwater Pipes

By Amanda Coulas

CAS Asset Management is a company that works on projects ranging from general infrastructure implementation to water irrigation plant, construction and agriculture project management. Aiding organizations to properly manage large-scale assignments without straining their resources or budgets is part of CAS's expertise. Bill Riley, president of CAS Asset Management, and his team have years of real-world experience in construction and maintenance, as well as 20 years designing and implementing asset management solutions in the Florida area. When a project arose to inspect thousands of miles of stormwater pipes for a private irrigation company, Riley began looking for compact and affordable solutions to best inspect the integrity of the entire irrigation system.

This particular irrigation system services 6,000 homes, two golf courses and 1 million acres of commercial space in Florida. Water irrigation systems such as these often face challenges when it comes to fully inspecting their systems, primarily because the waterways are submerged and run for miles throughout communities. Often, completing a full inspection is too difficult, so only certain access points are checked from above. This practice leaves the pipes susceptible to damage that could be avoided with proper and thorough inspection and maintenance. Stormwater systems are crucial for flood prevention, and it is essential to ensure they are in working order for the safety of the community.

Another common issue is that these pipes often accumulate sediment. Due to the instability of the sediment it is impossible for a diver or a crawling vehicle to inspect the pipes without stirring up the resting silt, diminishing visibility. When there is a suspected problem, having the ability to see where the damage is can be critical to determining the necessary corrective steps to take. In order to avoid the sediment mixing with the water, draining the pipes is required to view their integrity. The disadvantages to this option are



many: not only does it require shutting down this large irrigation plant, but it also comes at great expense, and with the risk of there simply being nothing wrong.

With two Deep Trekker (Waterloo, Canada) DTG2 micro-ROVs, depth rated to 250 feet, CAS Asset Management gained the ability to inspect the pipes in an affordable way. The company won the contract to inspect the irrigation system because Riley did the research to find a vehicle that could constantly inspect the system and enable the ability to produce in-depth analysis and plan operations accordingly. With the ROV, they were able to inspect every inch

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(Top) Deep Trekker DTG2 ROV package.
(Bottom) Deep Trekker DTG2 ROV in action.



of the pipes without passing on a large equipment expense to the customer. Armed specifically with their Deep Trekker DTG2 ROVs, Bill Riley and his team could easily traverse and inspect the submerged pipes, with the ROV carefully floating above the sediment without disturbing it. The pipes range in size from 15 to 60 inches, making the compact and spherical shape of the DTG2 ROV perfect for the job. Inspecting the pipes is a constant job for the ROV operators—upon complete inspection of the waterways comes time to start inspecting from the beginning again.

**Deployment of Deep Trekker
DTG2 ROV**

Daily, the team heads out on their all-terrain vehicle along with two Deep Trekker DTG2 ROVs in the back, ready to inspect a section of the irrigation system. This large-scale ongoing project requires inspection throughout the community. The team does not always have access to power or the ability to bring along a generator to power their equipment. This makes the unique design of Deep Trekker ROVs

ideal for their projects. With batteries on board the ROV, operators can still complete their tasks in the most remote locations. Operation time on one three-hour battery charge is typically between six to eight hours. Employing two Deep Trekker ROVs ensures there is never down time on the job.

In the field, two operators set out to the next access point with their ROVs. One team member lowers the DTG2 ROV into the pipe by the tether and remains near the access point to feed more tether into the pipe as required. The other team member uses the handheld controller to maneuver the ROV once it is in the water. The neutral buoyancy of the device allows for the operator to make small horizontal movements while also rotating the camera to take a better look at the infrastructure without risking sinking into the sediment below. CAS Asset Management has chosen to use digital video glasses to monitor what the ROV camera is recording when it is in the pipe (as opposed to the on-control screen alternative). Although the integrated screen in the controller is much brighter than any computer screen, the digital video glasses block out all of the sunlight and simulate watching an 80-inch screen. In total, deployment of the DTG2 ROV takes less than a minute.

Once the team is maneuvering in the pipe, the 270° camera field of view is their most trusted asset. Being able to look at the top, bottom or sides of the pipe without having to drive the ROV allows for intricate viewing of potential problem areas with minimal movement that could stir sediment. The team is constantly searching for any blockages and examining the integrity of the structures. Once the team has inspected a certain area of the pipe, they can navigate the ROV back

“However, anyone that has explored underwater knows that the conditions in the depths are nowhere near those above land.”

the opposite way by following the bright yellow tether, or pull up on the tether from above. The team then moves on to the next access point on their route and completes the procedure again. The entire inspection is recorded to a secure digital (SD) card, so they are able to review footage on any computer, make suggestions in their reports and provide evidence of their findings for the customer. At the end of each day there is no maintenance to perform on the ROVs, a simple rinse and charge of the batteries sufficiently sets the team ready for the next day.

Conclusion

The DTG2 ROV is an invaluable instrument to the team at CAS Asset Management for its ease of use and portability. The simple design has allowed for a more affordable product to emerge in the marketplace; thus providing an alterna-

tive to individuals and small to medium-size businesses that never before would have considered an ROV as a viable option. This reduction in cost of modern ROV options has helped to open up an abundance of alternative options to these parties who seek affordable and practical underwater exploration.

As an alternative, companies typically rely on divers' eyes to inspect underwater structures in order to make informed decisions of what may be causing a problem or when maintenance is needed. However, anyone that has explored underwater knows that the conditions in the depths are nowhere near those above land. Currents drive much more force than gusts of wind, and a dangerous branch or rock can be easily disguised in the darkness of the water. It is also worthwhile to consider that the safety of the diver is, of course, a top priority. This burden, coupled with the high costs of putting a diver in the water for extended periods of time, has encouraged companies to search for alternative means of viewing what is there before they actually send a diver in.

CAS Asset Management is just one example of how a company can take its core competencies and diversify them by adding a micro-ROV to the equipment mix to enable inspection of any submerged waterway in a simple and intuitive way. This is an example of how jobs can be made easier, providing a more holistic product to customers. ■

Amanda Coulas is the marketing coordinator for Deep Trekker Inc. She assists in all aspects of marketing, including collateral creation, social media, website content and customer relations. Amanda is a recent graduate from Wilfrid Laurier University in Waterloo, Canada, with a bachelor's degree in psychology and business.



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