

By Steve Buehler & Philip Johns



Off-Road Sewer Line Inspection

*P*ennsylvania's McCandless Township Sanitary Authority (MTSA) is known as an innovator in the region. The authority was one of the first RedZone Robotics customers to operate Solo robots under almost exclusively off-road conditions. Three thousand of MTSA's 10,000 manholes are in easements or remote, off-road locations, making it challenging for the authority to have truly complete pipe condition information as part of its mandated wastewater inspection cycle.

In conducting the 2009 off-road inspections using Solo, McCandless wanted to evaluate the robots' effectiveness by benchmarking against a 2008 project using conventional technology with an ATV. MTSA

leased four Solo robots from RedZone for two weeks in May, with RedZone providing all necessary equipment and training as part of the lease package. In 10 working days, two MTSA employees (with a part-time RedZone trainer) inspected 112 difficult-to-access segments totaling more than 23,000 ft of pipe. The inspection cost per foot was 60% less than that of the conventional technology method.

Inspection Made Easy

A Solo robot weighs 20 lb and is completely self-contained, making it ideal for off-road inspection of 8-to 12-in. pipe. Everything required to conduct inspections can be carried by hand, including four Solo robots, deployment pole and a rugged laptop. Unlike conventional equipment, Solo does not require an onsite generator, special vehicle, tether system or control hardware.

It inspects without an operator present and collects 360-degree spherical video so that the results can be coded offline and the entire pipe can be reviewed at any time. Because an operator can conduct multiple inspections at the same time, throughput is dramatically increased—especially when combined with the benefits of portability in an off-road environment.

Initial training of MTSA's employees to use the Solo robots was speedy; they learned quickly and were able to deploy on the first morning. "Solo changed off-road inspection from a hard task to an easy task," said Tim Barker, MTSA CCTV technician. "Solo will change the industry standard for CCTV inspection."

Overcoming Challenges

The real challenge came in optimizing the routes and techniques for off-road work. RedZone's trainer was an expert when it came to rapid road and grid-based

A sanitary authority conducts off-road inspections on more than 23,000 ft of pipe in 10 days



The Solo robot inspects without an operator present, collects 360-degree spherical video and has portable off-road abilities, making it ideal for off-the-grid inspection of 8- to 12-in. pipe.

PROBLEMSOLVER

inspections but had to work with MTSA's employees to adapt the system for this new use.

The team would often spend three to four hours away from a vehicle, which is unusual with typical Solo inspections. Some equipment had to be upgraded, such as the batteries used in the rugged laptops that had not been away from chargers for that length of time previously. It also was important to have an equipment checklist to reduce unnecessary travel time.

The crew had to develop a new method of cleaning robots, as the commonly used portable sprayer was too cumbersome to carry long distances. Operations also were found to be more efficient in those areas where MTSA had conducted reconnaissance and marked

manholes prior to inspection activities.

"Working with RedZone has truly been a win-win situation for our authority, utilizing their cutting edge robotic technology and our employees' expertise in the operation and maintenance of the collection systems," said Bill Youngblood, MTSA executive director. "This partnership has helped us develop an additional tool for our toolbox in our never-ending struggle to do the most we can with the limited funds we have."

Effective Solution

Inspection data was reviewed in the field for potential emergency action, and then it was sent to RedZone for full NASSCO PACP coding. MTSA has a RedZone

MTSA now has four options for inspecting off road:

1. RedZone Solo
2. Ranger ATV and conventional portable equipment
3. CCTV truck for locations near a road (up to tether length)
4. Clear right-of-ways

Prior to Solo, off-road projects were typically covered with the ATV. This conventional technology method required more than 250 lb of equipment, including a reel system, tether, monitoring equipment, tracked crawler and a generator, all mounted to an 800-lb Ranger ATV. It was towed to the job site on a trailer, and loading/unloading took about an hour per day. To deal with large amounts of brush, inspection was conducted in the winter, and brush clearing was still often necessary and required an additional person.

viewer providing 360-degree spherical video of the segments, allowing staff to virtually pan-tilt-zoom anywhere in the pipes that were inspected. In addition, the resulting databases and videos were exported into the authority's existing software.

Solo proved to be an effective solution for off-road inspection. MTSA's ATV-mounted conventional equipment was a resourceful method, but Solo yielded more than four times the footage in the same number of days with fewer people. The cost per foot using Solo worked out to be 60% less. MTSA sees Solo as a permanent new addition to its off-road inspection program and is considering it for other municipal work. [www](#)

Steve Buehler is field operations foreman and lab technician for McCandless Township Sanitary Authority. Buehler can be reached at 412.364.2119 or by e-mail at stevebuehler@mtsaonline.org. Philip Johns is director of marketing and product management for RedZone Robotics, Inc. Johns can be reached at 412.476.8980 or by e-mail at pjohns@redzone.com.

For more information, write in 1113 on this issue's Reader Service Card.

WEBresources >>>

Related search terms from www.waterinfolink.com:
sewer, pipe inspection, off-road inspection

For more information related to this article, visit www.wrdmag.com/lm.cfm/wd011013



HYDROTEC™

**We've been there.
We've done that.
And have a 150,000 tank
track record to prove it.**

Other tank companies talk a good game, but only HydroTec™ systems from Columbian TecTank® have stood the true test of time. With over 100 years providing storage solutions, we've perfected a variety of tank applications in order to build the liquid storage system that's right for you.

New process technologies, effective designs and investments in new equipment have raised the HydroTec product offering to a new level. Every HydroTec tank features our proprietary coating technology performed in-factory that stands up to water, wastewater or any other liquid. All at a low cost per gallon stored and construction three times faster than concrete or field welded tanks.

No other company can match the Columbian TecTank's experience in design, manufacturing and construction of liquid storage tanks.

There is no liquid application HydroTec tank systems can't handle, and we have our world-wide field performance and reputation to prove it.

www.columbiantectank.com
sales@columbiantectank.com

COLUMBIAN TecTank
Columbian TecTank
5400 Kansas Avenue | Kansas City, KS 66106
Phone: 913-621-3700 | Fax: 913-621-2145
© 2009. HydroTec/BulkTec is a trademark of Columbian TecTank.
A division of CST Industries, Inc.

write in 136