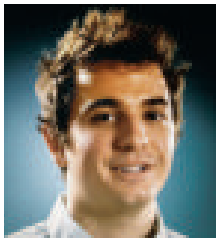
Photo: CBC, Dragons' Den

Inspection Robot Flies High

By Filip Sobotka

WHAT IF you could train a monkey, armed with a helmet camera, to climb around your highrise building to conduct a visual inspection? Well, a company by the name of FTD Highrise Inspection thought, why not have a robot do it instead?



No, this is not a column about how robots are coming to take more jobs away from hardworking human engineers, but more an introduction to the latest tools available to both engineers and property managers when it comes to the maintenance of the exterior of their buildings.

Weldon Warren, Director of Maintenance at Park Property Management Inc., took a chance that a robotic inspection would be of great value for him and would help to get a better look at the exterior of one of his properties in Cambridge, ON. Warren's current issues primarily revolved around the masonry brick spalling and deterioration. In his case, the deterioration was posing a potential fall hazard and needed to be quickly remedied. With the help of SAM, a patented inspection robot, FTD was able to photograph the entire exterior surface of the 9-storey building in two days.

Property	Mid-Rise Residential
Height	9 storey
Exterior	Brick masonry
Images Collected	825
Number of Drops Completed	46
Coverage (approx.)	41,400 sq. ft.
Coverage Rate	100%

SAM at work – getting ready to inspect and photograph the building envelope. Inset: detail of a photo taken by SAM.

The inspection method consists of setting up a mobile crane unit on the roof, which allows for the suspension of cables. These cables run alongside the building facade approximately five feet away from the wall exterior. The robot travels along these wires collecting images during its descent.

This process allows for more visual information to be collected in an orderly and accurate fashion. It is sometimes quite difficult for inspectors to keep track of the exact location when using binoculars or hanging on a bosun chair. For this reason, the images are coded with location data, which allows for easy review. With this type of technology, full exterior scans are something that property managers can now consider without cost being the major deterrent.

Once the images are collected they should be reviewed by a licensed engineer or consultant who will be able to find the issues and properly estimate the correct cost associated with the remedies. In this particular case, the images were reviewed by Robert Silano, president and CEO of Ontech Building Consultants Inc., based out of Toronto. During Silano's reviewing process he stated: "So far it's been very informative and helpful with seeing the overall condition of the exterior cladding system." The images provide the engineer with a bird's eye view of the exterior, all from the comfort of an office chair. FTD's robotic inspection provides valuable detail due to the high-resolution images that are collected. These images allow the viewer to zoom-in and see cracks that wouldn't be evident through standard binocular surveys.

The image on the left is the image captured by SAM and the image on the right shows SAM ready to inspect. In a zoomed-in photograph it is clearly evident that cracks have developed. This issue would have most likely gone unnoticed if a traditional binocular inspection had been conducted. It most likely would have been noticed by the contractors once they started their work. Herein lies a hidden value of conducting such a thorough inspection since it allows for greater cost certainty when it comes to project costs. In this particular case, the cracks were caught prior to work commencing and thus allowed for the work to be captured in the first estimate. There is nothing more frustrating to a property manager than having a chat with the contractor about why the project is now over budget and having to decide whether to continue or not. For his part, Weldon was happy with the

results commenting, "The detail is impressive! In many cases this will save our company thousands of dollars for swing stage investigations on building elevations."

Other property managers have expressed their feedback on the new technology and how it has helped them in their role as a property manager. Susan Acker, RCM and VP of Client Services at Provincial Property Management Ltd., one of the earliest adopters of the robotic inspection, had these comments as to why she felt the service was a great tool when comparing to alternative methods: "We have to go through a major process in order to get a swing stage on the building to start the process of looking at a problem ... and the swing stage is only the first step, you still have to get the professionals on that stage to inspect." She also commented on how she plans to use the images as a part of an ongoing maintenance strategy. They plan to "have the entire building scanned, and then update the sections that have been worked on, if applicable at least every three to five years, that way the information is still up to date."

Safety First

Safety is always a major concern when dealing with the building exterior. It was only a few years ago in 2009 that four workers lost their lives due to a swing stage accident and which was commented on in the fall 2012 issue of *CM*. In the simplest of terms, having a robot do a scan as opposed to hanging a human off the side of the building is much safer for all parties involved, something which Jonathan Juffs, Director of Building Science at Inspec-Sol Inc. noted when introduced to the idea for the first time.

"Safely, and affordably, obtaining high-quality visual records of existing wall conditions – to permit an analysis of how they change over time – has been the bane of building envelope evaluations for years. Now, the FTD robotic inspection method allows for solid, objective, and repeatable documentation to assist with all kinds of evaluations, estimates, and investigations. There is great value in this service."

Regardless of the usage, complete robotic inspections are now something every property manager and engineer can add to their toolkit to deal with the challenging building envelope issues that come up over time. Of course if you're not one for technology, you could always see what a monkey with a helmet camera can find; just make sure to check his credentials first. ■

Filip Sobotka is vice president of FTD Highrise Inspection Inc. www.ftdhighrise.com. SAM was pitched by Filip and his brother Thomas Sobotka on Dragons' Den http://www.cbc.ca/dragonsden/pitches/ftd-highrise-inspection