

Innovative Technology Is Changing Construction Risk Management

Written by: Erin Rotz, Head of Inland Marine & Builders Risk, The Hartford, and Toby Cushing, Head of Construction for Middle & Large Commercial, The Hartford

THE CONSTRUCTION AND INFRASTRUCTURE INDUSTRY IS ONE OF THE MOST CRITICAL PIECES OF THE WORLD'S ECONOMY.

According to the White House, it is estimated that with President Biden's Build Back Better agenda, the investments in the Bipartisan Infrastructure Investment and Jobs Act will add, on average, around two million jobs per year over the course of the decade.

However, the construction industry faces significant risk management hurdles from on-the-job injuries and physical damage to their own work and to third parties, caused by human error and natural disasters. These risks are going to be especially concerning as the number of construction projects increase, causing strain on owners and construction staffing, and project managers and safety managers that may be stretched thin. To help mitigate and manage these risks, owners, developers, contractors, and subcontractors are increasingly turning to the latest technology, including, imagery, wearables, and water leak detection devices to protect and mitigate losses on project sites.

Imagery

On-site imagery will have the most impact on project sites over time. Currently, the use of imagery and artificial intelligence



is in its infancy and doesn't get as much press as wearables and water sensors, the power of imagery combined with programmed flagging and the use of AI is the future and will likely be used in conjunction with other "Internet of Things."

There is a spectrum of on-site imagery from good old fashion cameras to AI triggered cameras.

Examples include:

- » On-Site Cameras with Monitored Security. Using external cameras positioned at the corners of a property, or facing down on the work zone, and monitored by professional security companies is especially powerful. This affords the opportunity to monitor the jobsite during all hours to

possibly catch events such as theft and fires, which can be caught on infrared lenses as they occur to mitigate loss and possibly prevent a future incident.

- » Three-Dimensional On-Site Walkthroughs. To track construction progress, a three-dimensional on-site walkthrough can be beneficial in adhering the project to specifications, as well as monitoring payroll progress and identifying safety issues. It can also be used to document the site at critical points such as just before wall close-up, and after substantial completion to document and defend construction defect cases. When combined with risk engineering and testing, such as mold testing, a powerful record of quality can be established to refute future allegations of improper construction.
- » Fixed Point Crane Cameras. When construction companies combine crane cameras with crane usage, it can become a powerful on-site tool to identifying risk and investigating loss. By incorporating this technology, construction companies can also achieve greater project management and better expense oversight, going beyond the risk management to affect the overall job. In addition, on-site job supervisors can catch accidents and track inefficient crane usage through crane cameras connected to computers that monitor safety issues and alert on-site personnel to risky activities.
- » Fixed Point Cameras with Interval Imagery and Hazard Triggers. In the future, it may be possible to alert contractors to accidents, safety hazards, and other incidents like near misses that might not otherwise be reported by using fixed point cameras with computer monitoring. Today, it is difficult to monitor a constant stream of video, so snapshots every 15 seconds to 15 minutes that are then analyzed by computers or monitored at audits can help on-site safety. Fixed point cameras also use better batteries and may one day be placed to capture all areas with work in progress and defend lawsuits where it can be clearly documented whether a fall took place from height or was a simple slip and fall. If the owner consents to the use of on-site cameras, it is also a very different conversation with workers about monitoring than attempting to make workers to use wearable technology when the worker does not feel comfortable.

Wearables

The use of wearable technology is one of the most efficient methods of risk mitigation in the construction industry, and many builders and contractors are starting to see a material return on their investment from the use of this technology. Wearables mitigate risks and claims in a variety of ways—from belts that can track movement to vests that can monitor ergonomics, environmental conditions, air quality, and noise.

For example, if a worker on a construction site has fallen, a belt can detect the environmental conditions around them and prevent future injuries at that location because the technology in the wearable will inform the construction company about the setting that may have contributed to the current fall, so it does not happen again. Vests can also track employees via geospatial positioning, which is important considering the current post-COVID-19 workplace environment as physical facilities are reconfigured for social distancing and implementing health safeguards to protect employees and construction workers inside a jobsite.

Additional wearables include:

- » clips that can track who enters and leaves a jobsite, how long they are there and what areas they are in, which is especially useful in a crisis to help a business locate workers and get to them quickly and safely;
- » gloves that can relay data regarding how workers are using their hands and wrists on the job are also beneficial because many workers experience hand injuries, especially those relating to repetitive motion, and businesses can get real-time feedback about how often a worker is performing the same repetitive motion;
- » armbands that can determine whether a worker is pushing or pulling repetitively or even whether a worker slips or falls, based on his or her arm motions, is helpful to providing safety information; and
- » straps worn around the chest or another body part that can monitor ergonomics and environmental conditions is useful in evaluating working conditions surrounding employees.

WATER LEAK DETECTION MONITORING

Water leaks inside buildings and on construction sites can cause serious structural and financial damage. Thankfully there's modern technology that can help prevent such catastrophes. For example, there is now technology available that can detect when water is flowing, when it is leaking, and when pipes freeze. These monitors can also detect humidity levels and the amount of water flowing within pipes. Examination of that data enables contractors and builders to respond immediately and cut off the water, if necessary, to limit physical damage.

The technology can send an email or text message within minutes or seconds after water starts flowing when it's not supposed to be. Instead of 400,000 gallons of water flooding a building, it could be just a few gallons before an automatic shutoff valve closes during nighttime hours, or a text message triggers a security guard or supervisor to turn off the water.

Water monitoring technology also allows businesses to find and diagnose an issue quicker. This is beneficial from a contractor perspective because there is less employee time spent looking for and monitoring leaks.

Some insurance carriers are also using water monitoring technology to track losses from water leaks and damage to analyze how the company performs when it comes to mitigating such losses. From a builder's risk perspective, to have a water leak when a building is 90% complete is the worst time and causes the most damage. With water monitoring technology, instead of being a major loss, it's now minor.

Using pipe and flow monitoring devices in addition to pods or hockey pucks that can detect water from leaking windows, or reservoir and tanks that don't pull water through the water meter, are the best combination. They are especially powerful at monitoring moisture, temperature, and other environmental data points.

The Benefits of Technology

On-site imagery, wearables, and water monitoring technology can even help owners, developers, and contractors mitigate business interruption, lower energy bills, and reduce losses and out-of-pocket expenses. With such technology in place, construction projects become a more insurable risk as employees and jobsites are made safer.

Innovation is key in this arena, especially when it comes to incorporating Internet of Things technology to improve workplace safety and help prevent or reduce property damage for its customers.



About the Authors

Toby Cushing is Head of Construction for Middle & Large Commercial at [The Hartford](#). Cushing holds a B.S. in Biology from Houghton College, a Juris Doctor from Quinnipiac University School of Law, Master of Law (LL.M.) in Insurance Law from the University of Connecticut School of Law. He has worked in The Hartford's claim group, law department, and underwriting units since 2010.

Erin Rotz is Head of Inland Marine & Builders Risk at [The Hartford](#). Rotz earned her Bachelor of Sciences in Business Administration with a minor in Risk Management from Illinois State University. She holds her CRIS designation and is a member of the Arizona Worker's Compensation Appeals Board. She can be reached at Erin.Rotz@thehartford.com.

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