Risk Control

Water Damage: Technology Solutions

The severity of water damage claims continues to increase – disrupting businesses, displacing occupants and damaging property. Here are ways you can leverage technology to minimize the impact and maximize the effectiveness of your water damage mitigation programs.

Overview

Businesses are subject to water damage from a multitude of sources. Plumbing system failures, HVAC malfunctions and severe weather events are just some of the many types of incidents that can ultimately lead to water damage at your location(s). No matter what the source, these events are increasingly expensive and disruptive. A large water damage incident can interrupt normal business operations for days, weeks and even months, and can be as damaging and destructive as a fire. The continuous drive to "make smart" and interconnect all aspects of our lives means water-sensitive components, sensors and electronics are finding their way into everything, from the production floor to the office and everywhere in between.

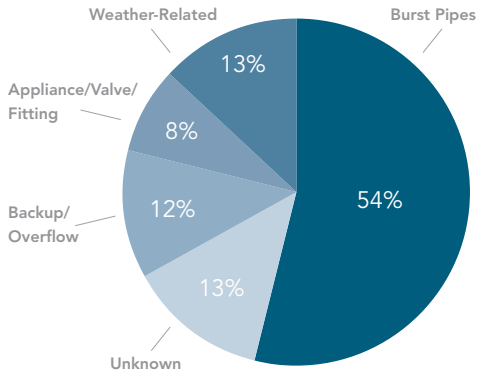
The Cold, Hard Truth

A review of approximately 18,000 water damage incidents reported since 2016 found that while there were occupancy-driven differences in the frequency and severity of such events, the majority of these claims were caused by interior piping that burst, failed or overflowed. Common causes included corrosion, freezing, vibration, water hammer, improper installation and component failures. In many occupancies, particularly those with finished spaces, water damage claims were more frequent than fire, windstorm, lightning and hail claims combined.

Water Damage Doesn't Adhere to a Schedule

When water damage incidents occur, stopping the flow of water as soon as possible and starting remediation efforts just as quickly are of paramount importance. However, these events can and often do occur when buildings are unoccupied. In these cases, detection of water damage is delayed significantly, often with disastrous consequences. In a high-rise building, for example, just an hour of undetected flowing water from a pipe as small as .75" can release thousands of gallons of water and damage 8-10 floors on average.

Water Damage Sources



Source: CNA Claims Data, 2016-2019

In these types of events, an incident response plan alone is unlikely to significantly impact the scope of damage and disruption. This is where technology that can detect and respond automatically to these incidents can play a pivotal role in protecting your building and operations.

Water Damage Mitigation: Technology Solutions

Water-sensing devices, some coupled with Internet of Things (IoT) technology, can be an effective solution to mitigating water damage. While basic water-sensing technology has been around for decades, recent advancements in interconnectivity and the use of artificial intelligence (to detect patterns of abnormal flow) have increased the power and effectiveness of these systems.

An IoT-based solution should only be implemented after a risk analysis of the exposure to help ensure the correct types of sensing devices are used and placed effectively. For example, the protection for a building with centralized hot water systems would be different than a building with individual hot water heaters servicing smaller areas. There are two main types of water-sensing IoT systems: active systems and passive systems.

Active Systems

Active systems incorporate devices that detect water and/or abnormal water flow rates and will automatically shut valves to stop the flow of water. These systems are typically used for larger piping that can move hundreds or thousands of gallons per minute. Active systems can also be installed in smaller diameter (.75 – 2") piping where water enters the structure. While these were originally developed for the residential market, many manufacturers of systems for smaller diameter piping provide solutions for multi-story habitational and hospitality occupancies as well. In addition to being able to automatically sense and stop water in the event of abnormal flows, these systems can be remotely monitored and controlled from a smartphone app. System software is often sophisticated enough to detect even small leaks hidden behind walls and other concealed spaces, where they can slowly cause undetected damage and mold growth.

Another example of an active system is "flow control" or "flow restriction" devices that can be placed in-line on smaller supply lines on plumbing devices such as toilet connection valves, dishwashers, ice makers and coffee machines. These are self-closing (pop-off valves) that shut off the water when a line breaks. Some plumbing device manufacturers also offer dedicated electronic flow control devices specifically for certain hazards such as laundry equipment. These devices use electronic sensors that turn off water automatically whenever the equipment is not in use and when abnormal flow is detected.

Passive Systems

Passive system devices sense water leaks and sound an alarm. They are considered "passive" because they don't stop the flow of water. These systems are typically used in areas with smaller water supply lines, like condensate drain pans, that would not normally accumulate large volumes of water. Some passive system devices can also detect unusually cold temperatures that can lead to freezing and burst pipes. In the past decade, these alarm devices have become more common in premises security and building automation systems, which allow for remote monitoring and notification just like burglar and fire alarm signals.

Sump Pump Monitoring

When operating normally, sump pumps help prevent ground and storm water infiltration into buildings and safely discharge the water away from the foundation. Unfortunately, sump pumps are subject to two key vulnerabilities:

- Heavy rainfall events, especially severe convective storms, can disrupt power supplies and render pumps inoperable.
- There is no way to "turn off" the source of water in the event of a pump failure. As long as there is ground or storm water present, the flow will continue and eventually overflow into the occupied space.

Various manufacturers provide integrated technology solutions that increase the resilience of these systems through a combination of backup power, alarms and remote monitoring. When building emergency power (such as generators) is not feasible, dedicated battery backup systems can keep pumps in operation for many hours. These backup systems can include Wi-Fi connectivity to allow remote monitoring of battery conditions, high water alarms and other features that can reduce the risk of failure even when power is available. Some even include a backup pump, eliminating the most likely single point of failure in the system.

A proactive approach to managing water damage risks includes hazard identification, mitigation, incident response and after-action review. For further guidance on managing water damage risk, refer to the CNA **"Water Damage: Prepare, Respond, Improve"** checklist or consult your CNA Risk Control professional.

To learn more about managing your risk and increasing efficiency, cna.com/riskcontrol.