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SAFETYZONE MAGAZINE

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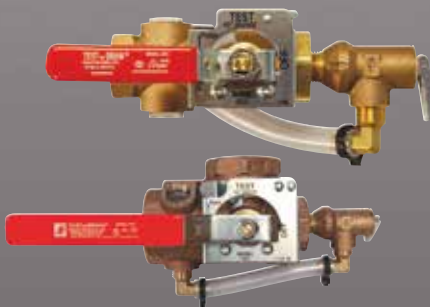
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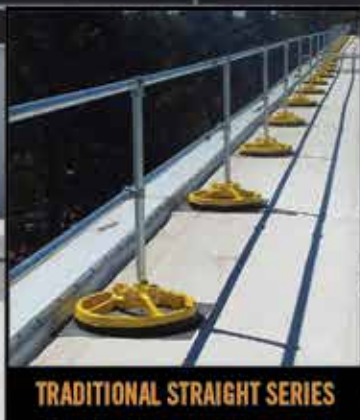
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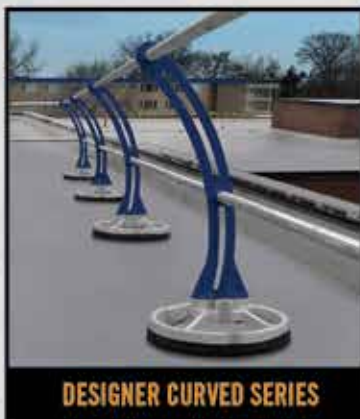
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Guard-Safe Guarding

Five Easy Steps to Successful Machine Guarding!



Identify the Hazards

Not all hazards are created equal. Nor are the solutions for guarding them. Keep in mind the basic principle: Over, Under, Around or Through. If any body part is capable of reaching a moving component by those means, it must be guarded. The example to the left shows an exposed rotating shaft and a fan that present a hazard to employees.



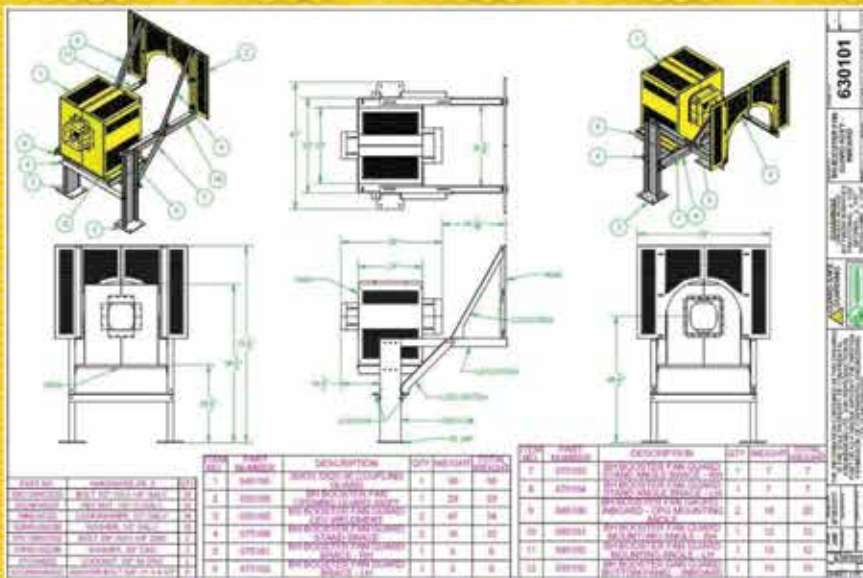
Scanning & Measurements

Set up an appointment with Guard-Safe Guarding to visit your facility and review your goals and primary objectives regarding your hazards. GSG will perform their own safety assessment to assist you in this process. GSG will photograph and measure the application. Some applications may require Laser Scanning to capture interferences and assist us in the design stage. The shaft/fan hazard from above was scanned by GSG, as shown here.



Designing your Guards

Upon processing the Laser Scan, GSG utilizes 3D CAD software to model the new guards and supporting structures. For simpler applications, the model is created based upon site measurements. A 3D CAD image is created and shared with our clients. The client is then able to visualize the final product, ask questions, and provide feedback regarding accessibility, or other concerns.



Engineering Drawings

Upon approval from the client of the initial concept model from above, GSG proceeds to create complete fabrication, arrangement and installation drawings. The drawings are once again submitted to the client for final approval prior to fabrication and shipment. O&M Manuals & drawings are provided for the client in electronic pdf format and paper format.



Installation

Guard-Safe Guarding powder coats all guards Safety Yellow. GSG preassembles the parts prior to shipping to ensure proper fit and delivers the guards assembled as much as possible to save time at installation. All guards are carefully packaged and shipped in a wooden box. It is recommended that a GSG technician be present during the installation process. All guards must be mounted rigid and secure.

At Guard-Safe Guarding we know that you care about your employees. We understand that guarding your equipment is not a simple or glamorous proposition. Guard-Safe Guarding is well prepared to answer your guarding questions. Typical concerns we hear are from Safety Managers looking for guidance, Maintenance personnel wanting easy access & removal of protective barriers, and from operators wanting to work safely, yet unencumbered. We have heard and addressed all of your concerns with our innovative and time saving products.

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1-1/2" Diamond mesh 10 gauge wire partition system are engineered for easy installation allowing unrestricted visibility and total air circulation. Inventory of standard height panels of 7, 8 or 10 high are available; but don't stop there because many industries require partitions to reach the trusses or building joists and that certainly can be accomplished. If you are installing partition on a raised platform (mezzanine) remember this requires zero or "no" sweep to keep everyone safe walking below. This is to prevent tools from dropping from the edge of the platform. (OSHA 1910.23(e)(4) Either partition system will work well but the more project information you are able to supply, the more knowledgeable we all become and it is truly amazing how that works!

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4 Advantages of Using Drones for Infrastructure Inspections

Mike Danielak

Director of Client Strategy and Business Development, Skyward, A Verizon company

Assessing roof damage and detecting pipeline leaks in hard to reach bridges or waterways are just a few of the common routine inspections that can introduce a variety of factors that may contribute to injuries or fatalities among construction workers. Today, construction and engineering firms are using uncrewed aerial systems (UAS, or drones) to boost job site safety and efficiency, among other benefits. The Occupational Safety and Health Administration (OSHA) reports that the construction industry's fatal injury rate is higher than the national average in this category for all industries. According to OSHA, falls, being struck by an object, electrocution and caught-in/between incidents, often referred to as the Fatal Four, are the leading causes of death for private sector construction workers. Today, drones enable people to work at height less frequently, and they help to eliminate the risks often posed by helicopters. Keeping workers safer is reason enough to use drones — but they can also help inspectors identify structural weaknesses more quickly than older, riskier methods.

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Let's explore four significant advantages of using drones to maintain infrastructure such as large buildings, roads, bridges, railways, dams and more.

Supporting workforce safety with drones

Working at height isn't the only risk inspectors face. They may also encounter toxic chemicals or emissions, moving machinery, and speeding traffic or high-voltage equipment. These risks multiply when the asset is in disrepair.

Drones make it possible for workers to survey structures from the ground and at a safe distance. As the Federal Aviation Administration (FAA) grants more waivers to enable flights beyond visual line of sight (BVLOS), field workers will be able to rely on drones to inspect gas pipelines and power lines, reducing the miles they have to drive on poorly maintained back roads.

"Many of the things we've done in traditional ways have required manned helicopters, humans climbing things, or our people getting in harm's way to do inspections or routine maintenance," said Harry Nuttall, director of system air for Southern Company, the Atlanta-based energy company with natural gas, electric, and other business operations across 19 states. "Putting an unmanned system in there really enhances safety and efficiency."

Drones are especially valuable following disasters, when damaged infrastructure systems need immediate assessment, but conditions are still hazardous. Drone pilots using platforms like Skyward can launch within minutes using the FAA's automated Low Altitude Authorization and Notification Capability (LAANC) approval process. They can also see temporary flight restrictions and coordinate safe flights with colleagues who may also be

flying drones or other aircraft in the area.

The following types of infrastructure inspections continue to become dramatically safer as a result of UAS:

- Transmission and distribution (T&D) lines, to identify vegetation encroachment and wildfire fuels buildup, leaning power poles, sagging wires, snagged metallic balloons, equipment wear, vandalism, and more
- Oil and natural gas pipelines, for leak detection and equipment corrosion
- Vertical structures—nuclear cooling towers, storage tanks, smokestacks, piers, and the like—to look for signs of wear and anomalies
- Dams and levees, to identify structural defects and needed repairs, and assure environmental compliance/avoid stop-work claims during replacement work
- Bridges, underpasses, overpasses and culverts, for cracks, wear, general conditions
- Roads and freeways, to assess cracking and maintenance needs of pavement
- Municipal water systems—aqueducts, fish ladders on older dams, reservoirs—for leak detection, environmental monitoring, vegetation management, equipment maintenance, and security
- Railways, to check for wear, vegetation, rocks, and security on tracks, as well as conditions of bridges, poles, and yards
- Utility-scale solar facilities, for locating sub-performing arrays and repair needs
- Onshore and offshore wind turbines, to detect cracks and other maintenance needs
- Emergency, post-weather-event, and post-disaster damage assessments of all of the above

Improving reliability and public safety with drones

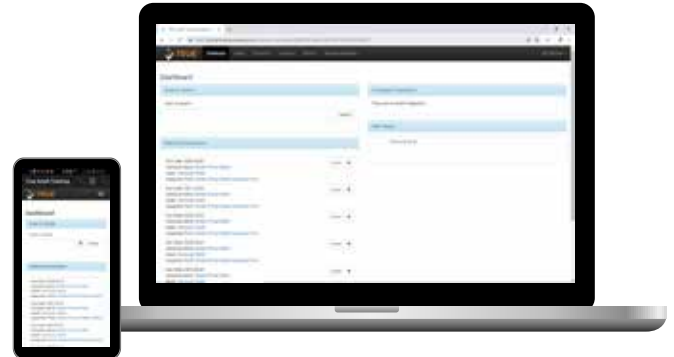
Drones are playing an increasingly important role in improving the reliability of the water, energy,

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Drone pilots in the field need to know how the surrounding area could affect flight. Skyward's airspace intelligence offers critical safety data to all users, providing a clear design, airspace data and LAANC access with essential ground intelligence such as 3D views of key structures and more than a million vertical obstacles.



and transportation systems we all rely on. Because drones enable infrastructure managers both to inspect more frequently and to obtain better data, they provide more timely understanding of what needs attention.

BNSF Railway Company (BNSF) for example, one of North America's leading freight transportation companies, started using drones in 2015, taking detailed photos of tracks to assess damage and working with the FAA to explore advanced industrial applications for drones through the agency's Pathfinder Program. As a result, the company was granted approval to test drones BVLOS, allowing the railroad crew to fly drones over remote pieces of railroad with pilots that are hundreds if not thousands of miles away.

In addition, this year's historic Midwest flooding presented exceptionally difficult assessment conditions for BNSF. However, using drones to collect data in flooded areas allowed, the company to not only keep safety a top priority, but also increase efficiency in railroad operations and enhance their ability to meet customers' needs.

Aiding in corporate and government risk management benefits with drones

Drones also help public agencies, utilities, and companies that own or manage infrastructure systems to mitigate corporate risk. By keeping the field force out of harm's way, drones curtail injuries and the lost work hours that come with them. Medical insurance, workers compensation insurance, and liability insurance expenses can

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workforce has uncorrected
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netting approximately
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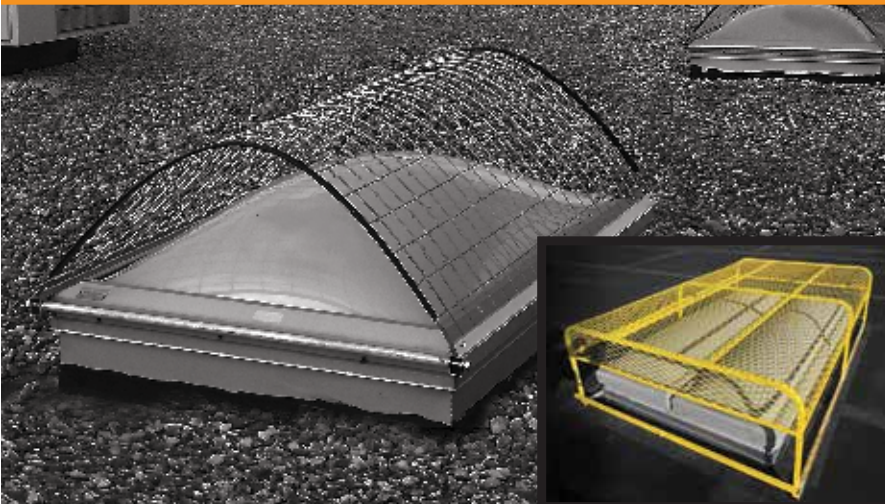
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also be reduced as the safety record improves. Better data reporting and improved compliance with environmental regulations bring still more risk-abatement benefits.

Surveying structure conditions and stability with drones

We know many United States bridges, dams, highways, energy, and water systems have exceeded their expected lifespans. But not everything is on the brink of collapse. American infrastructure remains among the world's best. In fact, much of the fragility can be remedied before they cause widespread economic disruption. For example, a Reuters analysis found that, while about nine percent of highway bridges were structurally deficient in 2017, only four percent of bridges carrying significant traffic were.

In June 2019, researchers at the University of South Carolina (USC) College of Engineering and Computing and Clemson's College of Engineering, Computing and Applied Sciences partnered to explore how drones can better assess bridges above water, including specific focus on culverts and bridge scour beneath the water's surface. Funded by the South Carolina Department of Transportation (SCDOT), the project aims to use drones and other systems to supplement bridge inspections conducted by trained personnel. By 2020, USC and Clemson anticipate their findings will be used by SCDOT to assist with load-testing of the state's bridges for post-natural disaster assessments. The South Carolina research team is not alone. In May 2019, the American Association of State Highway and Transportation Officials reported that 36 state DOTs are implementing drone technologies.

Drone technology is increasingly transforming construction workflow and processes. From detecting pipeline leaks and surveying road and building damage to curtailing injuries and lost work hours, UAS are significantly changing the way we collect data and keep crews out of harm's way. Continued drone industry advancements, such as 5G BVLOS testing capabilities, will further innovate infrastructure inspections of tomorrow.

Mike Danielak is director of client strategy and business development at Skyward, a Verizon company. •

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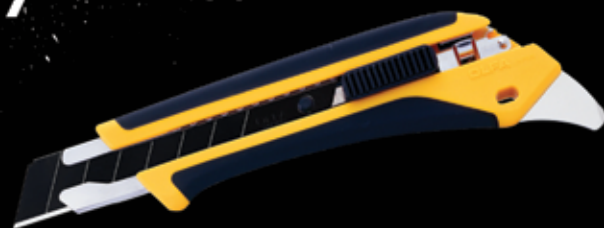
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