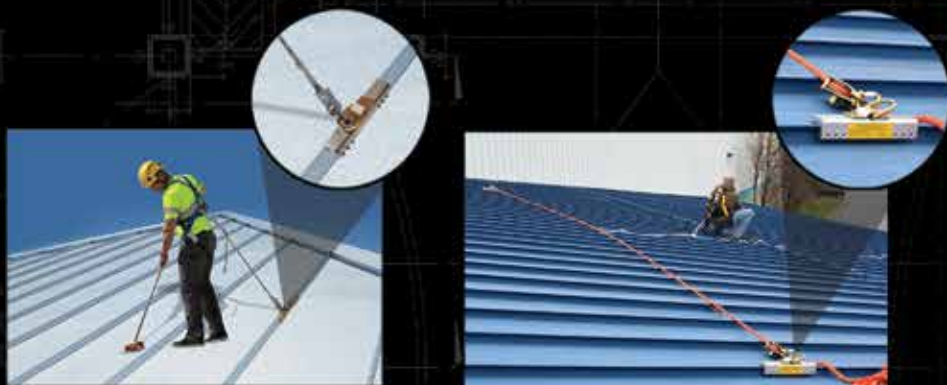


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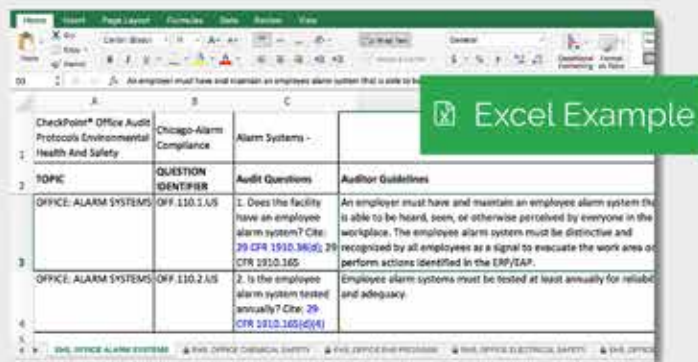
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TOPIC	QUESTION IDENTIFIER	Audit Questions	Auditor Guidelines
OFFICE ALARM SYSTEMS	OFF.110.1.1/5	1. Does the facility have an employee alarm system? Cite: 29 CFR 1910.38(d)(2); 29 CFR 1910.165	An employer must have and maintain an employee alarm system that is able to be heard, seen, or otherwise perceived by everyone in the workplace. The employee alarm system must be distinctive and recognized by all employees as a signal to evacuate the work area or perform actions identified in the ERP/EAP.
OFFICE ALARM SYSTEMS	OFF.110.2.1/5	2. Is the employee alarm system tested annually? Cite: 29 CFR 1910.165(d)(4)	Employee alarm systems must be tested at least annually for reliability and adequacy.

G. AUDIT QUESTIONS

Date: _____
Facility: _____
Auditor: _____

Question ID	Audit Questions	Auditor Guidance And Notes-Audit Questions	Y E S	N O	N A	Comments
ERGONOMICS OFF.140.1.1/5	1. Are workstations configured so that employees can achieve ergonomically correct working postures?	Workstations should be configured to prevent common ergonomic problems. The computer keyboard and mouse should be within easy reach and at a comfortable height (elbow high), the keyboard and monitor should be aligned, and the screen should be at or slightly below eye level. There knee c under				
OFF.140.2.1/5	2. Are chairs used at workstations adjustable and in good condition?	Chairs so that employees can work in a comfortable seated position, with good body support. Chair height should allow feet to rest flat on the ground with thighs parallel to the				

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- PG 14 "Sweating" Pipeline is No Sweat for Electric Utility Project
- PG 24 Portable Friction Testing Can Prevent Slip and Fall Accidents and Deter Costly Liability
- PG 32 Guard-Safe Guarding: Five Easy Steps to Successful Machine Guarding!
- PG 34 Company Profile: Jesco Industries, Inc.
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Users can use one of the OSHA inspection checklists from the provided library or create their own new forms which can be deployed in minutes. Talk to text, barcode scanning and instructions on performing the inspection and drop-down selections for failure reasons put this app in a different class that reduces time for users up to 80% while also improving accuracy and detailed information at the same time. Monitoring of inspections by safety managers allows for full visibility and real-time monitoring of people, equipment and other assets, raising communication and safety awareness helping to quickly identify inspection failures and prevent injuries.

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TRUE Asset Tracking Solutions is launching its business to meet one of the most universal needs of any company: asset tracking. Regardless of the business size or type of asset - safety equipment, machines, tools, vehicles, personnel training certification - the process is a comprehensive task that requires a mass amount of time and resources. TRUE Asset Tracking Solutions simplifies and streamlines this process, giving businesses a greater return on their assets and a healthier bottom line.

With TRUE Asset Tracking Solutions, companies can manage their assets in real time and with less burden on employees. Using the cloud-based platform along with their iOS or Android app, users are able to manage assets from any location at any given time. Inspections of physical assets can be done in-house or in the field utilizing the in-app inspection forms. In addition, TRUE Training Tracker Cards keep job sites and personnel working seamlessly by allowing personnel to carry one card that holds all of their training certifications and licenses.

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In 2018, OSHA reported that Fall Protection - Training Requirements (1926.503) was a top 10 violation. Implementing TRUE Asset Tracking Solutions provides the necessary platform to keep training certifications up-to-date with a single, easy-to-access card that holds all training certifications or licenses. According to OSHA 1926.502(d)(21): Personal fall arrest systems shall be inspected prior to each use for wear, damage and other deterioration, and defective components shall be removed from service. ANSI A10.32-2012 states: All fall protection equipment shall be inspected at least every six months after initial service by a competent person and ANSI Z359 states: Equipment shall be inspected by the user before each use and, additionally, by a competent person other than the user at intervals of no more than one year. TRUE's Inspection forms are specific to each physical asset, including history of inspections, scheduled reminders for future inspections, and more.

About

TRUE Asset Tracking Solutions is a cloud-based platform focused on the need to help businesses track, manage, and maintain their assets and personnel training certifications by providing a tool that simplifies this requirement for companies. TRUE Asset Tracking Solutions is the link between you and your assets.

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At STE, we incorporate new concepts and technology throughout our projects with 3D BIM, finite element analysis, fabrication drawings and a plethora of services. Fueled by a forward thinking team, STE serves a superior client base with innovative industry solutions.

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eline is Utility Project

The utility protects in use, wet pipeline with an anti-corrosive, water based, ceramic coating with no VOCs or HAPs

When an electric utility in the Southeastern United States sought to protect above ground natural gas pipeline against corrosion, the goal was to cost effectively do so while minimizing downtime and environmental impact.

Yet in the power and petrochemical industries, protecting above ground pipeline from corrosion can be a challenge, particularly when the pipeline carries a cooled compressed gas that draws moisture out of a hot or humid external environment. This causes in use pipeline to continuously drip water, or “sweat”, making adhering a protective coating to the exterior of the pipeline virtually impossible without shutting down the line.

Traditional organic coatings also typically require days or even weeks of facility downtime depending on the project, due to complex surface preparation and application as well as curing times needed between coats. This can be tremendously expensive in terms of lost production as well as shut down and start up costs.

Utilizing such coatings near people or sensitive areas can also be problematic because they typically involve dangerous Volatile Organic

Compounds (VOCs) and Hazardous Air Pollutants (HAPs), as well as clean up using harmful turpentine or mineral spirits.

So, when the electric utility chose an anti-corrosive coating for about 3,500 feet of power plant pipeline in a facility, it was very particular about its selection.

The 30-inch diameter pipeline connects down to smaller diameter pipe that feeds natural gas boilers at the power plant. The boilers provide steam to two 858 MW steam turbines.

Because the power plant is located near a freshwater preserve teeming with wildlife, the electric utility is very attentive to its environmental stewardship.

Accordingly, the electric utility turned to EonCoat, a

spray applied inorganic coating from the Raleigh, North Carolina-based company of the same name, for use on the pipeline. EonCoat represents a new category of tough, Chemically Bonded Phosphate Ceramics (CBPCs) that can stop corrosion even when applied on in use, wet, “sweaty” pipeline. This eliminates the need to shut down the pipeline for maintenance while also eliminating dangerous VOCs and HAPs.

In Use Pipeline Corrosion Protection

Unlike traditional coatings, the CBPC coating is designed to apply over wet pipe because it is water based, ceramic, and initially porous before setting. This allows any excess water to vent out of the coating during the application process.

In contrast to traditional polymer coatings that sit

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on top of the substrate, the corrosion resistant CBPC coating bonds through a chemical reaction with the substrate. An alloy layer is formed. This makes it impossible for corrosion promoters like oxygen and humidity to get behind the coating the way they can with ordinary paints.

Although traditional polymer coatings mechanically bond to substrates that have been extensively prepared, if gouged, moisture and oxygen will migrate under the coating's film from all sides of the gouge.

By contrast, the same damage to the ceramic coated substrate will not spread corrosion on the pipeline because the carbon steel's surface is turned into an alloy of stable oxides. Once the steel's surface is stable (the way noble metals like gold and silver are stable) it will no longer react with the environment and cannot corrode.

Visible in scanning electron microscope photography, EonCoat does not leave a gap between the steel and the coating because the bond is chemical rather than mechanical. Since there is no gap, even if moisture was to get through to the steel due to a gouge, there is nowhere for the moisture to travel. This effectively stops atmospheric corrosion of power and petrochemical industry pipeline and steel assets.

The corrosion barrier is covered by a ceramic shell that further resists corrosion, water, fire, abrasion, impact, chemicals, and temperatures up to 450 °C. Beyond this, the ceramic shell serves a unique role that helps to end the costly maintenance cycle of replacing typical barrier type coatings every few years.

"In power and petrochemical assets such as compressed gas pipelines, if the ceramic shell and alloy layer are ever breached, the ceramic shell acts as a reservoir of phosphate to continually realloy the steel,"



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explains Merrick Alpert,” President of EonCoat. “This ‘self heals’ the breach, depending on its size, and stops the corrosion if necessary.

This capability, along with the coating’s other properties, enables effective corrosion protection for the life of the asset with a single application.”

Easy Application, Environmental Benefits

In the electric utility pipeline project, water jetting the pipeline’s exterior was sufficient to clean and prepare the surface for coating, since only a NACE 3 / SSPC-SP 6 /WJ-1 commercial blast cleaning is needed.

The CBPC coating was successfully applied to the exterior of the ‘sweating’ in use natural gas pipeline outside the facility when atmospheric temperature was 87 °F with 58% humidity.

Such CBPC coatings consist of two non-hazardous components that do not interact until applied by a standard industrial plural spray system like those commonly used to apply polyurethane foam or polyurea coatings.

While EonCoat is normally spray applied at a thickness of 20 mils before a topcoat is applied, in this case the CBPC coating was deliberately applied at 25 mils and no topcoat was used to deter mold growth on the pipeline’s exterior. The high pH of the inorganic coating tends to retard mold growth when used without a topcoat, even in a hot, humid environment.

Because of the ceramic coating’s multiple layers of corrosion protection, and the ability to “self heal” breaches, the power plant is on track to see long term protection of its pipeline, effectively eliminating the traditional cycle of blasting and recoating during costly shutdowns.

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The electric utility also met its environmental goals with this approach. The CBPC coating is inorganic and non-toxic, so there are no VOCs, no HAPs and no odor. The coating is also non-flammable. This enhances safety not only for plant personnel but also for the wildlife of the nearby freshwater preserve.

With atmospheric corrosion a perennial problem for owners or operators of any pipeline that carries compressed gas, whether for natural gas fired power plants or midstream oil and gas companies, the utilization of CBPC coatings that can control corrosion for decades will only help the bottom line and protect the environment.

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For facility managers ensuring safety and preventing slip and fall litigation can come down to documenting that surfaces where people walk meet safe standards in terms of available traction, particularly when wet – when falls are more likely.

When slip and fall liability can top 5 or 6 figures per incident due to negligence, medical expenses, lost wages/future earnings, pain and suffering, and other factors, simply cleaning up spills on flooring is no longer an adequate response.

Instead, a proactive plan is required that prevents clutter; speeds clean up, and routinely documents safe traction. Today, this often entails measuring the Static Coefficient of Friction (SCOF) on a range of materials to meet the ANSI/NFSI B101.1-2009 Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.

In this regard, $SCOF \geq 0.60$ equates with high traction (lower probability of slipping); $0.40 \leq SCOF < 0.60$ equates with moderate traction (increased probability of slipping); and $SCOF < 0.40$ equates with minimal available traction (higher probability of slipping).

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Since most slip and fall lawsuits allege that the facility failed to provide a reasonably safe surface, periodic documentation of safe SCOF measurements can help to assure safety, deter lawsuits, and minimize liability.

While transportable manual strain gauges that are pulled by hand have traditionally been used for such measurement, these do not provide a truly reliable means of high-volume testing on varying surfaces in multiple locations as needed. The devices are also complicated to use, requiring calibration and specialized training.

Fortunately, a new generation of innovative, portable, friction testers are now enabling fast, lab quality SCOF testing in volume by essentially anyone without specialized training. With this capability, onsite measurement is easily conducted on a variety of surfaces, even at an angle or upside down.

Even stairs, ramps, and inclines such as roofs can now be readily measured. This can help to facilitate safety on a host of materials, while documenting compliance and preventing slip and fall liability.

Traditional Testing Limitations

For onsite measurement of existing surfaces, manual strain gauges are traditionally used to test the SCOF by facility managers. However, the problem with these bulky transportable units, pulled by an operator over horizontal test surfaces, is that the devices introduce human error.

“With a manual strain gauge, the operator is trying to measure very minute numbers, but cannot pull the unit with a steadily increasing force until it starts to break free, and then stop exactly at that point to get an accurate number,” says John Bogart, Managing Director of Kett US, a manufacturer of a full range of SCOF and surface property analyzers for various industries.

Additionally, these units do not fit in narrow spaces such as stairs, and do not accurately measure areas

such as ramps and roofs which are not level. The units also do not distinguish between individual spots in a larger area, but only give the average without variation – which can leave some areas out of compliance.

Another challenge with manual strain gauges is that the devices do not readily measure mixed surfaces. This can be a problem not only with water, wax, polish etc. residing on the surface of the material, but also with certain shoe sole surfaces, such as leather or high heels, which can significantly change the SCOF and make slip and fall incidents more likely.

Finally, using such instruments can require substantial training. Even then, any variance in measuring technique between technicians can cause further differences in accuracy.

Portable Testing Benefits

In contrast to complex, traditional transportable units which can be larger than a microwave oven, easy to use, portable friction analyzers about the size of a hand mixer are now available. These can essentially be used anywhere onsite. As such, utilizing them can help to ensure safe, compliant SCOF documentation that deters slip and fall litigation and liability.

Examples of this include two handheld, battery operated models, the H94i and H37i by Kett. Both are designed so virtually anyone can quickly use them with minimal training, wherever SCOF measurement is needed. Operation is simple. The operator puts the unit on the surface to be tested, presses the measure key, and obtains the SCOF value in seconds, with accuracy comparable to lab models.

The units rely on an electric coil assembly and a magnet to create an easily variable and precisely measureable force. When the operator presses the measure key, a voice coil motor increases the force exerted on a fixed slider until it begins to move. An integrated microprocessor measures the force vectors and calculates the SCOF.



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To enhance accuracy, both units automatically calculate averages to reduce operator judgment on mixed surfaces. Even with these capabilities, both instruments are compact enough to take measurements in smaller spaces (such as stair steps) so the operator can also determine SCOF variations.

While the H94i must be used on a level surface, the newer H37i has integrated angle adjustments that allow it to be used at any angle from horizontal to vertical to upside down. This enables onsite SCOF measurement on ramps, inclines and roofs as well.

The newer model, in fact, has been used to measure the SCOF of a variety of materials at slopes as high as 45° in a recent unpublished National Institute for Occupational Safety and Health (NIOSH) study.

Compared to less flexible traditional methods, another benefit of the portable friction testers is the devices' allowance for more versatile testing with a variety of

mixed surfaces. This can include any solid or liquid on both hard and soft surfaces.

According to Bogart, the ability to attach an interface layer onto the portable units enables multi layer simulation tests. These, for instance, can simulate the slip resistance of various shoe surfaces (leather, high heel, rubber) on materials, both dry and wet.

Ensuring Safety, Deterring Liability

The bottom line for facility management professionals is that they can now truly protect from dangerous, costly slip and fall incidents. With portable SCOF testing, they can ensure and document that all of their materials are within safe specifications anywhere as needed.

For more info, contact Kett: call 800-438-5388; email support@kett.com; or visit www.kett.com.

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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.

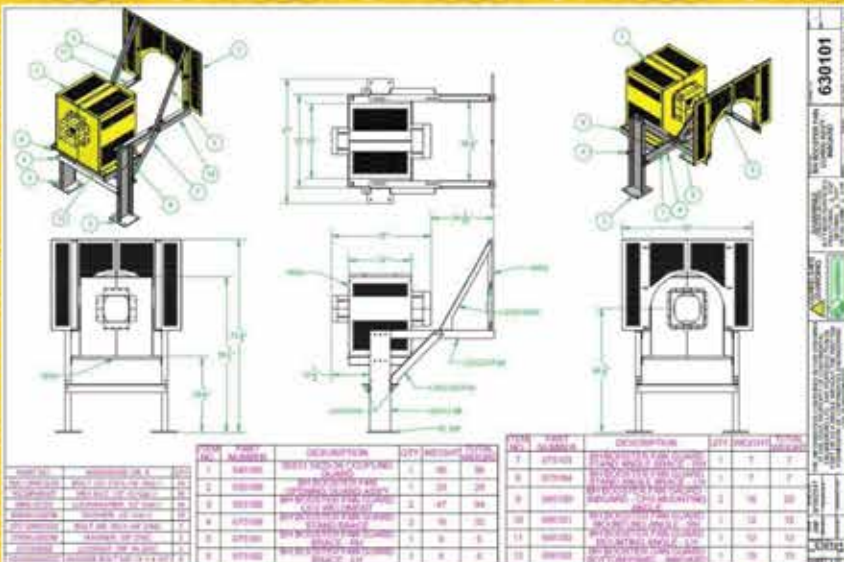


Designing your Guards

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.



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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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