

JULY 2019

SAFETYZONE MAGAZINE



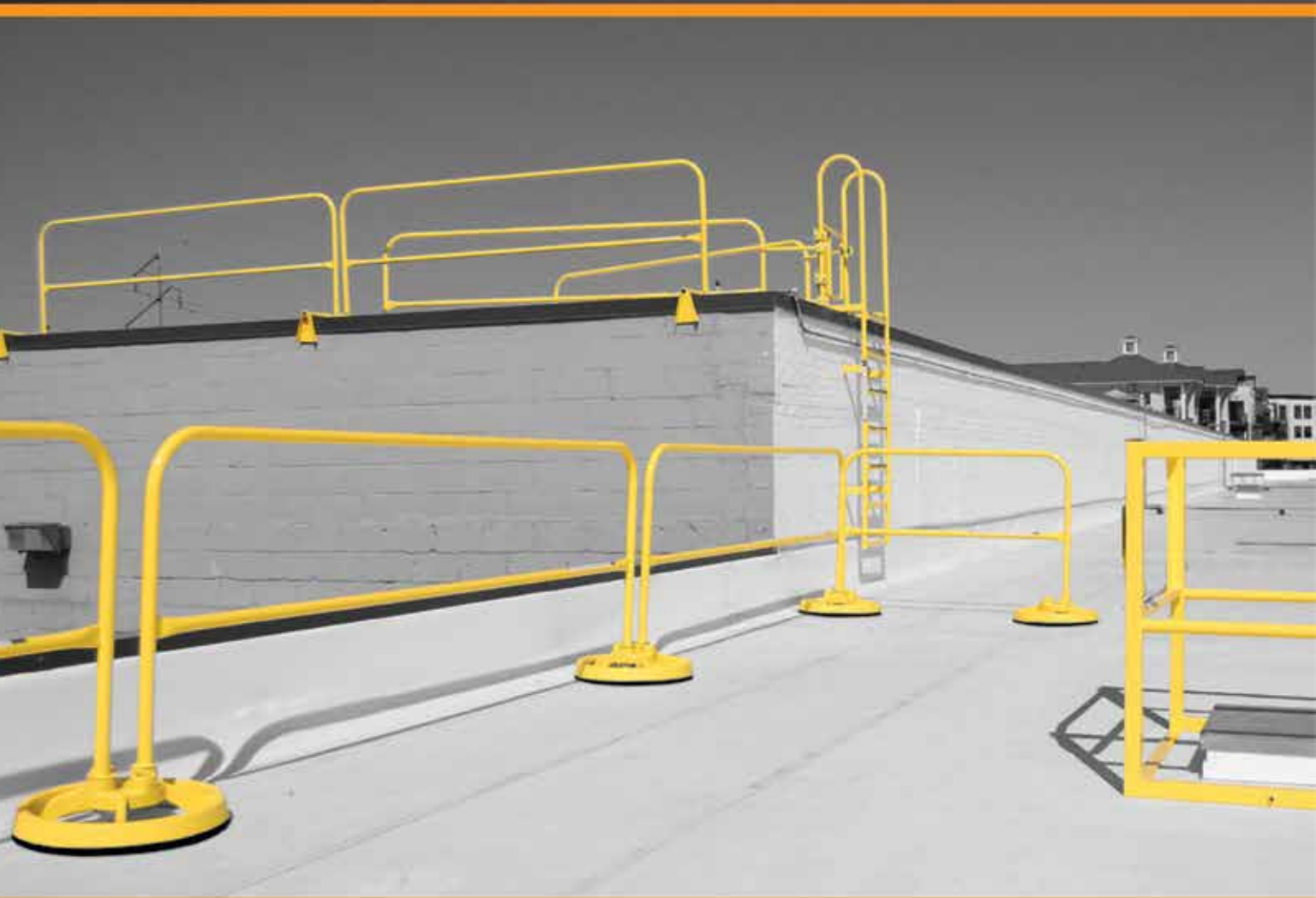
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SZM Contents • July 2019

PG 6	Company Profile: Safety Through Engineering
PG 8	Company Profile: Jesco
PG 12	Creform AGV and Flow Rack System Helps Powers Up a Powertrain Manufacturer
PG 18	Advanced Fire Detection Ensures Safe Football Broadcast at Biggest Game of Year
PG 26	Comparing Industrial Transformers
PG 32	Ad Index

Cover Art Provided By: Safety Rail Co



Pg 12

SAFETYZONE MAGAZINE

Vol. 19 Issue 7

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Safety Zone Magazine™ is published six times a year on a bi-monthly basis by CJS Media, P.O. Box 1568, Pelham, AL 35124 USA. *Safety Zone Magazine™* is distributed free to qualified subscribers. Non-qualified subscription rates are \$57.00 per year in the U.S. and Canada and \$84.00 per year for foreign subscribers (surface mail). U.S. Postage paid at Birmingham, Alabama and additional mailing offices.

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Creform AGV and Flow Rack System Helps Powers Up a Powertrain Manufacturer

Creform Corporation, a manufacturer of unique products for the design and building of material handling structures and automated guided vehicles has built an AGV and flow rack system for an automotive parts company in Mexico. The AGV Tugger with racks, transports powertrain components as they travel between machining to the clean room area for assembly. Full carts are delivered, and empty carts returned.

The BST AGV, Model CA2-A3800C, with brushless motor, works as an automated tugger and pulls each of the eight flow racks through the system. It can travel up to 50M/min. and has a load capacity of 1322 lb. (600 kg). The BST Tugger moves along a magnetic guidepath and travels approximately 600 ft. It makes a circuit of the route every hour during production over a two-shift operation. The AGV automatically exchanges (drop/pickup) full carts and empty carts during the run. It is manually started to allow flexibility in the operation as the associate can either press a dispatch button on the AGV or



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Each of the flow racks is made utilizing the Creform system of 28 mm pipe and joints. They were kitted and assembled onsite by the Creform team. The rack's dimensions are 63" L x 31" W x 65" T. There are four ergonomic levels per cart and each shelf/level is rated for a distributed load of 200 lb. The parts flow down gravity lanes with no packaging. This helps ensure damage-free parts handling and production efficiency. Integral to the flow racks are wear-resistant, stainless steel covered Creform Placon® skatewheel rollers. The carts feature high-quality 6 in. casters to handle the frequent movement of the AGV. The casters also allow an associate to easily move the carts manually for positioning. Each cart also features a special hitch plate to accommodate AGV coupling.

Options with Creform AGVs can include: Multi-course control with the addition of "Course-10" module, opportunity charging system to minimize the need for manual battery changes and a Creform Preventive Maintenance program.

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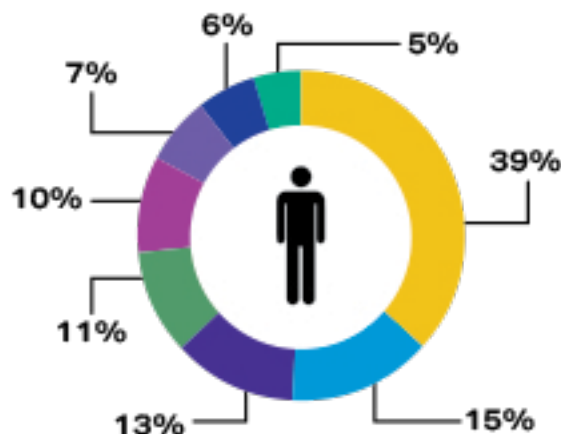


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Advanced Fire Detection Ensures Safe Football Broadcast at Biggest Game of Year

Aspirating smoke detection technology is selected as economical, quick installation solution for temporary broadcast offices at biggest game of the year

Before the Patriots could take on the Rams in the Super Bowl, ensuring the safety of assigned broadcast personnel and equipment was required at the Georgia World Congress Center Authority (GWCCA) convention center. Like other facilities located near the Mercedes-Benz Stadium in Atlanta, Georgia, the convention center was being used to accommodate the immense surplus of support personnel and equipment associated with the event.

When global events like these come to town, temporary facilities are often required to accommodate specialized equipment and support personnel. In the case of the GWCCA convention center, this meant building temporary offices within a large hall to accommodate essential broadcast support equipment and personnel. The offices included a broadcast control room, a room for storing engineering equipment and a meeting area.

Despite being a temporary solution, the newly constructed office space had to remain compliant with fire codes. This essentially meant that a complete fire detection system had to be installed and later removed.

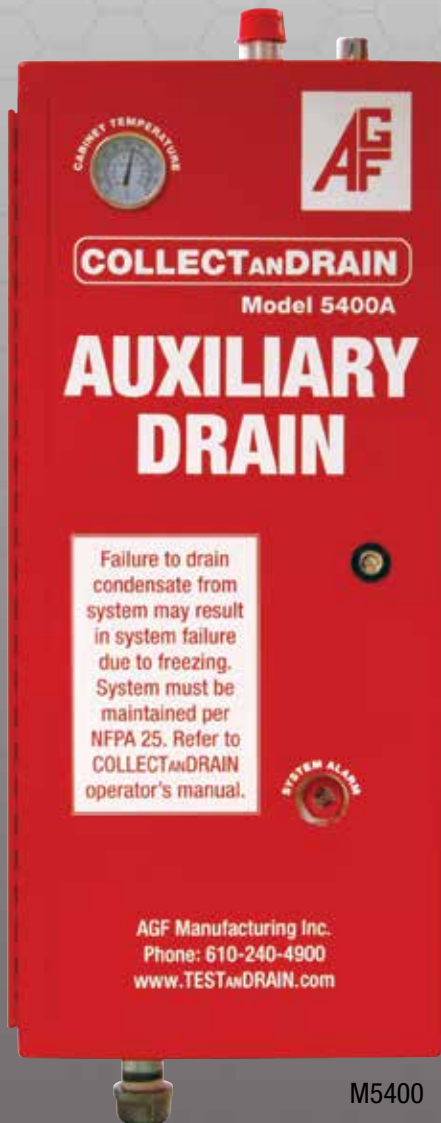
Installing a “temporary” fire detection system is no small feat, however. Although traditional spot smoke detectors are easy to install, it requires certified electricians to run electrical conduit and wire to each unit that connect back to a central alarm panel.

Although the GWCCA convention center had its own traditional fire detection system, the decision was made to install a complete, standalone system including fire alarm panel.

“They were not going to accept the existing Convention Center’s Fire Alarm System on its own,” says Christian Santamaria, a co-founder of Intelligent Fire Systems & Solutions, Inc., a fire and life safety installation company involved with the project. “They wanted additional protection for the temporary structure within the convention center that was completely separate from the existing system so it could be installed quickly and removed with ease after the event was over.”

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According to Santamaria, the fire marshal specifically recommended an advanced aspirating smoke detection system for the application.

For the project, an aspirating smoke detection system called the VESDA-E VEA from Xtralis was selected. The VEA unit draws air in through tubing connected to small, unobtrusive "sampling points" located in each room. The air is analyzed to identify the presence of minute smoke particles in a continuous process using sophisticated laser-based technology built into the central unit.

The system is able to detect minor particles in the air much faster than traditional spot smoke detectors, even before a fire begins to flame and burn. In many cases, early warnings can speed evacuation and prevent fire spreading to other areas.

The technology, though advanced, is not new. Aspirating smoke detection technology has been used for decades in sensitive applications such as cleanrooms and data centers where early smoke detection is critical.

Although the VEA system is often installed as a permanent solution, the ease of installation makes it ideal for operational smoke detection in temporary facilities or during construction or remodeling of any space. The VEA has already been installed for this purpose in schools, universities, hospitals and medical office buildings.

According to Santamaria, the VEA detector used for the GWCCA convention center application utilized six smoke detection sampling points, although a single detector allows for up to 40. He notes that the fire marshal specified that audible/visible alarms had to be installed inside and outside the temporary offices as well.

One of the most helpful factors in this project, was the simplicity of the VEA system compared to traditional methods, which usually involve running electrical wire and conduit.

"Depending on the size of the rooms, it can easily take a couple of days just to run electrical wire and conduit between rooms, which adds to cost and complicates removal," says Santamaria.

In contrast, the aspirating smoke detection system does not require a certified electrician to run the small, flexible tubes to the designated locations. The central unit also simplifies testing and monitoring of the system.

To speed installation, Intelligent Fire Systems & Solutions Inc. pre-fabricated and programmed the VEA aspirating system before it was shipped to Atlanta. "We

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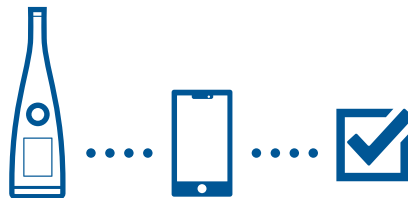
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also created a video to demonstrate how to install and test the system for the installation team onsite," explains Santamaria.

Although he was on standby to fly to the location if needed, the installation team was able to successfully install the system without difficulty. Once installed, the fire marshal quickly inspected and approved the system.

Since it was implemented as a standalone system and without running electrical wiring, the system was easy to remove. Although it is not determined yet, it could be utilized at other events that may have temporary structures which require a fire alarm system.

"Because the aspirating smoke detection system is not tied into the facility's electrical or fire detection systems of the convention center, it is easier to remove and reuse in different configurations and even with more sampling points if needed in the future," explains Santamaria. "That kind of flexibility is the reason the VESDA-E VEA system works so well as an economical, temporary solution for events requiring supplemental smoke detection."

For more information, contact: Xtralis at 175 Bodwell Street, Avon, MA 02322; call: +1 619-252-2015, email: sales@xtralis.com; or visit: www.xtralis.com/vea

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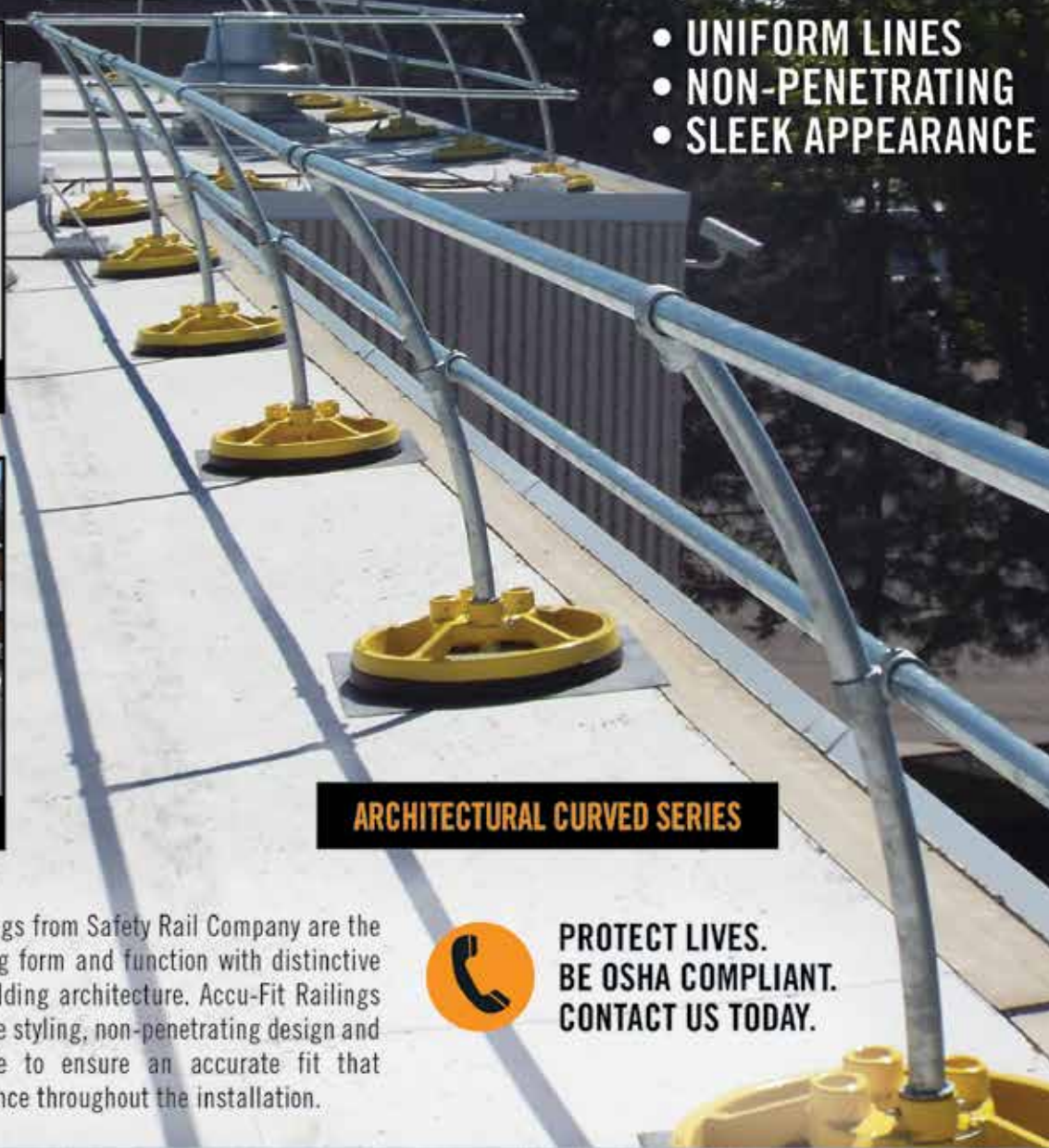
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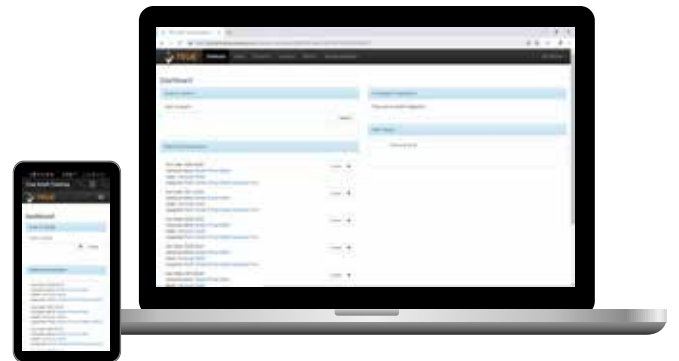
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COMPARING INDUSTRIAL TRANSFORMERS



Industrial transformers come in various sizes, capacities and functionalities (just to name a few). For operators, one must select a transformer that meets the needs and requirements of the project or business.

This article compares the following types of transformers and their applications: isolation transformer, auto transformer, DOE 2010/2016 transformer and buck-boost transformer.

Isolation Transformer

An isolation transformer is a basic, two-winding unit with separate primary and secondary coil windings. As the term suggests, a main isolation component separates the two windings. In application, an operator connects line-in power on the primary side of the transformer, with the unit providing isolated output of the alternating current on the secondary side. This type of transformer is mainly used for electrical isolation. Because of this, electrostatic shields and other protective components are commonly used with the unit, in order to deter noise.

“Isolation” occurs in isolation transformers, because an electrical connection is not shared/does not exist between inputs and outputs.

When used strictly for isolation, an isolation transformer may feature a 1:1 (equal) turns ratio, suggesting no voltage conversion will take place. The turns ratio in the primary and secondary windings are not equal when a transformer is required to step up or step down input voltage (more on this later).

When to use: prevent ground loops, accurate measurement requirements, equipment preservation (isolation), electrical safety, sensitive equipment, mitigate electrical disruptions, transfer power between two non-connected circuits and more.

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Auto Transformer

Next, an auto transformer is a unit with a common primary and secondary winding. Due to the transformer's shared, single-winding configuration, isolation does not occur between inputs and outputs. Furthermore, the common coil in transformer is responsible for the functionality of both primary and secondary windings. For voltage conversion, the winding component in an autotransformer can be tapped accordingly, at various points on the winding.

As mentioned earlier, when stepping up or stepping down input voltages, conversion is dictated by the turns ratio (also known as transformer ratio). To arrive at the turns ratio of an autotransformer, one must divide the turns on the primary side with the secondary side. For example, if 240V is provided on the primary and 120V is required on the secondary, the required number of loops on the primary side is 2x (double), compared to the secondary side, resulting in a 1:2 ratio.

From a cost perspective, auto transformers are economical; in a sense that the unit's shared configuration allows it to use less materials. Additionally, this type of transformer is more compact than an isolation transformer. Businesses with strict space-saving requirements at the work site may find this feature advantageous.

When to use: voltage conversion, current regulation, non-isolating electrical connections and more.

Drive Isolation Transformer

Drive isolation transformers are used with AC/DC variable motor drives. Isolation is provided for the input current and SCR load, as the primary windings and the secondary windings are separate. In application, an operator may utilize a drive isolation transformer to reduce load issues inflicted by the SCR drive component.

When to use: SCR drives, variable speed drives, motors, reduce mechanical stress, decrease noise/electrical distortions, voltage conversion and more.

DOE 2010/2016 Transformers

The US Department of Energy (DOE) governs efficiency and performance standards of industrial transformers under the Energy Policy and Conservation Act of 1975 (EPCA) and 10 CFR Part 431 Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Final Rule.

DOE 2016 standards officially superseded DOE 2010 standards on January 1, 2016. Hence, most of the focus will be on DOE 2016 transformers.

There are several meticulous details in the standards that must be carefully taken into consideration. For instance, the scope of the term "distribution transformer" does not refer to an autotransformer, rectifying transformer, units with 20%+ tapping range, welding transformer, drive isolation transformer and more.

Instead, the scope of DOE 2016 transformers includes the following: liquid-filled/immersed, low voltage dry-type and medium voltage dry-type.

Based on current DOE 2016 regulatory guidelines, this type of transformer features an input voltage of 34.5kV (or less), output voltage of 600V (or less) and a frequency rating of 60 Hz. Moreover, the scope of application is limited to distribution transformers with capacities not exceeding 2,500 KVA for both liquid and dry-type units.

When to use: DOE compliance, industrial regulation compliance, energy savings and more.

Buck-boost Transformers

Lastly, a buck-boost transformer is a type of autotransformer (according to 2008 NEC Handbook Section 210.9) that steps up (boost) or steps down (buck) an input voltage in an economical manner. Equipped with two primary windings and two secondary windings, this type of transformer is applicable to small voltage conversion requirements, roughly between 7 and 20 percent.

Buck-boost transformers are versatile, depending on their connections. When functioning as an autotransformer, it is common practice to use 2-3 buck-boost transformers for handling three-phase voltage rectification, while one unit can be used for single-phase voltage conversion. In an isolated configuration, operators can use the unit as an isolation transformer, which converts line-in power to a desired low voltage setting (12, 16, 24, 32 or 48V).

When to use: field connections, space-saving configurations, minimal voltage conversion, motors, lights and more.

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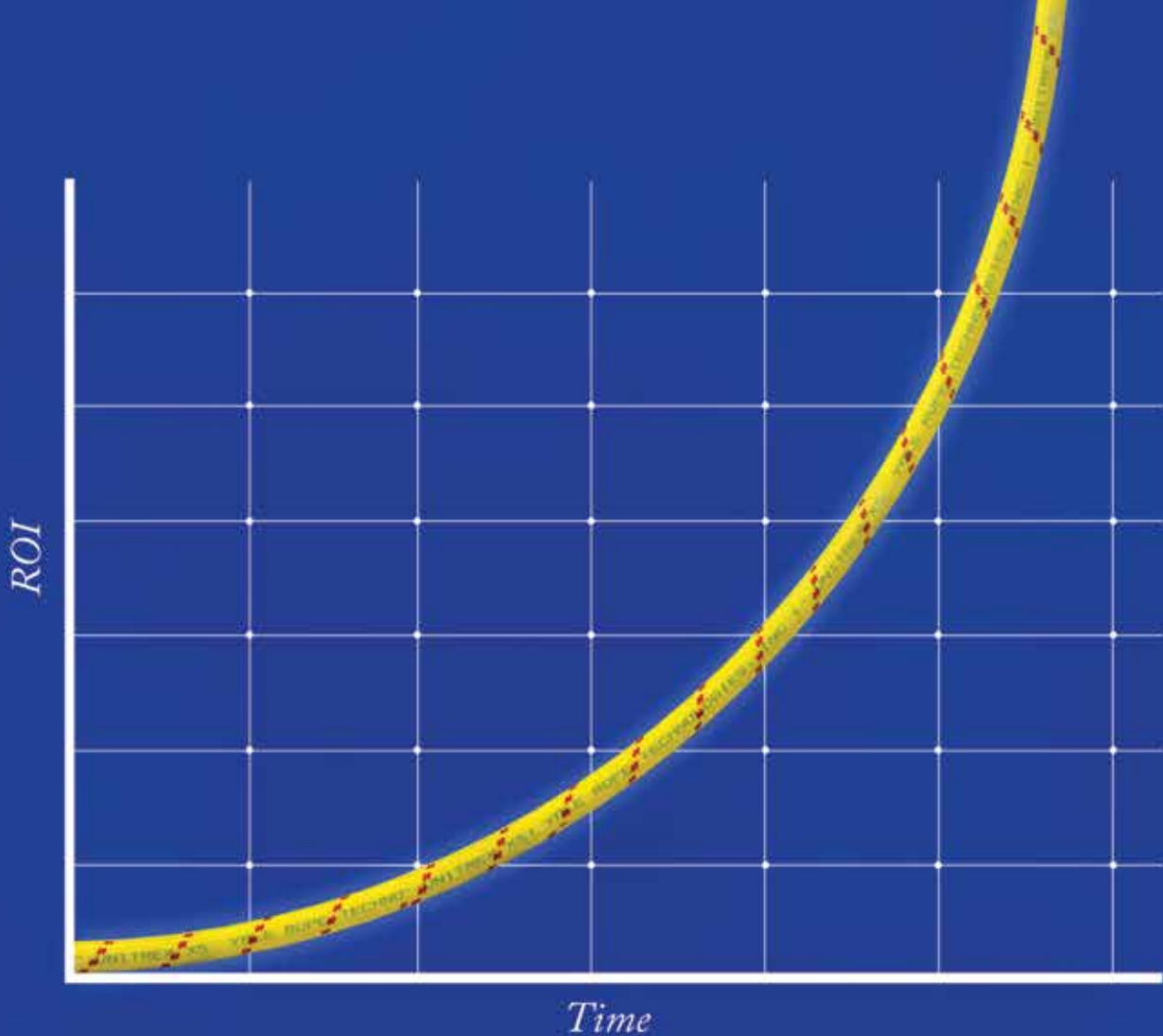
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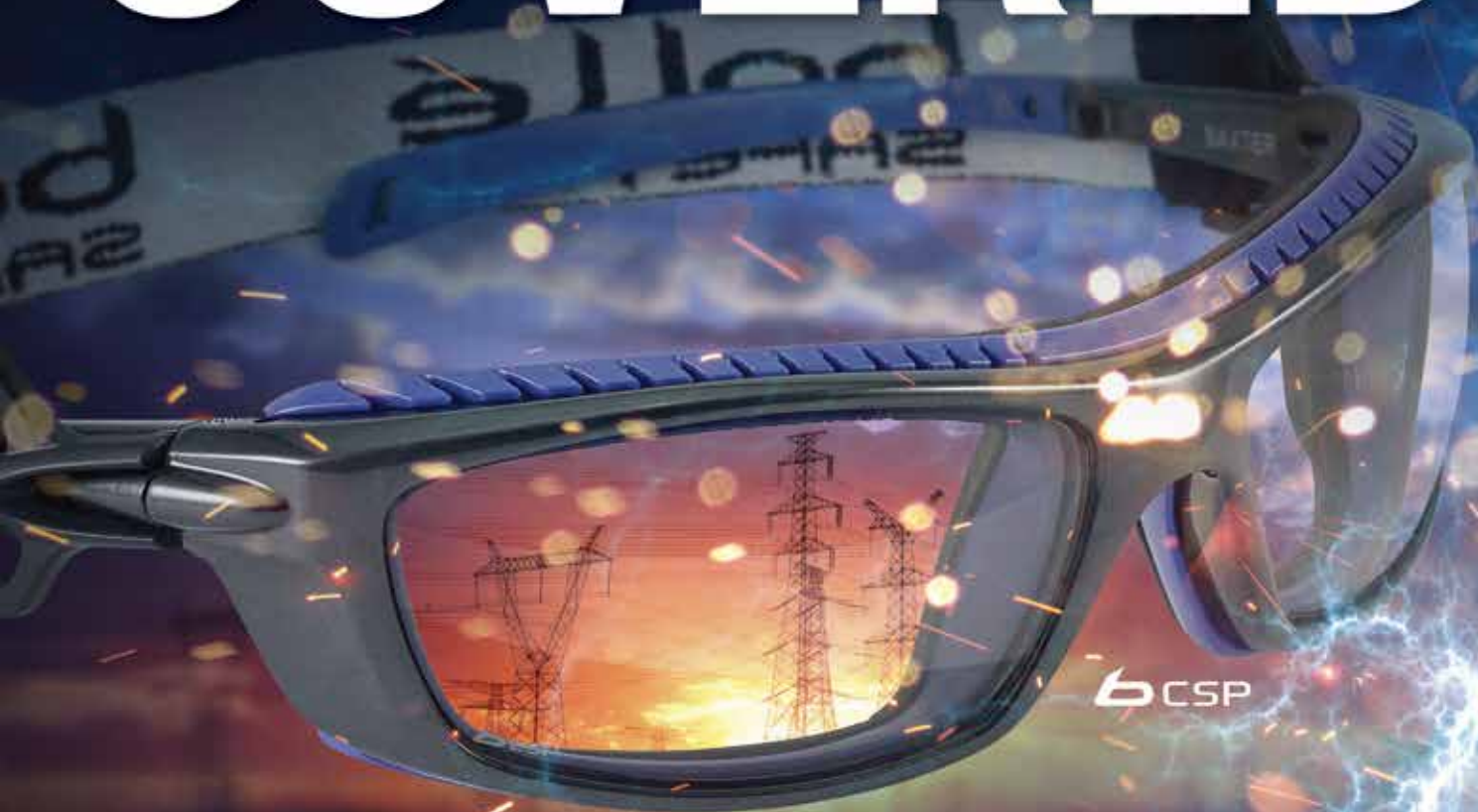
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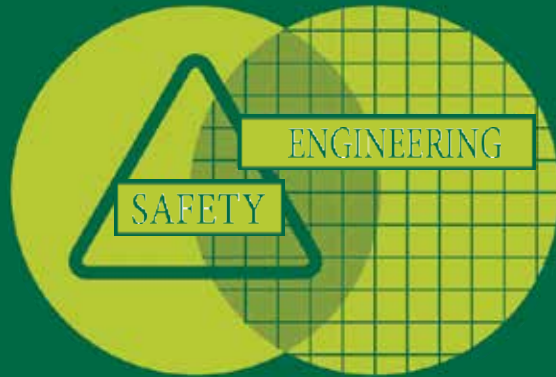
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