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PG 4	Company Profile: Grace Industries Inc
PG 6	Arc Flash Safety: A Call for Vigilance & Responsibility
PG 10	Sunbelt Solomon: Powering the Future with Tradition and Innovation
PG 14	11 Parts of an Electrical Transformer
PG 22	Ad Index



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Vol. 25 Issue 4

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The Electric Current™ is published twelve times a year on a monthly basis by Southern Digital Publishing, Inc. *The Electric Current™* 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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Grace Industries

Overview:

Grace Industries, Inc. is a U.S.-based manufacturer that designs and produces personal safety and emergency signaling products, primarily for firefighters, emergency responders, industrial workers, and military personnel. Their focus is on life-safety equipment that can alert others if a worker becomes incapacitated or in distress.

Founded: 1974

Headquarters: Fredonia, Pennsylvania, USA

Industry:

- Personal Safety Equipment
- Emergency Signaling Systems
- Worker Safety Solutions

Products:

- PASS Devices (Personal Alert Safety System) — small devices that automatically send alarms if the user stops moving.
- Man-Down Alarms — wearable alarms for lone workers.
- Evacuation Systems — emergency communication and alert devices.
- Accountability Systems — tracking and monitoring systems for emergency teams.
- Wireless Safety Solutions — for both indoor and outdoor industrial environments.

Notable Technologies:

- Motion-sensing alarms
- Wireless telemetry and signaling
- Rugged, waterproof designs for extreme conditions

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- Fire departments
- Oil and gas industries
- Mining operations
- Military and law enforcement agencies
- Industrial companies with hazardous environments



Core Mission:

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Website:

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(you can find full product catalogs and support resources there)



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Arc Flash Safety: A Call for Vigilance & Responsibility



In the world of electrical work, few hazards are as sudden and devastating as an arc flash. In an instant, temperatures can soar to over 35,000 degrees Fahrenheit—four times hotter than the surface of the sun—releasing explosive energy capable of causing catastrophic injuries, equipment destruction, and even death. Yet, despite these staggering risks, arc flash incidents continue to occur with alarming regularity, often stemming from preventable causes.

Arc flash safety is not just a regulatory checkbox; it is a profound ethical responsibility. Every worker who approaches energized equipment deserves the full protection of diligent safety practices, modern technology, and a culture that prioritizes life over convenience.

The foundation of arc flash safety is education. Workers must understand not just how to work safely, but why each precaution is necessary. Too often, familiarity with a task breeds dangerous complacency. Ongoing, high-quality training can reframe routine activities through a lens of risk awareness and ensure that critical procedures are followed even under pressure.

Equally important is the commitment to thorough and accurate arc flash risk assessments. Companies must invest the time and resources to properly label equipment, calculate incident energy levels, and develop clear, actionable safety plans. Cutting corners, whether to save money or meet deadlines, is an

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invitation for tragedy.

Proper personal protective equipment (PPE) serves as the last line of defense. While no gear can make an arc flash “safe,” PPE dramatically increases the odds of survival and recovery. It must be chosen based on the specific risk assessment of the task and worn correctly every time—not just when it’s convenient.

However, even the best PPE and training are insufficient without a workplace culture that empowers employees to speak up and stop work when safety is compromised. Leadership must set the tone, modeling safety-first behaviors and refusing to prioritize production over people. True commitment to safety is visible, consistent, and uncompromising.

The good news is that arc flash incidents are largely preventable. Advances in technology—such as arc-resistant switchgear, remote racking devices, and maintenance-mode settings—are making hazardous work safer than ever before. But technology alone is not a substitute for vigilance.

Each injury avoided, each life saved, is a testament to a company’s character and values. Arc flash safety is not about fear; it is about respect—respect for the forces we harness, for the lives we touch, and for the families who expect their loved ones to come home safely every night.

Safety is a journey, not a destination. In the realm of arc flash hazards, that journey must be traveled with humility, commitment, and unwavering resolve. •

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Sunbelt Solomon: Powering the Future with Tradition and Innovation

In the evolving world of power distribution and electrical infrastructure, Sunbelt Solomon stands out as a leader blending decades of expertise with forward-thinking innovation. Formed through the merger of two industry powerhouses — Sunbelt Transformer and Solomon Corporation — the company has positioned itself as a comprehensive provider of equipment and services that keep the world energized.

A Legacy of Excellence

Both Sunbelt and Solomon built strong reputations individually, serving utilities, industrial companies, and commercial operations across North America. Their 2020 merger combined over 90 years of experience in the sale, rental, repair, and recycling of electrical transformers and related equipment. This union allowed Sunbelt Solomon to offer one of the largest inventories of new, reconditioned, and rental transformers in the country. From distribution to power transformers, regulators, reclosers, and switchgear, they provide essential equipment that keeps industries running smoothly.

Services that Power Progress

Sunbelt Solomon offers a full suite of services, including:

- Transformer Repair and Reconditioning: Extending the life of aging equipment with expert diagnostics and refurbishment.
- Field Services: On-site maintenance, testing, installation, and emergency support.
- Asset Recovery and Recycling: Environmentally responsible disposal and recycling of outdated or damaged equipment.
- Sales and Rentals: A vast inventory that supports both planned projects and urgent, emergency needs.

Their ability to deliver fast, flexible solutions has made them a trusted partner for electric utilities, renewable energy projects, data centers, and industrial facilities.

Innovation Meets Responsibility

Sunbelt Solomon is committed to sustainable business practices. Through its recycling programs and efficient repair services, the company reduces waste and promotes the reuse of valuable materials.

*"As a safety professional, you always want your workers to have access to leading edge safety tools that improve safety and focus. Working with **COOLSHIRT SYSTEMS** over the past two years allowed me to help design a tool by lineman for lineman."*

*The **A.R.C. Hybrid Cooling System** by **COOLSHIRT SYSTEMS** allows lineman to remain more focused and less fatigued by reducing their core body temperature in extreme environments, therefore reducing the possibility of unintended accidents."*

-James "Jim" Bonner
Compliance Coordinator- Retired
Alabama Power



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This focus on sustainability not only benefits the environment but also helps clients meet their own ESG (Environmental, Social, Governance) goals.

In addition, Sunbelt Solomon embraces technological innovation, using advanced testing equipment and predictive analytics to ensure their services are both reliable and forward-thinking.

Nationwide Reach, Local Service

With facilities and field teams strategically located across the United States, Sunbelt Solomon delivers responsive, knowledgeable service wherever it's needed. Their coast-to-coast footprint ensures that critical electrical infrastructure is supported — from small rural co-ops to massive utility companies and Fortune 500 industrials.

Looking Ahead

As the demand for reliable, renewable, and resilient power continues to grow, Sunbelt Solomon is poised to meet the challenge. With a strong foundation built on history, expertise, and innovation, the company is helping to shape the future of the energy landscape.

For those seeking a trusted partner in the world of power equipment and services, Sunbelt Solomon remains a beacon of reliability, capability, and progress. •



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11 Parts of an Electrical Transformer





Transformers are crucial to electrical system infrastructure, function and power. They transfer energy to one or more electrical circuits, increasing or decreasing the voltage without changing the frequency. This is necessary for appliances to function correctly without the risk of an electrical hazard.

A transformer has several parts, each serving a unique purpose to enhance the overall operation of these machines. These include:

- Laminated core
- Windings
- Main tank
- Insulating materials
- Transformer oil
- Cooling tubes or radiators
- Conservator tank
- Dual voltage switch
- Control box and fans
- Pressure relief device (PRD)
- Tap changer

The core, windings, insulating materials and tank are features of almost all transformers, from isolation to distribution transformers. All other components are seen in machines above a certain kilovolt-amp (kVA). Let's look at each part in more detail.

1. Laminated Core

A transformer's core allows electromagnetic flux to pass easily via a low-reluctance path and supports primary and secondary windings. It is typically made with stacked sheets of either silicone steel or soft iron separated by a thin insulating material. These sheets help reduce eddy current loss, prevent hysteresis loss and allow for magnetic path continuity.

The exact design of a unit's core will depend on its current, voltage and frequency. However, its diameter is often directly proportional to the loss of copper and inversely proportional to the loss of iron.

2. Windings

There are always two sets of windings — the primary and the secondary. These are made from several turns of copper or aluminum bundled together. Copper is most commonly used as it is one of the most conduc-

tive metals, whereas aluminum is only around 60% as conductive. Both are insulated from each other and are wound around the core.

Windings are classified based on either the supply's input and output or on the supply's voltage level. When classifying based on input or output, the windings are:

Primary: This winding is connected to the input supply.

Secondary: This winding takes the output load.

The primary winding is connected to the electrical source, which generates the magnetic flux. The magnetic flux passes through the core to the secondary winding, completing the movement and creating a magnetic circuit.

However, windings are also classified based on the voltage level:

- **High voltage:** This winding is connected to the higher voltage and can either be the primary or the secondary. It is generally made from a thin copper conductor with a larger number of turns.
- **Low voltage:** This winding is connected to a lower voltage. It can also be primary or secondary. Unlike their high-voltage counterparts, low-voltage windings are usually made from a thicker conductor with fewer turns.

3. Main Tank

Also known as the casing, the main tank is one of the most sturdy parts of a transformer. It houses the windings, core and all other components and protects them from the external environment.

These tanks are typically made from steel, yet aluminum is becoming increasingly popular to help reduce the weight of these parts. Aluminum is a lighter metal, only weighing one-third as much as steel.

4. Insulating Materials

Every transformer requires insulation to isolate both sets of windings from each other, the core and other parts made from conducting materials such as the tank. As 70% to 80% of all transformation failures result from internal winding insulation faults, the insulating materials are considered the most important electrical transformer parts.

Ideal insulating materials have excellent dielectric strength, beneficial mechanical properties and high temperature resistance. Paper, cardboard and cotton are often used as insulation, and transformer oil is also an insulating material.

5. Transformer Oil

Transformer oils are usually hydro-carbon mineral oils that are either paraffin- or naphtha-based. Along with providing additional insulation between the windings in oil-immersed transformers, this oil also cools the core and coil.

Due to its chemical properties and dielectric capabilities, transformer oil transfers the heat created by the core and windings to the external environment. Once the windings heat up due to the current's flow, the oil cools these parts as it circulates inside the machines and displaces this heat via cooling tubes.

6. Cooling Tubes or Radiators

Cooling tubes or radiators cool the transformer oil. Oil circulation in the transformer can either be forced or natural.

With forced circulation, an external pump is necessary. If the circulation is natural, the hot oil moves upwards when the temperature rises, and the cold oil moves downwards, naturally circulating in the tubes.

7. Conservator Tank

The conservator tank is a metallic, airtight, drum-like structure that sits on top of the main tank. The

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primary function of the conservator is to allow the oil to expand and contract according to changes in the ambient temperature inside the tank. When the transformer heats up, the oil expands and flows into the conservator tank. As it cools, the oil contracts and moves back into the main tank, helping to ensure a balanced oil level.

This process is vital for the transformer's operation, as it allows other components to be constantly submerged in oil, keeping air out of the system and protecting insulation and cooling properties. As a result, there is a much lower risk of that machine overheating, which could result in suboptimal performance, unnecessary wear and tear, and even failure. The conservator tank controls oil levels and temperatures, promoting a transformer's longevity and efficiency.

8. Dual Voltage Switch

Dual voltage transformers can supply power at two different voltages. If the two windings have a series connection, the output will be the sum of both voltages. The total voltage will be lower if they have a parallel connection.

A dual voltage switch is essential to alternate between the different voltages according to the necessary output. This switch is typically located outside the main tank.

9. Control Box and Fans

The control box and fan are two indispensable components of a transformer. Control boxes manage the voltage and current that moves through these machines, helping to balance the load on the grid and ensure an even and efficient distribution of electricity. Transformer control boxes also shield the grid from failures and faults using fuses, surge arresters and circuit breakers to avoid overloads, short circuits and other issues.

However, control fans have a multifaceted role:

- They can reduce the amount of noise a transformer generates.
- They dissipate the heat in the transformer, helping to maintain an ideal temperature and improve the stability of these machines.
- Transformer fans can also boost insulation, helping to properly disperse static electricity and lower the risk of electrical accidents.

10. PRD

In the case of a severe internal fault, the tank's pressure may rise to dangerous levels. Mounted on top of the transformer, PRDs protect transformers from sudden increases in pressure by ensuring this pressure can be released, preventing a potential rupture or explosion.

The way these devices work is simple — if pressure levels exceed a safe limit, a valve cap opens to expel oil and hot air gases, depressurizing the tank. Once the levels return to normal, this cap returns to its leak-tight, closed position.

11. Tap Changer

Tap changers change the transformer's output voltage, also known as its secondary voltage, by adjusting its turn ratio. There are two types:

On-load: With this tap changer, tapping can be adjusted without disconnecting the transformer from the supply. As a result, it can function without interrupting the power supply.

Off-load: Conversely, with this changer, the transformer must be disconnected from the supply to change its turn ratio.

Some transformers have automatic tap changers.

Contact Sunbelt Solomon for Your Transformer Needs

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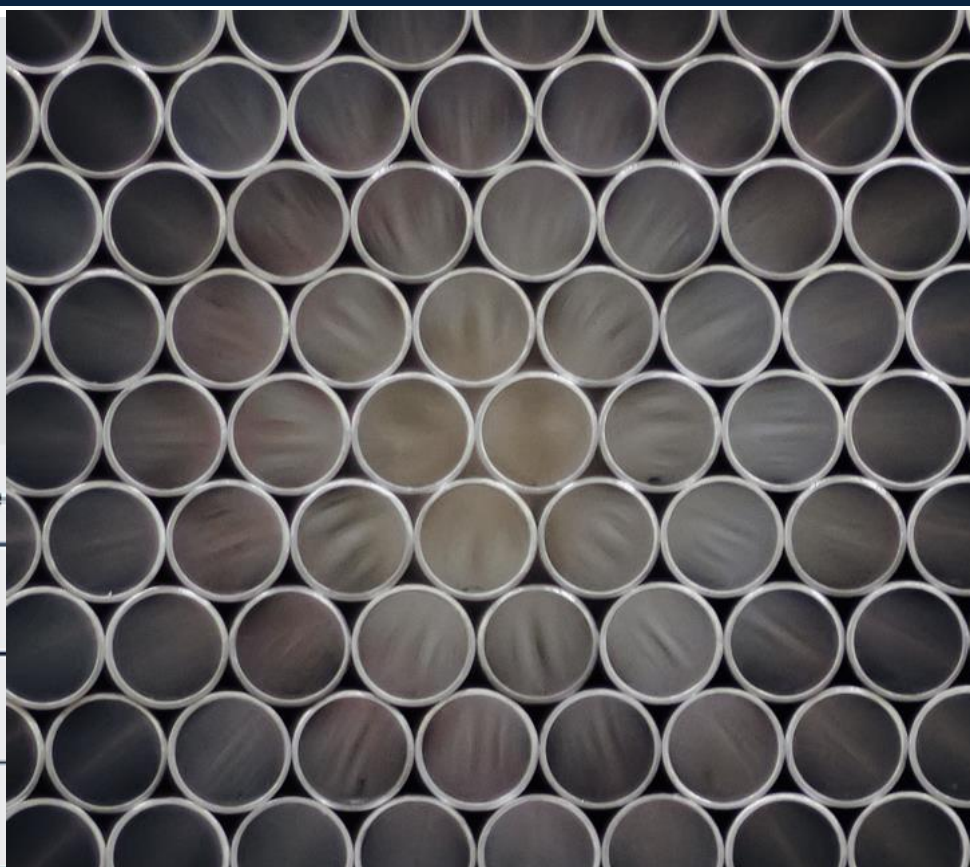
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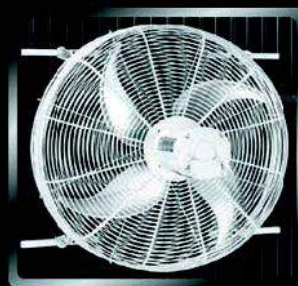
you'll likely understand these machines and how they work much better. With so many key components, regular maintenance and timely repairs are nonnegotiable to help ensure your transformer functions at its prime. With 100 years of combined experience, Sunbelt Solomon is here to be your trusted partner.

We are the nation's leading field service and maintenance specialist and offer comprehensive repair and replacement services. With our engineering capabilities, commitment to safety and various environmental qualifications, we will keep your equipment working as it should. We know experiencing issues with your transformer can be highly disruptive, so we also provide high-quality rentals to help you minimize downtime.

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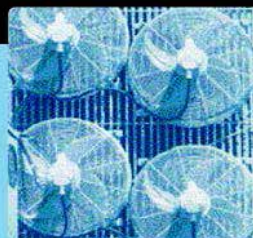
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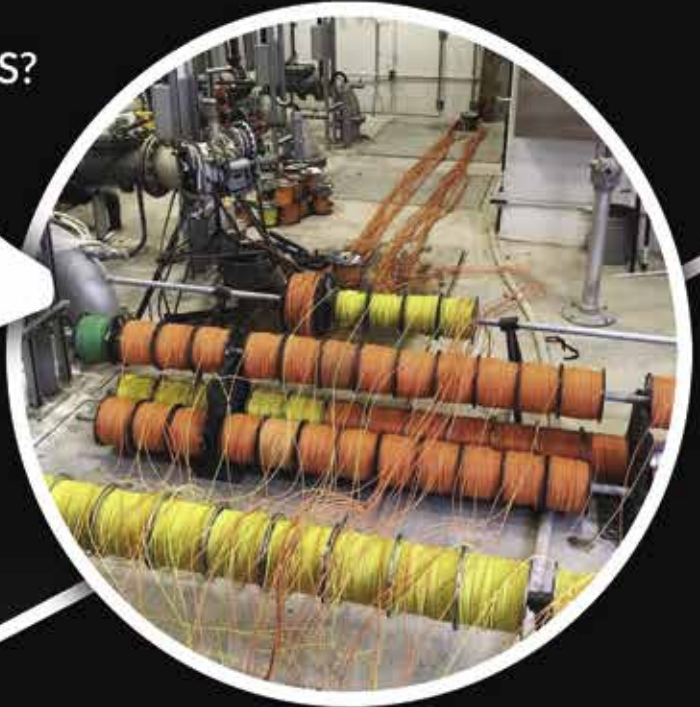
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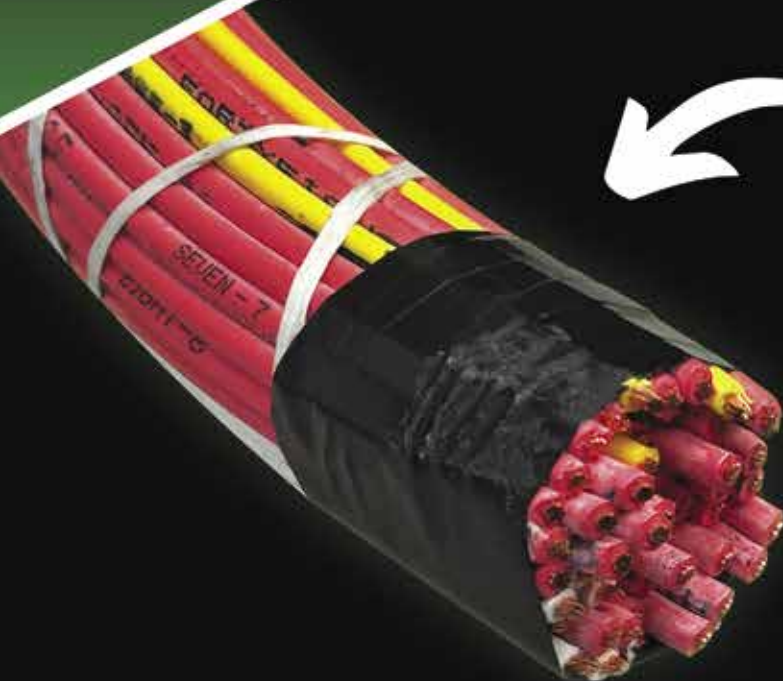
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Ladder Pegs
Pegs are Aligned
for Easier Climbing

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LINE-OF-SIGHT** 



ASSIGNED MONITORING ATTENDANTS



Grace Web Portal Dashboard



Custom Check-In Schedule



TEXT/Email Notification



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Check-In System



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Fall Detection

Manual Panic Button

Motion Detection

GPS Location

