

Mobile Innovations



The Power of Ideas

GENERAL APPLICATION

Overall *reliability* is a critical focus for utilities across North America, creating the need for solutions and equipment that can support the grid during times of emergency or occasional planned outages. Taking proactive measures to address these potential vulnerabilities is, therefore, vital to ensure a resilient network that minimizes customer interruption frequency and duration.

Southern States, with over 100 years experience integrating high voltage switching equipment, has worked to address this initiative by designing mobile solutions that are specifically tailored to our customer's unique applications. These mobile substations and auxiliary trailers can provide immediate cost savings to a utility's network, offering expedited restoration times as well as operational flexibility when multiple location sites are impacted by severe weather or equipment damage.

Leveraging our partnership with various ISO certified transformer manufacturers, Southern States has the resources to design or retrofit mobile substations that can be outfitted with Southern States' or your preferred switchgear brands. Available up to 230 kV and 65 MVA, our mobile products are manufactured with stringent specifications, ensuring the design is robust, durable, and to the utility's expectations.

For additional applications, Southern States also offers auxiliary mobile solutions to support reactive power compensation, switchgear failures, as well as other utility resiliency initiatives. These include capacitor trailers, circuit switcher trailers, breaker trailers, disconnect switch trailers, reactor trailers, recloser trailers, and voltage regulator trailers to name a few. Each can be equipped with a variety of custom features such as racking mechanisms, hydraulic systems, turn tables, fences, and much more. Let our team of experienced designers and engineers develop a solution best suited to your utility's specification requirements!

Mobile Innovations



Customized Solutions For Improved System Resilience

MOBILE SUBSTATIONS

Southern States designs, manufacturers, and retrofits mobile substations for a wide range of utility applications. Designed to meet customer specifications, DOT standards, and in compliance with the latest published standards of ANSI, IEEE, NEMA, NESC, and ASTM, these interim restoration sources serve as a backup during both planned and unplanned outages, reducing maintenance costs and maximizing utilization and return on investment. Available up to 230kV and 65 MVA, our self-contained trailer mounted units can be supplied with any preferred manufacturer's transformer, circuit breakers, disconnect switches, protection schemes, or other switchgear. If desired, Southern States can also leverage its extensive product breadth and industry partnerships to offer a more value engineered solution.

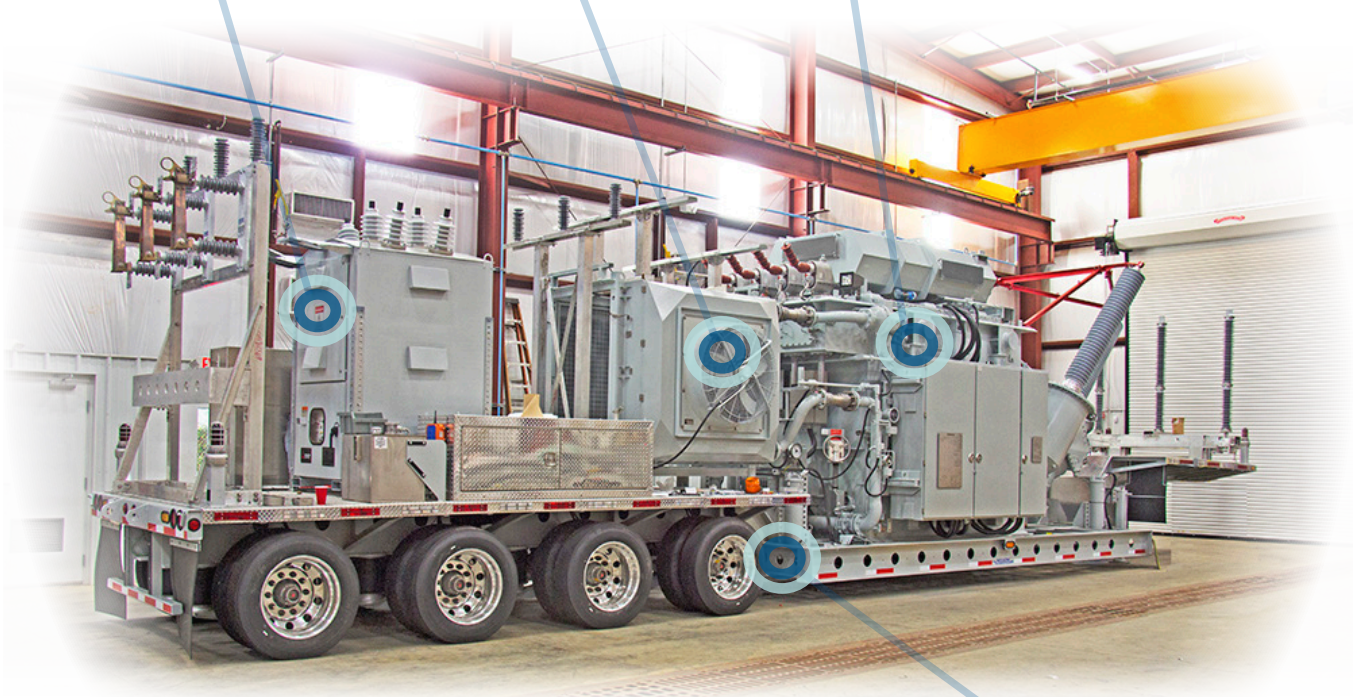


Low Voltage Switching

Cooling System

High Voltage Switching

Mobile Transformer



Custom Trailer

COMPONENTS



HIGH VOLTAGE SECTION

- Surge arrestors in accordance with transformer insulation level
- Disconnect switches - various types for local or remote operation
- Circuit switchers, power fuses, live or dead tank circuit breakers
- Current and potential transformers



TRANSFORMER & COOLING SECTION

- Available up to 230 kV / 65 MVA
- Bushings selected in accordance with voltage and current requirements
- Real-time monitoring for early fault detection and system assessment
- ODAF, OFAF, ONAN, or ONAF forced oil and air cooling systems available based on application requirements and climate



LOW VOLTAGE SECTION

- Disconnect, ground, and hookstick switches
- Vacuum breaker for protection against short circuit currents
- Surge arrester in accordance with transformer insulation level
- Protection relays suited for individual specification requirements



CUSTOMIZED TRAILER FRAME & COMPONENTS

- Hydraulic (parking or road use) or standard steering
- Hydraulic down riggers
- Grounding systems
- Structural steel from US or Canada / Welds per AWS standards
- Anti-slip decking

AUXILIARY TRAILERS

Along with mobile substations, Southern States also specializes in the design and manufacture of application specific mobile trailers. These have included capacitor trailers, circuit switcher trailers, breaker trailers, reactor trailers, recloser trailers, voltage regulator trailers, as well as disconnect switch trailers.

The economical advantage and deployment flexibility of these mobile trailers can offer significant value to a power supply network. Our highly adaptable designs can be monitored remotely and are ideally suited for temporary configurations, requiring minimal operator effort.



APPLICATIONS



CAPACITOR BANK TRAILERS

- Available up to 230 kV (Fused or Fuseless)
- Reactive power compensation solution providing voltage stabilization or load flow control
- Emergency outage or maintenance application
- Add VARs economically without installing permanent equipment



CIRCUIT SWITCHER TRAILERS

- Available up to 230 kV
- SF₆ interrupting medium
- Lighter weight than live or dead tank circuit breakers
- Reliable, smooth opening rack-out mechanisms or turn-tables



BREAKER TRAILERS

- Available up to 230 kV, sync close or pre-insertion resistors available
- Live or dead tank breaker type
- Available turn-tables for easy bushing alignment
- Highly engineered, smooth opening rack-out mechanisms

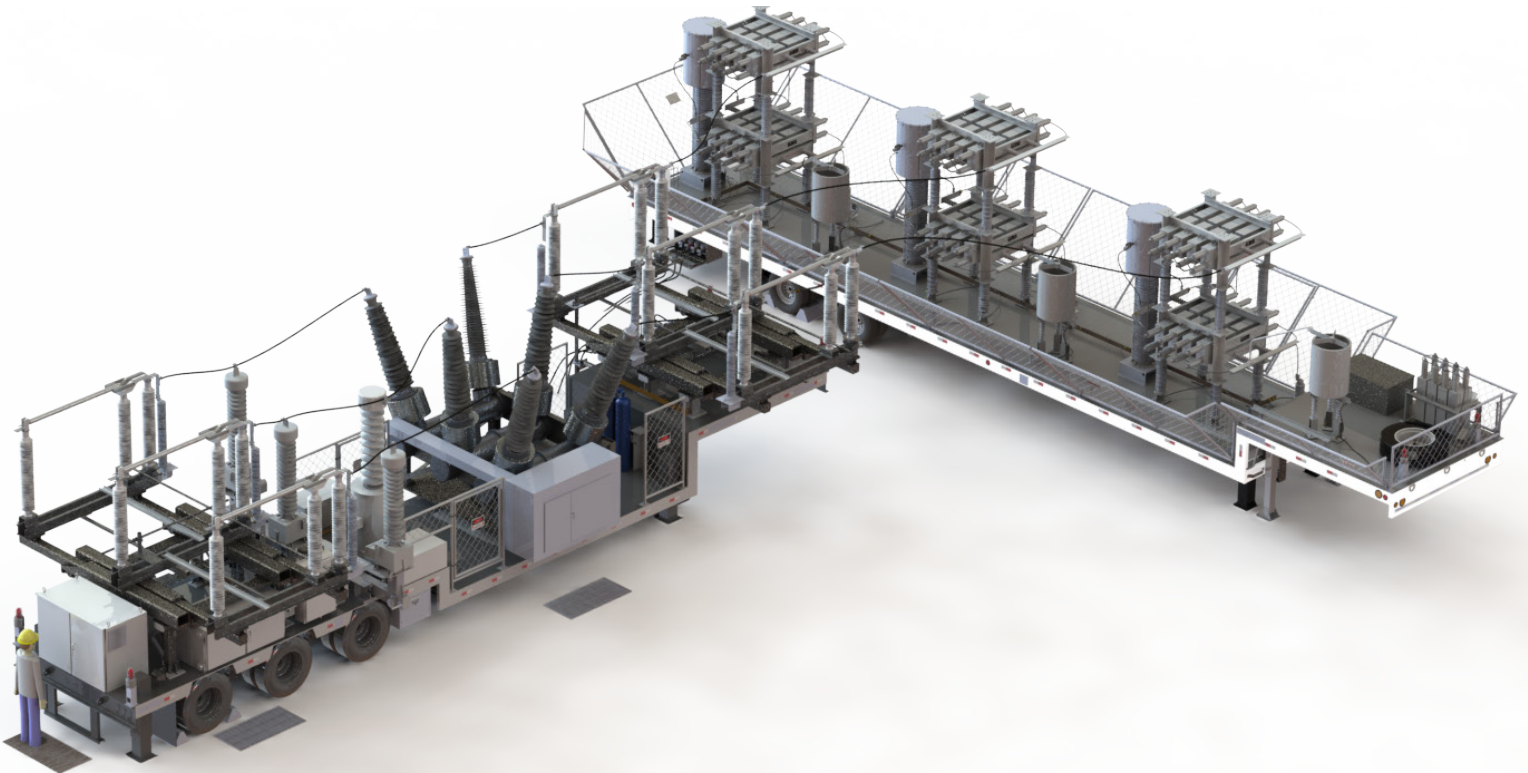


DISCONNECT SWITCH TRAILERS

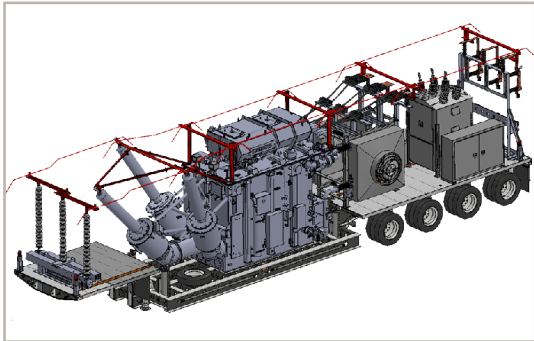
- Available up to 230 kV, 4000 A
- Vertical break, center break, and double end break switches available
- Rack-out mechanisms for phase spacing compliance
- Anti-backdrive manual operator or motor operator available

DESIGN & 3D MODELING

The engineering team at Southern States utilizes the most up-to-date software and design tools to provide mechanical and electrical structure solutions that best meet our customers' unique applications. Using our advanced design capabilities, we are able to create industry standard solutions that are safe, easily deployable, efficient, and that require low total cost of ownership. Using SolidWorks™ 3-D software allows our customers to view life-like representations of what is often very complex customer solutions. Its system design and analysis tools can also be used to identify clearance concerns early in the design process, reducing design hours and allowing for a more expedited production process. All of our components and practices comply with industry standards such as IEEE, ANSI, SAE, and DOT, providing assurance to our customers for a successful project.

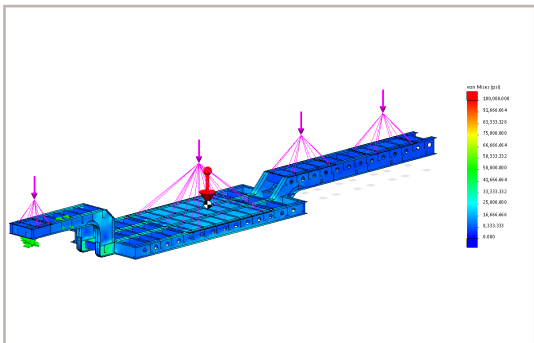


DESIGN CAPABILITIES



3D MODELING SOFTWARE

- Enhance customer visual evaluation
- Mitigates design flaws
- Reduces design hours
- Ideal for customized solutions that are complex
- Precise analysis for electrical trailer clearances



FINITE ELEMENT ANALYSIS

- Provides mathematical analysis of stress, strain, and deflection
- Optimized design that validates structural integrity
- Ability to test physical parameters via safe simulation of potentially dangerous, destructive, or impractical load conditions and failure modes
- Rapid data output to minimize production times



QUALITY DESIGN ASSURANCE

- Corrosion resistant material as appropriate
- Vibration dampening padding under secured loads
- Fatigue resistant materials and manufacturing methods
- High quality materials and assemblies
- Electrical clearance, conductivity, etc.



DOT COMPLIANCE & TRANSPORTATION

- Designed to meet federal, state, and local size and weight restrictions
- Shipping bracing used to handle G force and vibration concerns
- Reputable tire brands to ensure safe support and travel
- LED lighting

CUSTOM SOLUTIONS

Unique applications require unique solutions. At Southern States, we have the experience and expertise to provide our customers with a multitude of design options which support ease of operation, safety, space limitations, as well as overall budget. Designed using the highest quality components, our innovative racking mechanisms, turn tables, hydraulic systems, fence systems, shipping braces, grounding systems, and much more are available to address the ever increasing challenges that utilities face every day.



APPLICATION EXPERTISE



RACKING MECHANISMS

- Different designs for different requirements
- Deploy for phase spacing clearance and retract for DOT compliance
- Low stress and easy deployment
- Color coding of interphase bracing and pipes
- Can support over 2,000 lbs per phase
- Spacing rigidity maintained for repeatable timing and synchronization of switch



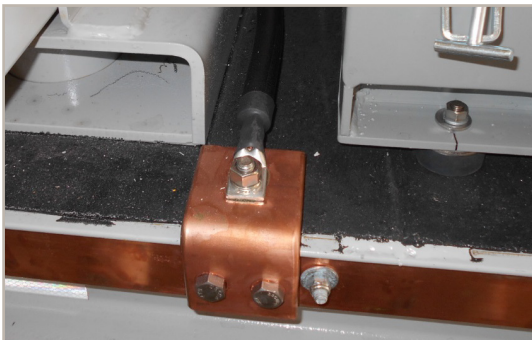
TURN TABLES

- Allows easy equipment rotation for alignment with station bus when trailer parking is limited
- Low friction bearing requires minimal effort
- Durable outdoor rated construction from corrosion resistant materials
- Indexable locking design enables multiple deployment positions



HYDRAULICS

- High quality components for safe lifting of heavy equipment
- Reputable and established equipment suppliers
- Design allows for protection, function, and ease of use
- Scissor lifts, tilt mechanisms, outriggers, suspension controls, etc.

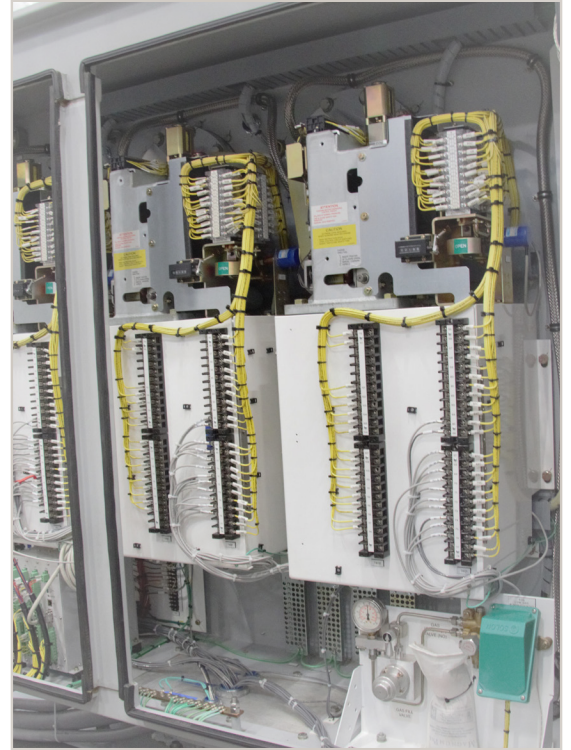


GROUNDING SYSTEMS

- Components designed and sized to safely withstand and ground high current faults
- Designed to maintain equipotential on all components, devices, and regions of the trailer
- Full, continuous perimeter grounding available
- Single ground bus in center of trailer available
- Manufacturer experience

PROTECTION & ELECTRICAL SYSTEMS SOLUTIONS

Electrical protection systems for mobile trailers are not one-size-fits-all, as utilities typically require customization for their respective relays and controls. At Southern States, we have the know-how to provide protection solutions for your transformers, regulators, capacitor banks, and much more. We're willing to work with our customers to utilize their specification's preferred brands, many of which we have experience with. Our wiring is done neatly, professionally, and always inspected point-to-point upon completion. Further, we utilize third party testing to perform objective evaluations of equipment and system wide performance and functionality. We also have the capability to create customized cabinets and battery systems to support your most critical needs.



CUSTOMIZABLE FEATURES



RELAYS & CONTROLS

- Voltage / current sensing and control
- Overcurrent, overload, and phase differential protections
- Annunciator / alarm Systems
- Tethered control
- Remote operation (SCADA, RTU)



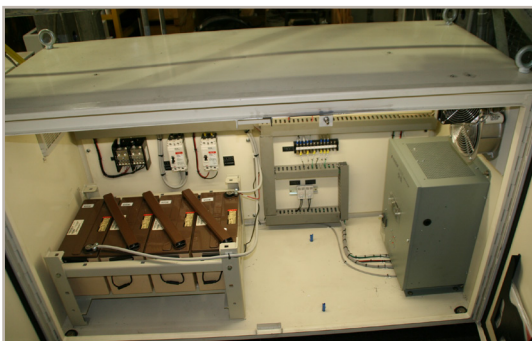
WIRING

- Professionally labeled and packaged with wire ties & conduit trays
- Water & fire resistant as appropriate
- Point to point wire inspection
- Tucked into conduit trays for organizational efficiency
- Solid barrel lug terminals available



OUTDOOR CABINETS

- NEMA 4 & 4X stainless steel, steel, or aluminum construction
- Continuous weld design, water tight to prevent water ingress
- Durable door gasket systems
- Vibration dampening, ventilation, fan, and exhaust systems



BATTERY SYSTEMS

- Designs based on customer preference and specification
- Built to withstand harsh outdoor conditions
- High quality parts and components
- Racks, trays, and other mountings
- Substation grade lead acid, marine grade lead acid, nickel cadmium, etc.

AFTER-SALES SUPPORT

At Southern States, we value our customers and work to provide them with the best care available on the market. System failures are unpredictable, taking place day or night, so utilities must be able to reach certified technicians and engineers at all times. We have a variety of support functions to assist you with your unique needs:

24/7 Hotline

770-946-4565

Access to technical experts no matter the time or day

Industry Partnerships

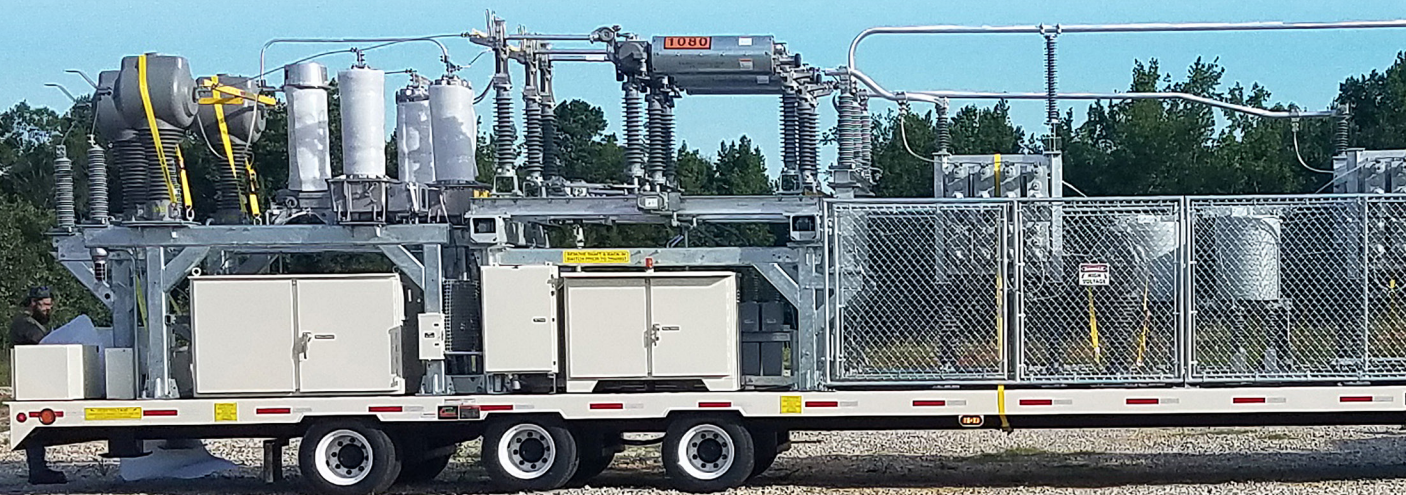
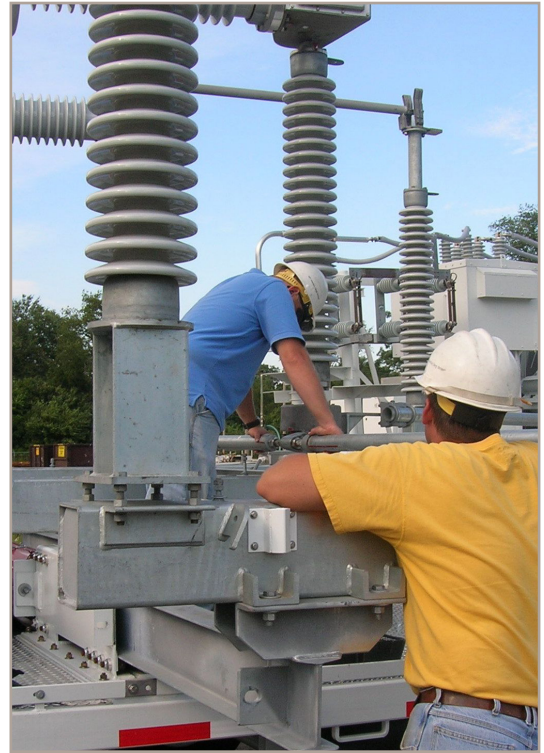
Long standing relationships with experienced companies and certified professional contractors to enable your rapid response capabilities

Parts & Refurbishment Services

Extensive inventory of parts and repair services for new and old Southern States equipment

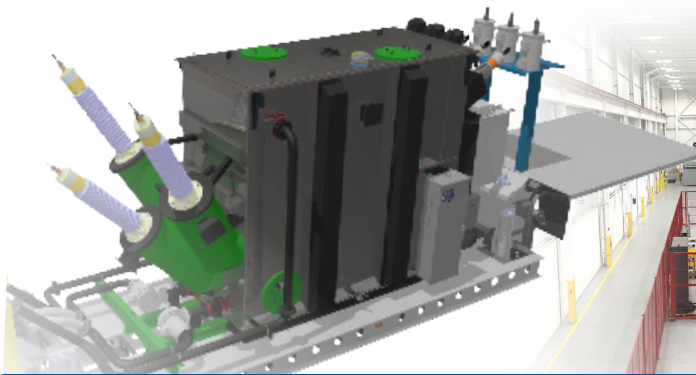
Customer Care Territory Managers

A personal Customer Care Territory Manager assigned to manage your account and maintenance needs



WHY SOUTHERN STATES?

- Proven industry leader with over 100 years of experience
- 165,000 sq. ft. combined state of the art manufacturing facilities
- Application and engineering expertise
- ISO 9001:2015 certification scope includes the *“design, sale, and service of mobile substation solutions”*
- Transformer manufacturing partner who maintains their own ISO 9001:2015 certification
- ANSI C57.12.90 testing, routine-design-special
- Comprehensive multi-channel sales network
- Unsurpassed person to person customer care



Transformer Manufacturer Partnership





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