

DELTA STAR INCORPORATED



LETTER FROM THE PRESIDENT



For more than 100 years, Delta Star has been manufacturing electrical power products of all sizes for utilities, industrials, and municipalities throughout North America, with over 40 years of manufacturing experience of mobile transformers and mobile substations in North America.

We want to provide our customers with quality products and services. As an employee-owned company, the men and women of Delta Star are our greatest assets. We take great pride in our customer service and have increased production capacity from coast-to-coast to meet our high demand. Every customer is appointed a personal representative who follows their order from contract to completion and is provided with unique direct-access to our vast engineering, mechanical, manufacturing, and field service personnel.

Since its founding in 1899, Delta Star has been an industry leader in providing superior, innovative client solutions that meet the energy needs of the future, through a culture of best-in-class customer service. We consider it a privilege to have built power transformers and mobile substations for many of the world's leading utilities and are committed to total customer satisfaction through teamwork, individual job excellence and continual improvement.

We look forward to providing you with a superior product, exceptional service and innovative power solutions.

Jason Greene

President & Chief Executive Officer

OUR MISSION

Provide peace of mind through reliably connecting people in communities throughout North America to one of life's most basic needs - electricity.

OUR VISION

Be the leading transformer manufacturing and substation services company in the industry, one that continuously improves the performance, delivery and reliability of power to meet the energy needs of the future.

OUR CORE VALUES



Progress

We have an uncompromising focus on meaningful impact by combining our rich industry history with a spirit of innovation.



Ownership

We hold ourselves accountable in all of our efforts and operations.



Worth

We put our internal and external customers at the center of everything we do, to create a best-in-class experience that surpasses all expectations.



Excellence

We have high standards for ourselves, we execute on the details and take pride in the challenging work that we do.



Responsibility

We act with honesty, integrity, and thoughtfulness.

LEADERSHIP



Jason Greene
President & CEO



Steve Newman
Vice President



Ray Glover
Chief Operating Officer



Jim Mott
Chief Financial Officer



Sergiy Razuvayev
Chief Engineering
Technology Officer

LOCATIONS



Delta Star East (Headquarters)
3550 Mayflower Dr.
Lynchburg, VA 24501



Delta Star West
270 Industrial Rd.
San Carlos, CA 94070



Delta Star North
860 Lucien Beaudin
Saint-Jean-sur-Richelieu, QC
Canada J2X 5V5



Delta Star Field Service
1018 Dillard Dr.
Forest, VA 24551

HISTORY

1908

Delta Star is founded in Chicago as the Delta-Star Electric Company.

1935

Delta-Star Electric through a government contract, manufactures the largest disconnecting switches ever built at the Hoover Dam.

1950

Delta-Star Electric Company is purchased by H. K. Porter Company and renamed the Delta-Star Electric Division of H.K. Porter Company.

2010

Delta Star expands its capabilities and introduces Field Service as a standalone division.

2009

Delta Star invests \$40 million in all manufacturing facilities.

2015

Delta Star acquires a transformer factory, formerly owned by Alstom, located in Saint-Jean-sur-Richelieu near Montreal, Quebec.

2019

Delta Star completes a \$7 million expansion at their Quebec facility.

2020

Delta Star Field Service celebrates 10 years of service to utility, cooperative, and municipal customers across North America.

1976

Delta Star successfully deploys its first mobile power transformer to Withlacoochee River Electric Cooperative.

1988

Delta Star separates from H.K. Porter, and becomes a Employee Stock Ownership Plan (ESOP).

2008

Delta Star celebrates 100 years in the electrical industry as a world-class manufacturer of medium sized transformers.



**BUILDING THE
SUBSTATION
OF TOMORROW**

POWER TRANSFORMERS

Delta Star power transformers are individually designed and manufactured to exceed the highest industry standards and the exact specifications for the particular application. Utility applications include power, distribution, generator step up, unit auxiliaries (UAT), grounding units, voltage regulators and auto transformers.



POWER TRANSFORMERS

Type	MVA (Top Rating)	HV kV*	LV kV
Power Transformer w/o LTC	200	15 - 345	4 - 115
Power Transformer w/ LTC	170	15 - 345	4 - 115
Auto Transformer & TV w/o LTC	300	34.5 - 345	34.5 - 161
Auto Transformer & TV w/ LTC	250	34.5 - 345	34.5 - 161
Voltage Regulators	7	15 - 115	+/- 10-15% Regulation
Grounding Transformers	----	15 - 115	Custom Z% or I-fault
Generator Step-Up	Same as Type 1 & 2		-
Unit Auxiliaries	60	15 - 34.5	2.4 - 25

Delta Star values quality at the component level. As a result, we design and manufacture our critical components in-house to meet our customer's specific requirements. This is another reason why utilities all over North America trust Delta Star for all their power needs.

TANK FABRICATION

Designing and manufacturing every steel tank at our factories allows for flexibility and control over quality and lead time.

DE-ENERGIZED TAP CHANGERS AND SWITCHES

Building our own switches allows the ability to make the complex, multiple voltage designs that are unique to our product.

PREVENTIVE AND SERIES AUTOTRANSFORMERS

While others purchase these components from third-party providers, we design and build in-house.

NITROGEN PRESERVATION SYSTEMS

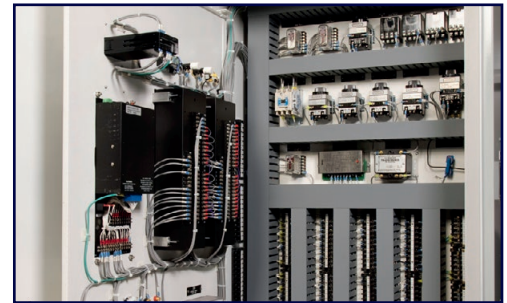
Decades of building mobile substations has led to a reliable nitrogen system that is considered the best in the industry.

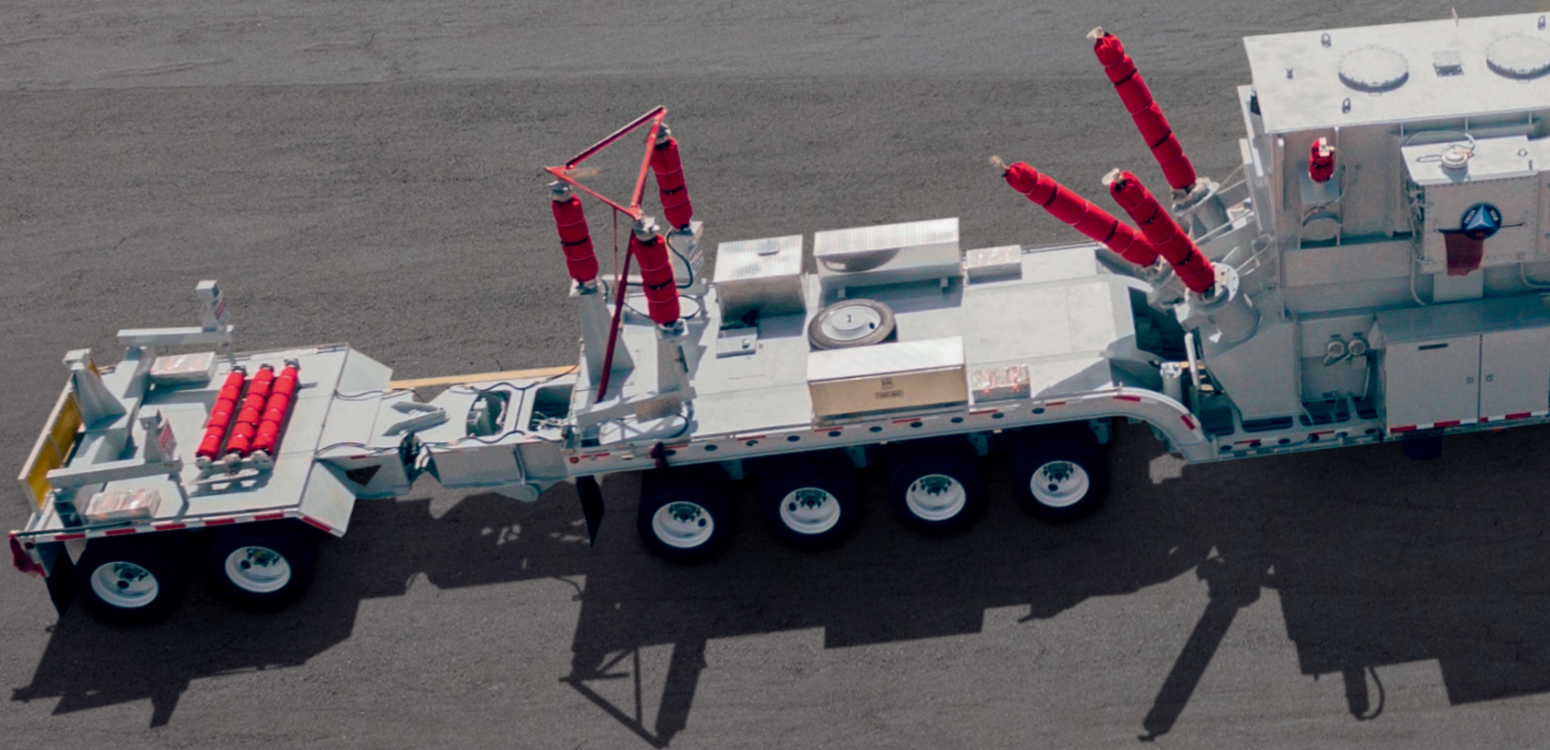
CONTROL CABINETS

Building lightweight, durable aluminum enclosures and control cabinets for entire substations showcases the flexibility of Delta Star.

PAINT SYSTEM

Relying on an epoxy-based primer with a polyurethane topcoat is a distinctive system that gives us the best paint system in the world.





INNOVATIVE SUBST



TATION SOLUTIONS

SUBSTATION SOLUTIONS

Delta Star is the premier manufacturer of mobile transformers and mobile substations in the United States and designs over 75% of the mobiles used by investor-owned utilities, electric cooperatives and municipalities in the North American Market. With more than 100 years in the power industry and over 40 years manufacturing mobile transformers, Delta Star has the engineering expertise to deliver this complex, critical product to fit any power substation application in the world.



PRODUCTS

- Mobile Transformer
- Mobile Substation
- Portable Transformer
- Unitized Substation (Skid Mounted)
- Auxiliary Trailers

PRODUCT APPLICATIONS

- Emergency Service
- Routine Maintenance
- Temporary Power Supply
- Substation Capacity Increase
- Power for Seasonal Load

SUBSTATION SOLUTIONS



RESTORING POWER: THE MOBILE TRANSFORMER SOLUTION



W A S H I N G T O N

In the heart of the nation's capital, a Potomac Electric Power Company (PEPCO) substation in Washington, D.C., experienced an equipment failure. Within seconds, power went out.

The equipment failure caused confusion and chaos as neighborhoods, businesses, college campuses, hospitals, and a public transit hub were impacted. Power coming back online required a not-so-simple solution. PEPCO needed a Mobile Transformer Substation.

With the substation out of commission in D.C., and thousands of individuals experiencing the lingering effects of an outage, the search for an MTS intensified. Fortunately, PEPCO's leadership team had been adequately trained to promptly respond in such circumstances.

A phone call was made to Delta Star who, at the time, had a 60 MVA mobile at their Lynchburg facility preparing to ship to a different customer. It was a perfect fit for PEPCO.



Turning the power back on was becoming more realistic. Contracts were drafted and reviewed, engineering specifications confirmed, chain of command issued approvals, and transportation was arranged. All three parties displayed a commitment and determination to restoring power.

Less than 26-hours after the initial contact was made between the three companies, the Delta Star mobile departed for D.C. with a police escort. The mobile arrived in less than four hours, where Delta Star Field Service technicians began installation immediately.



This is one example out of thousands that occur on a yearly basis. A Delta Star Mobile can bridge the gap left after a potentially hazardous event, keeping the grid operational, safe and secure from various unknowns. As the premier provider of mobile solutions, Delta Star delivers proven solutions to the industry's most severe challenges. Superior, innovative client solutions that meet the energy needs of the future.

SUBSTATION SOLUTIONS

Delta Star is the only North American transformer manufacturer with the breadth of products to meet all your power needs. Below is a partial list of our capabilities. Many factors influence the criteria such as: Impedance, Sound Level, Loss Evaluation, Temperature Rise, Basic Impulse Level (BIL), Limiting Dimensions, and State Highway Road Limits.

MOBILE SUBSTATIONS

Type	MVA (Top Rating)	HV kV	LV kV
Mobile Substations	<100	26 - 230	2.4 - 69
Portable Substations	100	15 - 230	2.4 - 69
Mobile Circuit Protection	---	15 - 230	---



Delta Star has industry-leading experience in the repair and redesign of mobiles, servicing all manufacturer on voltage classes up to 230 kV. Our engineering and manufacturing team can remanufacture, repair, and retrofit your aging equipment to ensure it is fitted with the industry's most recent materials and technologies.



ADVANTAGES

- Extended mobile transformer life
- Equipment adapted to meet grid requirements
- Reduced investment costs
- Faster turnaround
- State-of-the-art materials and standards
- Smart Mobile equipped
- Proprietary Battery, Switch & Cooler monitoring.

FIND A REPRESENTATIVE

Learn more about Delta Star's extensive product list, services, and industry leading experience in mobile remanufacturing by contacting a local representative.



UNITIZED SUBSTATIONS



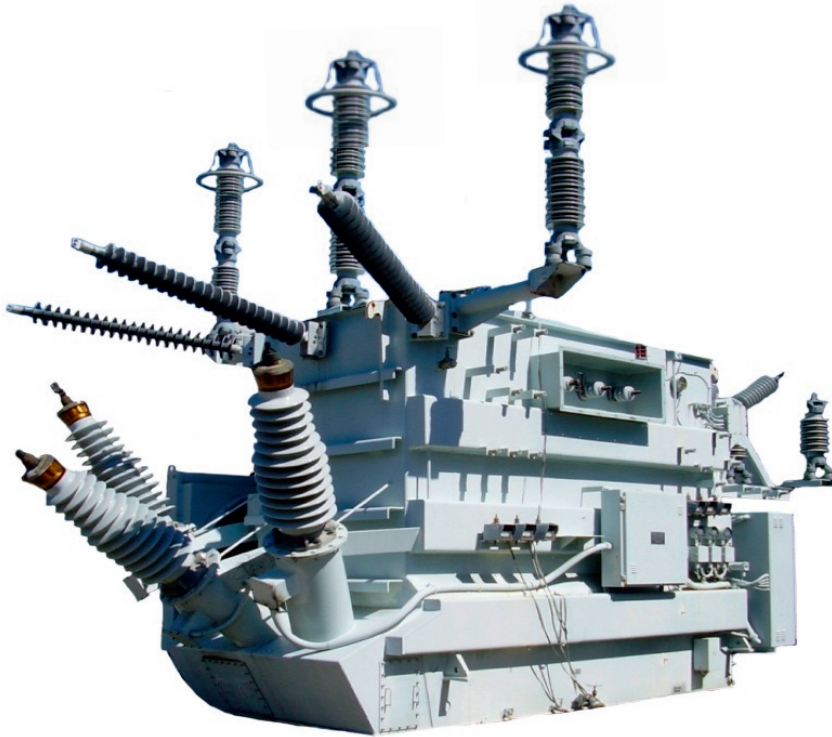
Delta Star's unitized substations are manufactured in North America and custom-engineered for a wide range of equipment and ratings options, providing utilities with greater capacity and operating flexibility. Built for fast deployment and industry-leading reliability, our unitized substations feature best-in-class designs and components.

BENEFITS

- Self-contained, compact design
- Robust, lightweight construction
- Designed for maximum efficiency and reliability
- Arrive fully assembled and ready to install

Unitized Substations Engineered for Multiple Applications

Engineered for resiliency and performance, our unitized substations are equipped to handle a broad range of applications and environments.



EMERGENCIES & PLANNED OUTAGES

Maintain power to customers during any emergency or scheduled outage.

SEASONAL & TEMPORARY LOADS

Meet increased energy demands and protect against asset overload.

SPECIAL PROJECTS

Power on demand for projects, maintenance, integrations or industrial customers.

OUR SUBSTATION CAPABILITIES

Type	MVA (Top Rating)	HV kV
Unitized Substation	<100	25 - 230
Auto Transformer	<100	15 - 230
Voltage Regulator	7	5 - 69

TRAILER SOLUTIONS

From trailer-mounted components to fully integrated solutions, Delta Star delivers the quality, reliability, and efficiency you expect from an industry leader. Our substations and auxiliary trailers are engineered to meet your unique needs and specifications, built for rapid deployment and easy installation. Our packaged solutions are designed for a variety of applications and improve the performance of your utility.

PACKAGED SOLUTIONS



CABLE REEL TRAILER

Choose from multiple setup, enclosure and power options.



SECURITY FENCE TRAILER

Secure your most important assets from outside threats.

ENGINEERED TO ORDER



TRAILER-MOUNTED SUBSTATIONS

Mobile, self-contained substations equipped with a range of customizable components and rated for up to 230 kV.



BREAKER TRAILER

Highly configurable, easy-to-install breaker trailers engineered for HV and LV systems.



SWITCHGEAR TRAILER

Custom-designed, mobile distribution to sub-transmission trailers capable of supporting multiple manufacturers.

FIELD SERVICE

Delta Star Field Service provides the best and most comprehensive service to ensure your transformer operates at peak performance. For over 10 years, Delta Star Field Service professional technicians have been providing expert support to minimize unscheduled future maintenance and lengthen the operational life of the transformer.

OUR SERVICES

- Installation
- Regasketing
- Relocation Services
- Testing (Standard & Diagnostic)
- Preventive Maintenance
- Turnkey Installation
- LTC Repairs & Maintenance
- Oil Processing
- Transformer Replacement Parts
- Control Cabinet Upgrades

CONTACT US



(888) 510-5829



FieldServiceRFQ@DeltaStar.com



DeltaStar.com/Field-Service



1018 Dillard Dr., Forest, VA 24551



Delta Star Field Service professional technicians have well over 300 years combined experience in providing quality support to significantly lengthen the operational life of your transformer. They receive extensive training, outfitted with proper Personal Protective Equipment (PPE), and are trained in accordance to OSHA requirements.



FIELD SERVICE: POST STREET ELECTRIC SUBSTATION



BACKGROUND

Post Street Substation, originally designed by famed architect Kirtland Cutter and constructed in 1909 by Washington Power Company, distributes electrical power generated by the Upper Falls and the Monroe Street hydroelectric plants.

Avista, a public utility located in Spokane, Washington, came to Delta Star for technical expertise and professional engineering services in the completion of a retrofit at the famous Post Street Substation.

Delta Star Field Service was tasked with retrofitting two Upper Level Substation transformers and two Lower Level Generation transformers cooling systems. The retrofits needed to incorporate the relocation of cooling from water cooled Oil Forced Water Forced (OFWF), fed from a river, to Oil Forced Air Forced (OFAF) coolers eliminating the discharge of cooling water into the river.

Delta Star Field Service implemented the design of a forced air OFAF cooling system.

The design incorporated:

- Equipment Platforms
- Pipe Supports
- Wall Penetrations
- Electric Service Requirements
- System Ventilation
- Cubic Feet per Minute (CFM) of Air Flow

Delta Star engineers designed air intake and exhaust systems so that there would be no impacts or alterations to the historic brick and windows of the Post Street building. On-site personnel used extreme care in observance of state and local safety regulations.

The project was completed within the proposed six-week timeframe and within the proposed budget established during negotiations.

Delta Star Field Service was able to resolve a pressing situation effecting the Post Street Substation historical site, while providing a more energy-efficient solution for Avista.



PARTS

Delta Star, with over 100 years in the industry, has longstanding partnerships, competitive pricing, and industry expertise to deliver the parts and service you need. From standard parts, kits, and hard-to-find items, Delta Star has the inventory and connections to keep your customers powered with parts for all makes, models and manufacturers of power transformers and mobile substations.

TRANSFORMERS

- Parts and kits for all sizes and classes.

LTC

- Get affordable OEM replacements for your LTC equipment.

MOBILE

- Stay up and running with our full range of mobile parts and kits.

GASKET KITS

- Get fast shipping on gasket kits at discount OEM pricing.

CABLE REEL

- Protect your equipment and personnel with cable reel solutions.



“We recognize the importance of treating customers as individuals, and we strive to hear their problems and offer personal solutions.”

Matt DeWever
Parts Sales



ENGINEERING SERVICES

Delta Star's engineers use industry-leading and state-of-the-art special transformer design software (TDS). TDS includes optimization package (TRDO) for all types of designs, 3D magnetic field analysis (ELMAG 3D) for calculation of the losses and temperature rise of metallic components, 2D electrostatic field analysis (2D TELAX) for optimization of windings insulation structure and WELDINST for short circuit analysis (forces and stresses) including Dynamic Mode for axial forces and displacement of each section of the windings.

WHAT WE DO



Training



Control Cabinet Upgrades



Transformer Life Extension



Load Study



Transformer & Mobile Assessments



Contact Us

Delta Star test engineers and technicians leverage decades of experience to measure performance data throughout manufacturing to verify compliance to design criteria. Testing to IEEE, ASTM, NEMA and ISO 9001:2015 technical and quality standards, all routine, design and special testing plans are laid out by design engineering.

WHAT WE DO

- Low Voltage Testing
- Loss Measurement
- Thermal Testing
- Sound Level Testing
- Functional Control Test
- High Voltage Dielectric

100%

C57.12.90 IEEE
Standard Test Codes Used



CONTACT US

ENERGY FOR

East Operations:	(800) 368-3017	Request For Quote:	RFQ@DeltaStar.com
West Operations:	(800) 892-8673	Field Service:	FieldServiceRFQ@DeltaStar.com
North Operations:	(450) 346-6622	Parts:	Parts@DeltaStar.com
Field Service:	(888) 510-5829	Marketing: ..	DSISCommunications@DeltaStar.com
Parts:	(800) 368-3017		

THE FUTURE



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DELTA STAR, INC.



