



We connect and protect

# nVent Power Utility Solutions

Comprehensive Electrical Protection Solutions



CADDY ERICO HOFFMAN ILSCO SCHROFF TRACHTE

[nVent.com](http://nVent.com)

# Building a More Sustainable and Electrified World

The modernization of the power grid and existing infrastructure to handle disruptions and avoid outages is a key issue faced by all utilities. For over 100 years, nVent has been an essential supplier of electrical protection for critical infrastructure, providing reliable, resilient and efficient power and data infrastructure solutions that are trusted by utilities owners, operators and contractors worldwide.

nVent solutions protect from the following power grid risks:

## **Contributes to Safety**

- Protects people and personnel from electrical injuries

## **Contributes to Grid Reliability**

- Shields critical equipment and systems to prevent/mitigate catastrophic damage that could lead to system downtime
- Reduces losses and improves efficiency



**LEARN MORE ABOUT  
NVENT POWER UTILITY SOLUTIONS.**  
<https://www.nVent.com/power-utility>





## TRUSTED PARTNER IN UTILITY APPLICATIONS

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### Safety and Reliability

nVent provides high-quality solutions that perform reliably in service over the long-term to avoid costly replacement of equipment.



### Critical Asset Protection

nVent protects valuable electrical equipment and electronic systems, with solutions designed to prevent and mitigate damage that can be extremely costly.

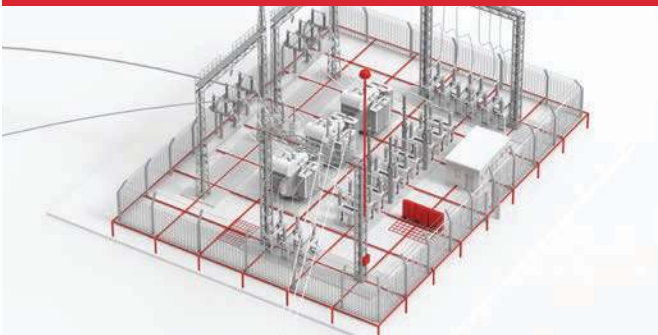


### Trusted Expertise and Product Range

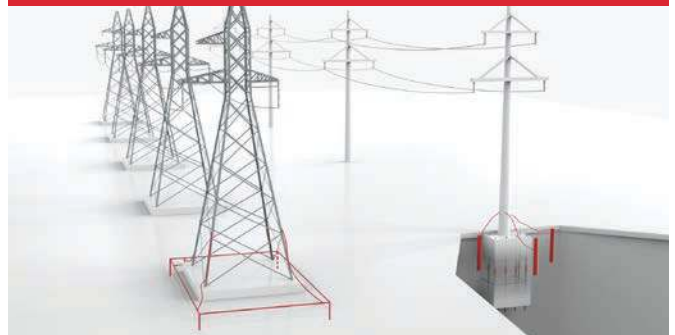
Customers trust and rely on nVent's team of experts to provide a wide range of compatible turnkey solutions for several niche electrical protection applications.

# nVent Solutions for Power Utility Applications

## SUBSTATION



## HIGH-VOLTAGE TRANSMISSION LINES



## DISTRIBUTION POLES



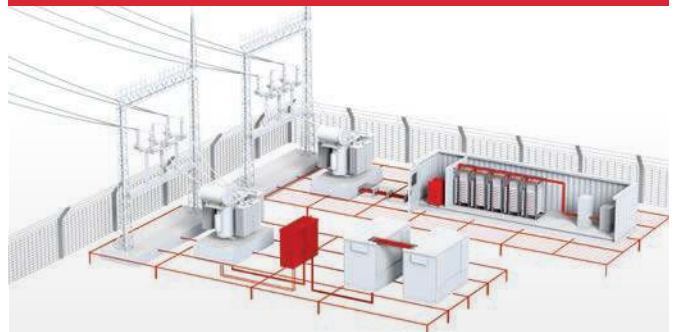
## RENEWABLE POWER GENERATION (SOLAR, WIND)



## OVERHEAD AND UNDERGROUND POWER DISTRIBUTION



## BATTERY ENERGY STORAGE



## NVENT PRODUCT OFFERING



- Lightning Protection
- Surge Protection
- Grounding and Bonding



- Mechanical Connections
- Compression Connections
- Cutting and Crimping Tools



- Enclosure and Climate Control Solutions



# nVent Grounding and Bonding Solutions

For over 60 years, nVent ERICO Cadweld has been a trusted component of utility grounding systems, playing a critical role in grid safety, reliability, and resiliency. nVent ERICO Cadweld and Cadweld Plus exothermic welds form a permanent molecular bond that won't loosen or corrode over time, minimizing maintenance/replacement costs and system downtime. Committed to quality, nVent ERICO has a comprehensive test program for Cadweld, ensuring compliance with IEEE Standard 837-2014 "Standard for Qualifying Permanent Connections Used in Substation Grounding." This standard is key to ensuring safe and reliable grounding systems for the full life of the substations (typically 40–50 years).



## NVENT ERICO CADWELD PLUS

### Self-Contained Weld Cup

Self-contained nVent ERICO Cadweld Plus weld cups will never spill and are resistant to degradation. This ensures that the precise formulation of weld material is always present in an nVent ERICO Cadweld Plus weld, improving weld quality.



### Electronic Ignition System

The nVent ERICO Cadweld Plus Impulse electronic ignition system provides the user a standoff distance of an optional 6 feet or 15 feet, and includes other safety features such as an LED ignition counter and five second ignition delay.



## NVENT ERICO CADWELD PLUS ONE SHOT

nVent ERICO Cadweld One Shot is a convenient, single-use ceramic mold and welding material connection package. nVent ERICO Cadweld One Shot is ideal for making permanent reliable connections to ground rods for electrical transmission and distribution and many other industrial applications.



# nVent Grounding and Bonding Solutions



Throughout the grid, utility infrastructure requires robust grounding and bonding to protect against lightning strikes and ground faults. Grounding and bonding provides a low-resistance, controlled path for fault currents directing the current away from critical equipment and into safe ground.

Grounding and bonding is critical to grid safety, reliability and grid resiliency. Inadequate grounding and bonding increases the likelihood of equipment being damaged during transient overvoltage events, which could lead to power outages and create unsafe conditions for people and personnel.

nVent ERICO grounding and bonding solutions meet key utility industry requirements, including IEEE and UL.

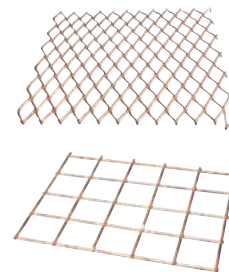
## nVent ERICO Copper-Bonded Ground Rods

nVent ERICO Copper-Bonded Ground Rods are manufactured with a proprietary electro-plating process that establishes a uniform copper coating, which is the key to superior corrosion resistance. As a result, nVent ERICO Copper-Bonded Ground Rods are extremely durable with a long-lasting service life.



## nVent ERICO Ground Mats and Mesh

nVent ERICO Ground Mats and Mesh are an essential component of a ground grid, reducing step potential at power plants and substations that can be hazardous to personnel. These prefabricated solutions are a high-quality, cost-effective and safe solution, and they work in conjunction with grounding elements including ground rods and conductors to create a comprehensive grounding system.



## nVent ERICO Ground Enhancement Material

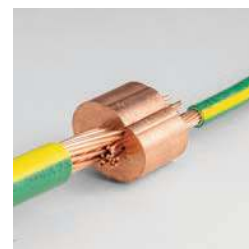
nVent ERICO offers a line of ground enhancement material to improve conductivity of high-resistivity native soil sites.

- nVent ERICO GEM: A cement-based conductive material ideal for challenging soil conditions like rocky ground or sandy soil.
- nVent ERICO Quickfill (No-Mix Ground Enhancing Backfill): A convenient, pre-mixed and low-dust solution for improving grounding.



## nVent ERICO PermaGround Compression Grounding Connector

nVent ERICO PermaGround Compression Grounding Connectors provide a comprehensive range of high-quality copper extruded compression connectors for all grounding applications.





# nVent ERICO Grounding and Bonding Solutions



## nVent ERICO Hammerlock and Lay-in Hammerlock Ground Clamp

nVent ERICO Hammerlock is an innovative ground rod-to-conductor connector designed for utility transmission and distribution pole applications, which quickly and easily creates a permanent and reliable connection using an ordinary hammer.

nVent ERICO Lay-in Hammerlock is a variation of the Hammerlock offering that is designed to allow conductors to be laid into the clamp, eliminating process of feeding the conductor through the connector.



Hammerlock



Lay-in Hammerlock

## Fence and Gate Grounding Connectors

nVent ERICO provides a variety of clamps and connectors that make it easy to affix and connect grounding system conductors to pipes, fence posts and gates, ensuring best-practice electrical protection throughout the site.



## Grounding Conductors

- **nVent ERICO Cu-Bond Round Conductor**  
nVent ERICO Cu-Bond Round Conductor is a revolutionary ground conductor featuring a steel core with a copper-bonded surface. These properties improve performance and reduce cost.
- **nVent ERICO Theft-Deterrent Composite Cable (TDCC)**  
nVent ERICO TDCC features tinplated steel wire armor that camouflages the copper cable core while also providing superior cut resistance to vandals.



## Distribution Pole Grounding Plate

nVent ERICO offers a line of copper grounding plates specifically designed for distribution poles. These plates provide a large surface area to dissipate current safely into the ground, protecting personnel and nearby equipment.



# nVent Lightning Protection for Substations



**Lightning strikes are a major threat to utility infrastructure. A direct strike can cause immense damage to substation equipment, such as transformers and breakers. Damaged equipment means costly repairs and potential outages or downtime.**

**Lightning protection is vital to grid resiliency and reliability – lightning protection systems shield equipment from the enormous electrical surge of a lightning strike to prevent or mitigate damage to critical equipment.**

**nVent ERICO is an industry leader in lightning protection systems that provide critical protection for utility infrastructure, contributing to grid reliability, resiliency and safety. nVent ERICO brings a systematic approach to site electrical protection with the strategic placement and integration of lightning protection to the larger grounding system.**

## **NVENT ERICO SYSTEM 3000**

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nVent ERICO System 3000 is an active lightning protection system based on CVM (Collection Volume Method) technology that is a significant improvement over the conventional mast and static wire equipment method. This technology provides improved lightning protection coverage and delivers advantages for labor and material savings.

nVent ERICO System 3000 features the proprietary nVent ERICO Dynasphere, a spherical air terminal unit with multiple points designed to enhance the electric field and effectively increase the interception area. The enhanced electric field around the nVent ERICO Dynasphere is designed to initiate an upward leader to intercept the lightning strike and safely direct its energy to the grounding system. nVent ERICO System 3000 provides several advantages, including:

- **Improved Lightning Protection Coverage:** CVM takes a more analytical approach to lightning protection, considering the entire 3D space to maximize the volume of air protected from direct strikes – making it well suited for large outdoor areas.
- **Labor Savings:** The nVent ERICO Dynasphere is a more efficient air terminal offering a broader protected area, significantly reducing the overall number of air terminals required and labor and material costs compared with static wires. As a result, nVent ERICO System 3000 requires significantly less maintenance as compared to traditional systems.
- **Standard Compliance:** nVent ERICO is the only manufacturer to offer a lightning protection system based on CVM and is recognized by IEEE 998 - "IEEE Guide for Direct Lightning Stroke Shielding of Substations."



# nVent Lightning Protection for Substations



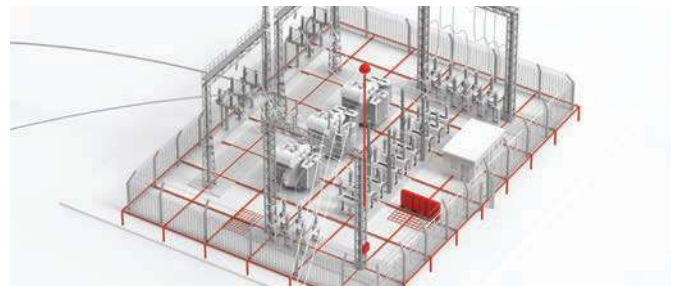
## NVENT ERICO SYSTEM 3000

**nVent ERICO System 3000 consists of the nVent ERICO Dynasphere Air Terminal and additional optional components, including:**

- nVent ERICO Ericore Conductor - specially designed insulated cable that safely conducts the lightning current from the air terminal to the grounding system
- Mounting Masts (Cantilevered and Guyed) - provide support for the air terminals, allowing for installation on rooftops or sides of structures
- nVent ERICO Lightning Event Counter - monitors and records lightning strikes for future maintenance and inspection purposes
- Grounding system



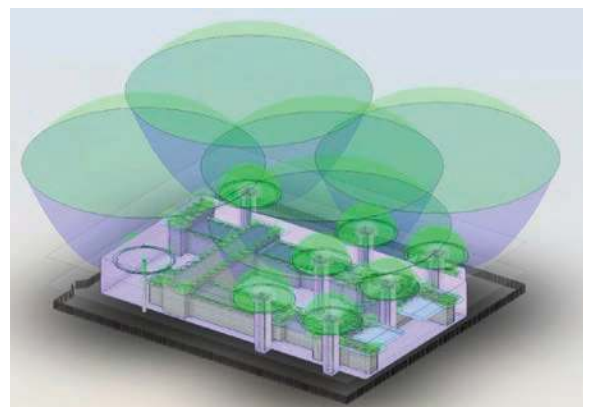
**nVent ERICO System 3000**  
Collection Volume Method  
(Active System)



## LIGHTNING PROTECTION DESIGN SOFTWARE

The placement of air terminals in a lightning protection system is critical for optimal protection. Our dedicated team of nVent ERICO engineers are available around the world to provide support for all major lightning protection standards. We use advanced lightning protection system design software to model conditions and recommend equipment placement. This software enables us to provide our customers with:

- Increased velocity and reduced design lead-time
- Conventional and active system design
- Complete submittal package, including drawings, BOM, component cut sheets and risk assessment
- Capable of accepting and returning 3D project models in AutoDesk Revit and SketchUp compatible formats



# nVent Surge Protection



## NVENT SURGE PROTECTION

nVent ERICO offers a range of surge protective devices that play a critical role in grid safety and reliability, protecting power distribution panels, communication lines, as well as I/O signals. nVent ERICO SPDs are used in applications throughout the grid including power generation stations, substations, transmission and distribution. This comprehensive offering includes standard surge suppression technologies (MOV, TOV, GDT, Spark Gap and hybrids) as well as a proprietary nVent ERICO Transient Discriminating (TD) Technology that provides enhanced protection during extreme surge overvoltage events.

### POWER DISTRIBUTION PROTECTION



- (Left) The nVent ERICO SES80P1202SC protects distribution automation systems and remote SCADA panels on the distribution pole
- (Right) nVent ERICO DT/ EDT/ PVT Series DIN Rail Power Surge Protective Devices

### DISCRETE SIGNALS (INPUTS AND OUTPUTS)



- nVent ERICO UTB Universal Transient Series
  - 20 kA per pair
  - 4 wires/package
  - 5 V, 15 V, 30 V, 60 V and 110 V, and 125 V
  - Compact design

### SERIAL COMMUNICATIONS, DATA NETWORKS AND RF



- (Left) nVent ERICO CSP Series 20 kA-rated SPD for protecting radio/cellular antenna, camera, TV/Cable and BNC communications equipment
- (Right) nVent ERICO LAN Series for protecting Cat 5/5E, Cat 6 and PoE



# nVent Connectors for Overhead Distribution Lines



nVent UTILCO is an integral supplier of mechanical, compression and grounding connectors along with cutting and crimping tools. nVent UTILCO utility solutions are critical for applications throughout the grid, including overhead pole-top transformers, padmount transformers and pedestals. With many decades designing and manufacturing connectors, nVent UTILCO are the experts at delivering connectors that meet the customers exact specifications.

## **NVENT UTILCO POLE TOP TRANSFORMER CONNECTORS**

- Used to connect overhead low voltage distribution lines to utility transformers



## **NVENT UTILCO TAP CONNECTORS**

- H Taps are commonly used to connect low voltage overhead distribution lines to service entrance conductors
- IPC Insulation Piercing Connector is used to tap conductors to low voltage overhead distribution lines



## **ALUMINUM PARALLEL GROOVE CLAMPS (PG LINE OF CLAMPS)**

- Offers a versatile and reliable overhead solution for electrical connections, designed to meet the demands of modern power distribution systems



# nVent Connectors for Padmount Equipment, Pedestals, and Underground Connections



## NVENT UTILCO PADMOUNT TRANSFORMER CONNECTIONS

- Unique lay-in design allows for quick and easy installation, eliminating the need to bend and route conductors into the connector providing significant time savings
- Compact size and lay-in design allows it to be suitable for a wide range of applications and challenging installations



## NVENT UTILCO DIRECT BURIAL CONNECTORS

- Enables secure and reliable connection of low voltage conductor directly underground, providing an interface for joining multiple conductor
- Safeguards electrical connections from the harsh underground environment, designed to withstand moisture, temperature fluctuations, and mechanical stress



## NVENT UTILCO PEDESTAL CONNECTIONS

- Pedestal mechanical connections are electrical connectors used to connect and splice underground power cables within pedestals
- Pedestals are above-ground enclosures that provide access to underground electrical cables, facilitating maintenance, repairs, and new installations



Encapsulated Pedestal



Non-Insulated Pedestal



Direct Burial Pedestal



Lay-In Pedestal



# nVent Cutting and Crimping Tools

nVent offers a full, versatile line of high quality crimping, cutting and stripping tools for electrical installation. nVent UTILCO also offers a 5-year tool warranty, 5-day repair pledge loaner tool program and the first reconditioning of the tool performed at no charge.



## **NVENT UTILCO LINEMAN 6 TON BATTERY HYDRAULIC IN-LINE CRIMPING TOOL**

- Accepts all W and X type dies
- Interchangeable heads with D3 and O or BG nose die
- Available with DataTrack crimp tracking software
- Brush contact safe up to 75kV
- nVent UTILCO Lineman Tools 5-year warranty



## **NVENT UTILCO LINEMAN BATTERY HYDRAULIC IN-LINE CUTTING TOOL**

- Heavy duty blades with rotating head
- Offering includes 10 cutting heads available in battery, manual and remote head configurations
- nVent UTILCO Lineman Tools limited 5-year warranty



## **NVENT UTILCO TASKMASTER HYDRAULIC PUMP**

- Auto cut detection
- DataTrack mini USB-port for connectivity
- Multifunction 3 color LED indication lights
- Manual retract switch
- Quick snap couples
- Closed oil system
- nVent UTILCO Lineman Tools 5-year warranty

## **CRITICAL PROTECTION FOR SAFER POWER DISTRIBUTION**

Projects in the utilities sector mean stringent guidelines and safety requirements to meet local codes. nVent provides innovative products and solutions to help safely enclose critical components from a variety of weather factors in outdoor applications.



## **Enclosure & Climate Control Solutions**

nVent HOFFMAN's wide range of enclosures and climate control solutions help to meet necessary regulatory requirements, maximize uptime and extend life.

- Free-Standing Enclosures
  - Modular Single Door – Type 4X, 12, 13
  - Universal Free-Stand Enclosures – Type 12, 4, and 4X
  - Two-Door with Floor Stands – Type 12
- Current Transformer (CT) Cabinets – Type 3R
- Utility Junction (UJ) Cabinets – Type 1, 12, 4X, 3R
- Terminal Boxes – Type 3R
- Air Conditioners, Filter Fans, Electric Heaters



# Building Engineered Solutions

## **BUILDING SOLUTIONS ENGINEERED FOR PERFORMANCE – PROTECTION - SAFETY**

nVent TRACHTE engineered building solutions are critical components of the power utility infrastructure. They protect mission critical equipment, ensuring the reliable and efficient supply of electricity to consumers.

- Substation control buildings
- E-houses
- Modular data centers
- Battery energy storage solutions
- Large-scale electrical equipment enclosures

### **PRE-ENGINEERED**



- Highly engineered, custom-designed to protect critical infrastructure

### **MODULAR**



- Scalable and Secure for Data Center and BESS applications
- Critical Power Solutions

### **INTEGRATED**



- Seamless turnkey solutions with OEM-provided equipment
- Custom Relay and protection

### **SWITCHGEAR**



- Engineered to meet the most rigorous demands according to ANSI, IEEE, NEC, NEMA and NFPA standards



# Engineering Support

nVent can support your project at any stage of the process—from design to construction. Our team of experts can help deliver safe, reliable and quality solutions to meet your project's needs. Contact us for product or technical support to get started on your next project with nVent.



### Field Experts

nVent provides extensive training for the specification, installation and maintenance of electrical protection systems to ensure optimal performance and compliance.



### Codes and Standards Guidance

Several of our nVent employees sit on codes and standards committees helping to shape industry requirements around the globe.



### Innovation Support

nVent has invested in state-of-the-art equipment and expanded the in-house engineering electrical lab to meet evolving regional trends and needs.

nVent employs an engineered approach when working with customers on electrical protection applications, ranging from small installations to multi-billion dollar, turnkey projects. Our team of design and engineering specialists is here to help you build a reliable comprehensive electrical grounding system with:

### GROUNDING AND BONDING TAKEOFFS

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Dedicated teams of application engineers and designers are available to create complete takeoffs for your grounding and bonding, lightning protection or surge protection designs.

### SITE SERVICES

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nVent engineers coordinate on-site with project installers, site supervisors, field engineers and quality professionals to assess site conditions and recommend electrical protection solutions customized for each site's individual needs and requirements.

### CUSTOM AND MADE-TO-ORDER

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nVent engineering experts can support your system design, provide technical and configuration advice, and help quote your complete grounding, lightning protection or surge solution.



**LEARN MORE ABOUT  
NVENT ENGINEERING SERVICES.**

# Resources



VISIT THE NVENT  
POWER UTILITY SITE



LEARN MORE ABOUT NVENT  
ELECTRICAL PROTECTION AND  
POWER CONNECTION SOLUTIONS.



TOUR THE NVENT UTILITY  
VIRTUAL WORLD



NVENT  
TRAINING CENTER





Blank lined paper for writing.

Blank lined paper for writing.



Our powerful portfolio of brands:

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