Electrical Solutions for Water and Wastewater Treatment Facilities
In 2002 the EPA reported that mechanical and electrical systems for facility components such as treatment plants and pumping stations need to be replaced every 15–25 years.

Are you making choices that will help extend the life of your electrical systems?
Challenge and commitment

The world has plenty of fresh water — just not in the right place or at the right price. In the decades to follow, water, along with energy, will become one of the most sought-after basic commodities.

The water industry consists of the following segments:

- **Water** — Sourcing and treatment before distribution, and network distribution to customers, including pump stations
- **Wastewater** — Treatment plants and collection and transport to treatment, including lift stations
- **Industrial** — Factory wastewater treatment
- **Agricultural** — Irrigation district

These segments include the following activities (listed alphabetically):

- Coagulation
- Desalination plant
- Incineration
- Industrial use
- Irrigation and water transfer
- Pressure boosting
- Pumping station
- Rain water pumping
- Residential
- Sedimentation
- Substation
- Treatment plant inlet
- Waste/sewage pumping
- Water intake

The following four principals are strategically involved in water and wastewater ecosystems:

- Design and build firms, including consulting engineering and construction companies
- Utilities and other treatment operators
- Water and wastewater equipment vendors
- Water and wastewater funding sources

The key indicators and business drivers are a response to:

- EPA regulations and enforcement
- Housing market starts and conservation initiatives
- Weather, specifically effects of drought and floods
- Aging infrastructure
- New technology, such as membranes and disinfection processes

Thomas & Betts understands the challenges and provides a set of solutions to be used in the water/wastewater industry. When you need to connect, terminate, fasten or protect, plug into the power and innovation of Thomas & Betts. Our goal is to be the brand of choice for our products’ end users.

Thomas & Betts is committed to developing solutions for the water industry, staying current with the latest available technology and remaining competitive. Our electrical solutions:

- Feature built-in safeguards to protect your workplace
- Reduce installation and electrical system changeover and downtimes by 40–50%
- Extend the life of electrical systems by up to 300%
- Safeguard your infrastructure from the consequences of unpredictable power
- Provide the latest technology to connect and protect your electrical systems
Delivering value through system solutions based on engineering innovation.

Our Value Commitment

Renovating and reinvigorating the nation’s wastewater treatment facilities is a challenge that demands a high level of commitment from all involved — from government officials to operations management and engineers, to participating contractors and suppliers of products and services. Thomas & Betts is committed to helping you meet the unique challenges you encounter with products and services that deliver value, including:

T&B Engineered solutions — Our products are designed to perform dependably under conditions such as constant moisture and liquid ingress, harsh chemicals, extreme temperatures, ultraviolet exposure, hazardous areas, high vibration and continuous operation.

Tested reliability — Our products are rigorously tested for use in highly corrosive environments, with proven results in thousands of installations.

Expert support — Thomas & Betts technical experts are available at every stage of a project, from planning and site preparation, OEM equipment design, through construction and MRO.

Training and certification — Thomas & Betts conducts training programs on specific products and works closely with all accredited electrical industry associations. Contact us for details.

Product availability — Our industry-leading distributor network assures you of reliable and on-time delivery.

Total Cost Savings — Today’s project management emphasizes the Total Cost Concept, including maintenance, replacement and downtime cost. In water treatment, the impact of these costs is even higher. Thomas & Betts ensures well engineered, labor-saving products through critical tests at every manufacturing stage.

Product Platforms

Thomas & Betts can help you obtain greater efficiency in design and installation with a systems approach to everything you need to connect and protect. Below are examples of our value-added system solution offerings:

Wire and Cable Management — T&B invented the Ty-Rap® cable tie in 1958 and continues to lead the world in innovative wire and cable management. OEMs, system integrators, panel builders, contractors and maintenance personnel depend on T&B electrical boxes, cable ties, weather-proof enclosures, cable tray and modular metal framing to do the job right and help reduce installation time and costs.

Cable Protection Systems — T&B Cable Protection Systems provide unsurpassed protection for wire and cables in the most demanding applications. They encompass industry-leading flexible conduit systems, PVC-coated conduit and fittings recognized as the standard in oil and gas applications and explosion-proof conduit systems meeting worldwide standards for hazardous locations.

Power Connection and Control — For reliable connection and intelligent control of electrical power, T&B mechanical and compression connectors, grounding products, medium-voltage cable accessories, high-voltage fuses, vacuum interrupters, reclosers and capacitor switches are specified worldwide in the industrial, construction and utility markets.

Safety Technology — Protecting lives and property requires state-of-the-art technology. T&B is a worldwide leader in emergency lighting and supporting central battery systems, lighting for hazardous locations and surge protection. T&B Safety Technology extends the life of your electrical system and protects your employees and assets.
Top Water Industry Challenges:

- Aging water and sewer infrastructure
- Managing capital costs
- Funding or availability of capital
- Energy costs
- Increasing/expanding regulation
- Treatment technology
- Chemical costs
- Aging workforce
- Information technology
- Security problems
T&B Engineered solutions for every application area

- Coagulation
- Desalination plant
- Incineration
- Industrial use
- Irrigation and water transfer
- Pressure boosting
- Pumping station
- Rain water pumping
- Residential
- Sedimentation
- Treatment plant inlet
- Waste/sewage pumping
- Water intake

At Thomas & Betts, we’re focused on providing products that address the issues in every area of your water or wastewater treatment facility, so you can focus on cost, quality, flexibility and regulatory challenges. Our family of products matches specific application criteria from start to finish, assuring the quality and reliability of your electrical system throughout your facility, from power substation to administration buildings. With the industry’s most efficient distribution system, we’re also prepared to meet your ongoing MRO needs down the road.
Corrosion is the enemy of electrical systems. According to NACE International, corrosion costs the U.S. water/wastewater processing industry an estimated $1.3 billion annually. Problems caused by corrosion include:

- Equipment failure and shortened life
- Poor electrical system reliability caused by high-resistance connections
- Long maintenance repair time due to corroded parts
- Safety hazards at the grounding level and from product contamination
- Added labor expenses

Corrosion is a natural and inevitable process. It cannot be eliminated, but it can be managed and controlled with the right products.

**Ocal**

Ocal® OCAL-BLUE® PVC-Coated Conduit and Fittings

- PVC-coated, hot-dipped galvanized conduit and threads
- Provides superior corrosion protection against many harmful elements
- Interior blue urethane provides corrosion protection around cables

**Kindorf**

Kindorf® Stainless Steel and Non-Metallic Modular Framing System

- Modularity reduces installation time
- Available in Type 316 stainless steel or non-metallic for the most corrosive environments
- Trapnut® Strut Fastener features a unique scissor action that closes at any point on the threaded rod, taking up to 43% less time to install than standard nuts and bolts

**T&B® Cable Tray**

Stainless Steel, Aluminum and Non-Metallic Cable Tray

- Available in stainless steel, aluminum and non-metallic materials
- Alternating “strut” rungs allow for supported mounting

**T&B® Fittings**

Stainless Steel Liquidtight Conduit and Cord Fittings

- Continuous sealing ring ensures a liquidtight seal
- Gland nut deflects water away from connector

**ABB**

Jokab Safety Stainless Steel Safety Sensors, Switches, Rope Pulls and E-Stops

- Type 316 stainless steel construction
- IP69K washdown protection
- Designed to withstand prolonged exposure to caustic chemicals and extreme temperatures
Does corrosion cause your plant to operate ineffectively or inefficiently? The proper conduit and fitting system solution can extend the life of your electrical system by up to 300%.

Thomas & Betts products for corrosion & harsh environment protection

ABB
- Stainless Steel Disconnects and Safety Switches
- Jokab Safety Stainless Steel Safety Sensors, Switches, Rope Pulls and E-Stops
- Jokab Safety Relays and PLCs

Adaptaflex®
- Stainless Steel Flexible Conduit Systems

Hazlux®
- Hazcote® Kynar® Coated Lighting Fixtures

Kindorf®
- Stainless Steel and Non-Metallic Modular Framing System

Ocal®
- OCAL-BLUE® PVC-Coated Conduit and Fittings

PMA®
- Flexible Nylon Cable Protection Systems

Red•Dot®
- Code Keeper® Weatherproof While-in-Use Covers

RussellStoll®
- MaxGard® and DuraGard® Pin-and-Sleeve Connectors

Sta-Kon®
- Corrosion-Resistant, Nickel-Plated Wire Terminals

T&B Cable Tray®
- Stainless Steel, Aluminum and Non-Metallic Cable Support Systems

T&B Fittings®
- Stainless Steel Form 8 and BlueKote® Conduit Bodies
- XTRA FLEX® Non-Metallic Liquidtight Conduit, Tubing and BULLET® Fittings
- Stainless Steel and Aluminum Hubs
- Stainless Steel and Aluminum Liquidtight Conduit Fittings
- Ranger® Series Stainless Steel and Non-Metallic Liquidtight Cord Connectors
- Silver Grip® Stainless Steel Tray Cord Fittings
- CoroStall® Aluminum Conduit Boxes
- STAR TECK® Stainless Steel and Aluminum Fittings for Jacketed Metal-Clad and Teck Cable

Ty-Rap®
- Stainless Steel Cable Ties

Kynar is a registered trademark of ARKEMA, Inc.
Power Quality, Efficiency & Reliability

Electrical equipment must be reliable and operational 24 hours a day, seven days a week, with protection from surges, line surges, voltage spikes and power interruption. For water treatment, maintaining service to motors, pumps and monitoring equipment is the difference between a smooth operation and a visit from the EPA. In this critical industry, the need for stable power is paramount. Thomas & Betts products and systems maximize uptime and control by:

- Detecting faults and protecting against overcurrent and voltage drops
- Preventing damage due to power quality disturbances
- Eliminating underperformance, minimizing system losses and increasing usable power

Joslyn Hi-Voltage® VBM Switching Systems

- Vacuum interruption and solid dielectric insulation for gas-free, oil-free operation
- Provides up to 100,000 maintenance-free operations, depending on operating mechanism and control voltage selection

Surge Protection Devices

- Multiple voltage configurations with available surge ratings of 25kA to 400kA
- Listed to UL® 1449 3rd Edition

Elastimold® Distribution Switchgear

- Solid EPDM insulating media makes it maintenance-free and environmentally friendly — no oil, no gas
- Compact, modular, field-upgradable design enables smaller footprint and field assembly inside tight vaults

ABB AF Series Contactors

- Provides continuous reliable operation, even with voltage fluctuation
- Modular accessories for reduced downtime
- Full range up to 2,050A; NEMA, IEC and horsepower rated

Tmax and Emax Circuit Breakers

- True RMS-sensing electronic-trip units for system coordination
- Fuseless 200kAIC versions available
- UL® Listed up to 6,000A molded case and power circuit breakers
- UL® current-limiting versions for superior equipment protection

Elastimold® Industrial UPS Systems

- Digital Static Transfer Switch design provides increased redundancy and reliability
- Systems developed to comply with both IEC and UL® applications for 10 to 150kVA range
- Rugged design for a 20-year service life
Power quality determines the fitness of electrical power to various devices. Selecting the appropriate devices allows electrical systems to function in their intended manner without significant loss of performance or life.

Thomas & Betts products for power quality, efficiency & reliability

ABB
• AF Series Contactors
• Tmax and Emax Circuit Breakers
• Pro M Miniature Circuit Breakers and Surge Protection Devices
• ProLine Touch Safe Panel Boards
• SMISSLINE Modular Power Distribution System
• Terminal Blocks

Cyberex®
• Industrial UPS Systems

Elastimold®
• Distribution Switchgear
• Molded Cable Accessories
• Molded Vacuum Interrupters
• Molded Vacuum Reclosers

Fisher Pierce®
• Capacitor Controls and Relays
• Faulted Circuit Indicators
• Current Sensors

Homac®
• Substation Connectors

Joslyn®
• Surge Protection Devices

Joslyn Hi-Voltage®
• VBM Switching Systems
• Capacitor and Air Disconnect Switches
• Load Interrupter Attachments
Continuous Operation & Sustainability

The production and fines associated with downtime in water/wastewater operations can be substantial. Lost power can mean overflows and contaminated water released into the environment. To prevent such problems, plants need solutions that ensure:

- Superior product engineering
- Quality product construction
- Accurate product selection
- Availability on demand
- Proper installation

In the single most demanding, non-stop operating environments, one single point of failure can lead to costly — or even disastrous — results.

**Blackburn Compression**

**Motor Lead Disconnects**
- Minimize motor downtime by eliminating the need for bolting and taping during motor change-out
- Offer a quick, snap-together assembly that is insulated with a slide-on cover
- Featuring the Color-Keyed® Compression System that ensures proper connections

**Compression Connectors**
- Boost efficiency with fewer crimps that yield superior terminations
- Featuring the Color-Keyed® Compression System that ensures proper connections

**Sta-Kon**

**Crimped Wire Termination Systems**
- Complete line of rings, forks, splices, disconnects, pin terminals and wire ferrules, built with materials for high-performance applications
- Longer, selectively annealed barrel for increased pull-out strength and lowered crimping force, with funneled terminal barrel entry for faster installation
- Nylon terminals feature metal insulation grip sleeve for strain relief
- All Sta-Kon® terminals are UL® Listed and CSA Certified
- Shrink-Kon® wire insulation products provide superior conductor, connection and termination protection, thus helping to ensure reliable, continuous operations

**ABB**

**Jokab Safety Eden E Category 4/PLe Safety Sensors**
- LED diagnostic indication
- High misalignment tolerances (12mm ±2mm)
- Non-contact, non-mechanical and non-magnetic to reduce mechanical failure and downtime

**Terminal Blocks**
- DIN-rail modular mounting
- Layered for higher density capacity
- Vibration-resistant IDC technology — 80% faster than screw connections

**Elastimold**

**Cable Accessories**
- A full line of loadbreak and deadbreak separable connectors, cable joints and cable terminations
- Developed for 5 to 35kV distribution systems
Thomas & Betts products are designed to perform consistently and withstand the forces of nature, requiring less field service.

Thomas & Betts products for continuous operation & sustainability

ABB
- Jokab Safety Eden E Category 4/PLe Safety Sensors
- Jokab Safety Vital 1 Safety Controllers
- Jokab Safety Rope Pulls and E-Stops
- Terminal Blocks

Blackburn® Compression
- Motor Lead Disconnects
- Compression Lugs and Splices

Cyberex®
- Industrial UPS Systems

Elastimold®
- Distribution Switchgear
- Molded Cable Accessories
- Molded Vacuum Interrupters
- Molded Vacuum Reclosers

Homac®
- Substation Connectors

Joslyn®
- Surge Protection Devices

Joslyn Hi-Voltage®
- VBM Switching Systems
- Capacitor and Air Disconnect Switches
- Load Interrupter Attachments

Kindorf®
- Modular Framing System

Ocal®
- PVC-Coated Conduit, Fittings and Accessories
- PVC-Coated XJG Expansion Couplings
- PVC-Coated XD Expansion/Deflection Couplings

PMA®
- Flexible Nylon Cable Protection Systems

Russellstoll®
- MaxGard® and DuraGard® Pin-and-Sleeve Connectors

Sta-Kon®
- Crimped Wire Termination Systems

T&B Cable Tray®
- Cable Support Systems

T&B Fittings®
- BlueKote® LU® Universal Conduit Elbow
- Ranger® Cord Fittings
- Liquidtight Conduit Fittings
- Wire-Mesh Strain-Relief Cord and Conduit Grips
Hazardous Location Protection

There is always a concern at water/wastewater treatment facilities about the significant presence of gases and vapors in certain areas.

Typical hazardous locations include:

- Water/wastewater plant process areas
- Booster stations and valve areas along pipelines
- Loading and unloading areas in terminals
- Storage areas for tanks, barrels and trucks

**Hazlux**

Hazardous Area Lighting
- Explosion-proof fixtures for use classified hazardous locations
- Class II Division 2, NEMA 4X
- Enclosed and gasketed

**Russellstoll**

MaxGard® Explosion-Proof Interlocked Receptacles
- Copper-free, cast-aluminum, epoxy-coated housing
- O-ring-sealed interior components ensure watertight protection whether connections are mated or not
- Explosion-proof systems for 30A, 60A and 100A

**T&B® Fittings**

STAR TECK XP® Stainless Steel and Aluminum Fittings
- High-quality fittings for jacketed metal-clad and Teck cables
- Suitable for use in hazardous locations
- Class I Division 2, Class II Division 2 and Class III

**ABB**

Flame-Proof Cable Protection Systems for IEC Applications
- Designed to meet UL®, CSA, IECEx and ATEX standards for hazardous environments
- Approved for use in Zones 1, 2, 21, 22, Class I Division 1 and Class II Division 2 hazardous locations
- Complete system includes conduit, fittings, stopping plugs, thread converters and accessories

**Kopex-Ex™**

Jokab Safety Explosion-Proof Safety Switches, Sensors, Rope Pulls and E-Stops
- For use in hazardous locations: IECEx and ATEX EExd IIC T6 (Gas and Dust)
- Die-cast and Type 316 stainless steel housings
Do you have explosion risks from chemicals used or gas being produced? Count on Thomas & Betts to provide electrical solutions designed to satisfy your facility’s needs for protection in hazardous areas.

**Thomas & Betts products for hazardous location protection**

**ABB**
- Jokab Safety Explosion-Proof Safety Switches, Sensors, Rope Pulls and E-Stops
- Jokab Safety Intrinsically Safe 3-Position Enabling Devices
- Explosive-Environment Terminal Blocks (UL® Class I, Zone 1, ATEX 95)

**Emergi-Lite®/Lightalarms®**
- Emergency Exit Lighting

**Hazlux®**
- Hazardous Area Lighting

**Kopex-Ex™**
- Flame-Proof Cable Protection Systems for IEC Applications

**Ocal®**
- PVC-Coated Conduit and Fittings for Hazardous Areas

**PMA®**
- ATEX Flexible Non-Metallic Cable Protection Systems

**Russelstoll®**
- MaxGard® Explosion-Proof Interlocked Receptacles

**T&B Fittings®**
- STAR TECK XP™ Stainless Steel and Aluminum Fittings
- XP Explosion-Proof Flexible Couplings
Grounding & Bonding

Grounding the electrical system provides a means in which conductive equipment is connected to an earth potential via the grounding electrode. This prevents potential differences and sparking between conductive equipment and grounded structures. Together, proper grounding and bonding will:

- Ensure personnel safety
- Eliminate lighting interruptions
- Protect critical equipment
- Meet IEEE, UL® and CSA requirements
- Provide electrical continuity and reliability

Thomas & Betts durable, code-compliant systems, onsite grounding and bonding training and installation support are designed to ensure the safe and reliable operation of your plant’s electrical systems and increase overall equipment effectiveness.

**Blackburn® Grounding**

**EZGround™ Compression and Mechanical Grounding Systems**

- EZGround™ connectors use standard compression installation tools and techniques
- Full range of mechanical grounding components also available

**High-Quality Flexible Braid Connectors**

- Extra-flexible links for heavy-duty applications up to 3,600A
- Standard flexible links for medium-duty applications up to 2,350A

**Sta-Kon®**

**Dragon Tooth® Insulation-Piercing Wire Connectors**

- Provide continuity without the need to remove insulation
- Designed to splice, tap and terminate magnet wire

**T&B® Fittings**

- **Revolver® Liquidtight Grounding Fittings**
  - Designed for use where an external bonding jumper is required for liquidtight flexible metal conduit
  - Revolving grounding ring provides flexibility in positioning for ease of installation
- **Blackjack® Grounding Bushings**
  - Dual rated for grounding and bonding of threaded and unthreaded conduit, aluminum and copper wire
  - Speeds installation and improves aesthetics
- **Steel City® Grounding Pigtails, Clips and Mud Rings**
  - Solid and stranded grounding pigtails and grounding clips for easy attachment of ground wires to electrical boxes
  - Steel City® Adjustable Mud Rings pass the standard UL® Grounding Continuity test
- **ABB**
  - **Pro M Residual-Current Circuit Breakers**
    - UL® 1053 equipment ground fault protection
    - 10–500mA trip range for equipment protection flexibility
Reducing the potential for electric shock and equipment failure results from following the National Electrical Code®. Turn to Thomas & Betts for the grounding and bonding solutions to meet NEC® requirements.

**Thomas & Betts products for grounding & bonding**

**ABB**
- Pro M Residual-Current Circuit Breakers
- Tmax and Emax Equipment Ground Fault Circuit Breakers
- Grounding Terminal Blocks

**Blackburn® Grounding**
- EZGround™ Compression and Mechanical Grounding Systems
- High-Quality Flexible Braid Connectors

**Elastimold®**
- Molded Separable Connectors and Solid-Dielectric Switchgear

**EZCODE®**
- Danger/Warning Labels and Signs, Industrial/Wire Markers and Barricade/Burial Tapes

**Fisher Pierce®**
- Faulted Circuit Indicators

**Homac®**
- Flood-Sea® Compression Splice Kits

**Kopex-Ex™**
- Flame-Proof Cable Protection Systems for IEC Applications

**Steel City®**
- Grounding Pigtails, Clips and Mud Rings

**T&B® Fittings**
- Revolver® Liquidtight Grounding Fittings
- Blackjack® Grounding Bushings
- Bonding Locknuts
- XD Expansion/Deflection Coupling for Rigid Conduit
- STAR TECK® Fittings for Jacketed Metal-Clad and Teck Cables
- Bonding and Grounding Wedges
- Grounding Hubs
- XJG Expansion Couplings with Internal Bonding Jumper

**Sta-Kon®**
- Dragon Tooth® Insulation-Piercing Wire Connectors
- Shield-Kon® Coaxial Grounding Connectors

NEC and National Electrical Code are registered trademarks of the National Fire Protection Association, Inc.
A single drop of oil seeping into an electrical control box is all it takes to knock out your production line for days. And a faulty fitting can be the culprit causing that failure. At Thomas & Betts, we realize that while most of our products are small, the jobs they do are big. And big jobs demand the right product engineering, testing and quality control. That’s what you get with T&B. Selecting proper equipment to battle liquid ingress helps to:

- Ensure electrical safety
- Prevent corrosion
- Avoid system degradation
- Minimize costly downtime

**Homac® Products**

- Make water-tight connections quickly and easily with Homac® Flood-Seal® splice kits and multi-tap connectors
- Flood-Seal® technology eliminates the need for time-consuming tapes and shrinks — no heat guns or pull cords
- Range-taking designs provide flexibility in the field and minimize the number of SKUs you have to manage

**T&B® Fittings**

**Stainless Steel Liquidtight Conduit and Cord Fittings**

- Continuous sealing ring ensures a liquidtight seal
- Gland nut deflects water away from connector

**PMA®**

**Flexible Nylon Cable Protection Systems**

- Ingress protection conforms to recognized test methods
- Connectors are commonly rated IP66, IP68 or IP69K
- Offer excellent resistance to lubricants and highly corrosive chemicals; also resistant to weather

**Code Keeper® Weatherproof While-in-Use Covers**

- Alloy A380 aluminum construction and stainless steel springs provide increased corrosion resistance
- Complies with National Electrical Code® Extra-Duty requirements

**Sta-Kon®**

**Shrink-Kon® Self-Fusing Insulation Tape**

- Easy-to-install insulation for harnesses, wires or cables — no heat or adhesive required
- Just two layers form a moisture-proof, abrasion-resistant dielectric seal for low- or high-voltage applications (600V max.)

**ABB**

**Compact IP69K Pilot Devices**

- Integrated design speeds installation
- Universal mounting for 22mm and 30mm entrances
- NEMA 4X rated

**Terminal Blocks**

- DIN-rail modular mounting
- Layered for higher density capacity
- Vibration-resistant IDC technology — 80% faster than screw connections
Water, water everywhere, except in your connections. Thomas & Betts solutions provide superior liquid ingress protection. Our products help to keep your electrical equipment—and those who use it—safe.
The goal of safety practices is zero accidents, zero injuries and zero deaths.

The major stakeholders in safety solutions are:

• The community
• The state
• The business/organization
• The employee(s)
• The environment/society

No one is immune to safety and contamination concerns. Contamination and safety concerns are not market specific. They affect workers, production schedules and the bottom line across a broad spectrum of industries.

Hazlux®
Quick Pole Light-Fixture Mounting Assembly
• Suitable for 180km/h winds as per AASHTO LTS-4 2001 — no ladders or lifts required
• Frees up catwalks and walkways during maintenance

EMERGI-LITE®/Lightalarms®
Emergency Lighting Systems
• Designed to withstand damp, corrosive conditions
• NEMA 4X certified for wall or ceiling mounting
• Choose halogen lamps or high-efficiency 4-watt, white LED light sources for optimum illumination over the path of egress
• Available with sealed, maintenance-free nickel-cadmium batteries
• Energy efficient with long, low-maintenance service life

EZCODE®
Safety Labels, Tags, Signs and Barricade Tapes
• Help to ensure personnel and workplace safety, as well as regulatory compliance
• Visible and long-lasting materials
• Custom labels, tags and signs available
• Barricade and burial marking tapes in a variety of materials and colors

ABB
Arc Guard Arc Flash Mitigation System
• Non-contact arc flash detection
• Easily retrofitted to any electrical system
• Reduces energy during arc flash event

Jokab Safety Products
• Safety Relays and PLCs
• Safety Sensors, Switches, Rope Pulls and E-Stops

Hazlux®
Quick Pole
Emergi-Lite®/Lightalarms®
Emergency Lighting Systems
EZCODE®
Safety Labels, Tags, Signs and Barricade Tapes
ABB
Arc Guard Arc Flash Mitigation System
ABB
Jokab Safety Products
Safety failures bring increased scrutiny in an already strictly regulated industry. Have you implemented both active and passive safety measures to ensure the safety of your plant and personnel?

Thomas & Betts products for safety & contamination

ABB
- Arc Guard Arc Flash Mitigation System
- Arc-Resistant Low Voltage Switchgear and Motor Control Centers
- ProLine Touch-Safe Panel Boards
- Jokab Safety Relays and PLCs
- Jokab Safety Sensors, Switches, Rope Pulls and E-Stops
- Jokab Safety Light Curtains

Blackburn® Compression
- Ergonomic Compression Tools

Blackburn® Grounding
- EZGround™ Compression and Mechanical Grounding Systems

Cyberex®
- Industrial UPS Systems

Elastimold®
- High-Voltage Separable Connectors
- High-Voltage Solid-Dielectric Switchgear
- Fused Loadbreak Elbows
- Molded Canister Fuses
- Molded Current-Limiting Fuses

Emergi-Lite®/Lightalarms®
- Emergency Lighting Systems

EZCODE®
- Barricade and Burial Marking Tapes
- Danger and Warning Signs
- Electrical and Cable Markers
- Machine Warning Labels
- Reflective Industrial Markers

Hazlux®
- Quick Pole Light-Fixture Mounting Assembly

Kindorf®
- Seismic Bracing System

Red Dot®
- Code Keeper® Weatherproof While-in-Use Covers

Sta-Kon®
- Luminaire Disconnects

Ty-Rap®
- Extra-High Temperature and Flame-Retardant UL94V-0 Nylon Cable Ties
- Ty-Rap Tote® Cable Tie Dispensers and Ergonomic Installation Tools
Electrical systems need to perform consistently in boiler rooms and around furnaces and evaporators. Many of these processes require heat tracing to maintain elevated temperatures throughout water/wastewater processing systems.

Excessive heat or cold can wreak havoc on an electrical system, potentially causing critical components to fail. Operations are challenged to:

- Prevent premature material aging due to prolonged heat
- Avoid material contraction and expansion due to ground frost
- Protect against physical damage from hail

Thomas & Betts offers numerous electrical systems and devices that are designed to withstand and insulate against severe temperatures.

**T&B Fittings**

**52® Series High-Temperature Liquidtight Flexible Metal Conduit Fittings**

- Handle temperatures ranging from -60° to 150° C
- Steel or malleable iron construction, electro-zinc plated and chromate coated for corrosion protection
- Available in 45°, 90° and straight versions

**ATX Liquidtight Flexible Metal Conduit**

- Performs in extreme temperature environments, from -60° to 150° C
- Conduit sizes from ⅛" to 4"

**Ty-Rap®**

**Extra-High Temperature Nylon Cable Ties**

- For use in temperatures from -40° to 150° C
- Smooth body sheds contaminants

**Heavy-Duty Stainless Steel Cable Ties**

- For use in temperatures from -80° to 538° C
- Available in both Type 304 and Type 316 stainless steel

**Sta-Kon®**

**High-Temperature Wire Joints and Terminals**

- Wire joints and fluoropolymer-insulated terminals rated for temperatures up to 150° C, 600V maximum
- Wire joints include a molded, one-piece nylon insulator, rated UL94V-2
- Wire joints feature brazed copper sleeves that prevent separation of connection during crimping
- Wire joints’ internal serrations enable cold flow for increased conductivity and pull-out strength

**Adaptaflex®**

**Stainless Steel Flexible Conduit Systems**

- Supports temperatures of -50° C to 350° C for static applications and -45° C to 250° C for moving applications
- Corrosion-resistant stainless steel construction
- Offers high flexibility and fatigue life

**ABB**

**Tmax and Emax Circuit Breakers**

- Electronic trip mechanism, unaffected by ambient temperature fluctuations
- 100% rated versions available
- 0–6,000A current range

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**T&B® Fittings**

ATX Liquidtight Flexible Metal Conduit and Fittings

**Ty-Rap®**

Extra-High Temperature and Stainless Steel Ties

**Sta-Kon®**

High-Temperature Wire Joints and Terminals

**Adaptaflex®**

Stainless Steel Flexible Conduit Systems

**ABB**

Tmax and Emax Circuit Breakers
Water treatment is sometimes performed at extreme temperatures in terms of both equipment and environment. Selecting the correct Thomas & Betts temperature solution system and components will extend the life of your electrical system and reduce the frequency of corrective maintenance.

**Thomas & Betts products for extreme temperature protection**

**ABB**
- Tmax and Emax Circuit Breakers
- AF Series Motor Control and Electronic Overload Relays

**Adaptaflex®**
- Stainless Steel Flexible Conduit Systems

**PMA®**
- Flexible Nylon Cable Protection Systems

**Sta-Kon®**
- High-Temperature Wire Joints and Terminals

**T&B® Fittings**
- ATX High-/Low-Temperature Liquidtight Conduit and Fittings

**Ty-Rap®**
- Extra-High Temperature Nylon Cable Ties
- Flame-Retardant UL94V-0 Nylon Cable Ties
- Stainless Steel Cable Ties
- Deltec® Outdoor Fastening System
Thomas & Betts has more than 200 direct representatives in the field, ready to instruct and train you on the proper use of products, tools and recommended installation practices. Contact your local Thomas & Betts representative, or give our technical services team a call to help walk you through your installation. Key challenges include:

Our ongoing innovations in electrical system reliability, efficiency and safety are designed to make jobs easier. As a full-service provider, Thomas & Betts offers product training, installation training and certification, application support, technical support, field engineering and onsite troubleshooting to ensure successful plant operation and maintenance.

**Blackburn® Compression**

**Blackburn® Mechanical**

**Blackburn® Grounding**

- The QTP program provides a guaranteed two-week shipment of select Blackburn® products
- Cloud-based Product Configurator enables online design of custom connectors
- Product specification specialists available nationwide to train in the proper use and installation of Blackburn® products
- Inside Tech Support group provides 24/7/365 expertise for Blackburn® Compression, Mechanical and Grounding products
- Full tool service, plus loaner and tool rental programs

**Cyberex**

- UPS and battery maintenance
- Battery replacement services
- Power quality and generator services
- Installation and commissioning assistance

**Ocal®**

- Onsite installation training provides hands-on practice of clamping, cutting, threading, assembling and repairing the Ocal® PVC-coated conduit system and extends warranty from 2 to 5 years on a system installed by a certified contractor

**ABB**

- Warranty extension for breakers and switches
- Preventive, predictive and corrective maintenance
- Field retrofit services

---

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**ABB**

- Warranty extension for breakers and switches
- Preventive, predictive and corrective maintenance
- Field retrofit services
Thomas & Betts provides training for many of our products. We make sure that our clients understand how our versatile solutions will work with their electrical systems.
T&B Engineered system solutions for wastewater applications

When it comes to corrosion-resistant materials to support, connect and protect your electrical system, Thomas & Betts has you covered with a complete solution, whether you prefer aluminum, PVC-coated, non-metallic or stainless steel.

Aluminum Products

Aluminum provides the advantages of high strength-to-weight ratio, superior resistance to certain corrosive environments and ease of installation. Aluminum typically weighs about 50% less than steel and requires no maintenance after installation.

- Conduit, cable and cord fittings
- Cable tray
- Framing channels, hardware and accessories

PVC-Coated Products

The comprehensive line of Ocal® products provides a systems solution for superior corrosion-resistant protection and ease of wiring in conduit applications. All Ocal® products meet or exceed applicable industry ratings or specifications. Look for the distinctive T&B blue color.

- OCAL-BLUE® Conduit, Couplings and Conduit Bodies
- OCAL-BLUE® FS/FD Device Boxes and Covers
- Ocal® Liquidtight Fittings
- Ocal® Large-Radius Elbows
- Ocal® XJG Expansion Couplings

Non-Metallic Products

The Carlon® brand from Thomas & Betts encompasses one of the most comprehensive lines of PVC conduit and fittings available in the industry.

- Conduit outlet bodies
- Schedule 40 and 80 elbows
- Couplings, adapters and accessories
Grounding Systems

Thomas & Betts Blackburn® grounding connectors take a systems approach to reliable grounding — from the grounding grid to power equipment and machinery to instrumentation, providing dependable protection throughout the plant. Optional terminating methods accommodate varying application preferences or specifications. The Blackburn® product line includes:

- EZGround™ Compression Connectors
- Mechanical Connectors

High-Voltage Capacitor Switches and ATS Switchgear

Joslyn Hi-Voltage® Capacitor and Reactor Switches and Elastimold® ATS Auto-Throwover Switchgear offer solid dielectric insulation and vacuum interruption for gas-free, oil-free and maintenance-free operation.

- Joslyn Hi-Voltage® VBM Switching Systems
- Elastimold® ATS Auto-Throwover Switchgear

Stainless Steel Products

For corrosion resistance combined with strength, durability and ease of installation, stainless steel offers performance that’s hard to match. Thomas & Betts’ complete line of stainless steel products is designed to safeguard your electrical system against corrosion to avoid costly downtime and repairs.

- Cable tray and cable ties
- Framing channels, hardware and accessories
- Conduit, cable and cord fittings
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<td>Pro M Miniature Circuit Breakers and Surge Protection Devices</td>
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<td><strong>Adaptaflex®</strong></td>
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<td><strong>Blackburn® Compression/Blackburn® Grounding</strong></td>
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<td>EZGround™ Compression and Mechanical Grounding Systems</td>
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<td>Distribution Switchgear, Molded Vacuum Interrupters, Reclosers and Cable Accessories</td>
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<td><strong>Emergi-Lite®/Lightalarms®</strong></td>
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<td><strong>EZCODE®</strong></td>
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<td><strong>Fisher Pierce®</strong></td>
<td>Faulted Circuit Indicators, Capacitor Controls, Relays and Current Sensors</td>
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<td>Hazcote® Kynar® Coated Lighting Fixtures</td>
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<td>Quick Pole Light-Fixture Mounting Assembly</td>
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<td>VBM Switching Systems, Capacitor and Air Disconnect Switches and Load Interrupter Attachments</td>
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<td>Seismic Bracing System</td>
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</table>
Thomas & Betts products for saving time, reducing installation costs and maintaining continuous operation

Blackburn® Compression
- Compression lugs accommodate code and flex cable on same lug
- Battery-operated tools for quick installations
- Motor lead disconnects
- HEX-FLEX® die system

Cyberex®
- Industrial three-phase UPS systems, built to meet NEC® or IEC standards

Elastimold®
- Shielded deadfront high-voltage cable connector systems
- Shielded solid-dielectric switchgear is compact and lightweight

Kindorf®
- Engineered 1 1/8” modular system enables a faster, easier installation and less waste

Sta-Kon®
- Ergonomic hand crimping tools

T&B® Fittings
- Blackjack® grounding bushings
- LU™ conduit elbows
- Ranger® cord and cable connectors
- STAR TECK® and STAR TECK XP® fittings for jacketed metal-clad and Teck cables
- STAR TECK EXTREME® DIRECTOR™ fitting reduces the need for an additional fitting when a bend is required
- XJG expansion and XD expansion/deflection fittings

NEC and National Electrical Code are registered trademarks of the National Fire Protection Association, Inc.
<table>
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<td>OCAL-BLUE® PVC-Coated Type 4X Form 8 Conduit Bodies and Liquidtight Conduit Fittings</td>
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<td>Code Keeper® Weatherproof While-in-Use Covers</td>
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<td>MaxGard® Explosion-Proof Interlocked Receptacles</td>
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<td>Sta-Kon®</td>
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Thomas & Betts Specification Guide

Thomas & Betts product guide specifications are available as Microsoft Word documents at [www.tnb.com](http://www.tnb.com). They follow the CSI three-part format, using section numbers from Master Format® 2010 Update. This enables their simple and seamless incorporation into any CSI compliant electrical specification. Following are products referenced in this brochure:

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Visit the T&B world of electrical product solutions

Visit our web site for more information about Thomas & Betts solutions and our newest products. For a user-friendly catalog and competitive part number search, application and technical support and other useful information, go to: www.tnb.com

Industry codes and specifications

Thomas & Betts products for use in wastewater treatment plants meet or exceed applicable industry specifications or codes which are detailed in the appropriate T&B product literature.

Online CAD library

Thomas & Betts offers free download of two- and three-dimensional CAD models of many of its products in more than 90 native CAD formats at: www.tnb.com/cadlibrary

American Recovery and Reinvestment Act (ARRA)

Get certification letters for compliant products online at: www.tnb.com/ARRA

Thomas & Betts Corporation
8155 T&B Boulevard
Memphis, TN 38125
901.252.8000

www.tnb.com

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