

Electrical Solutions for the Oil and Gas Industry



Thomas & Betts

A Global Leader in Innovative...

Wire & Cable Management • Cable Protection Systems • Power Connection & Control • Safety Technology



Today's global project management emphasizes how maintenance, replacement and down-time affect total cost. In oil and gas installations, the impact of maintenance and downtime costs is even higher.

Challenge and commitment.

Thomas & Betts understands your oil and gas operation must be competitive and profitable as well as:

- Maintain a safe environment in process areas classified as hazardous locations
- Meet unforgiving product delivery deadlines
- Battle corrosion (in all its many forms)
- Manage unpredictable raw material costs
- Adapt to new technologies used to find energy sources
- Comply with environmental and community regulations

The oil and gas industry demands performance from components used in electrical infrastructure. Thomas & Betts manufactures quality products that reliably connect and protect electrical wiring systems around the world used for upstream, midstream and downstream processes. Our innovative components and systems are designed for safety in classified hazardous locations to save you valuable installation time and stand up to the harshest, most corrosive environments.

From original design and manufacturing excellence to world-class service, Thomas & Betts meets the demands of this changing market. That's why we are one of the world's largest providers of electrical components.

A few facts about Thomas & Betts:

- 46 manufacturing plants in operation around the world
- More than 100,000 electrical components and systems available
- Thomas & Betts products can satisfy up to 70% of most projects' BOMs
- Efficient service infrastructure offers distributors single-order, single-shipment service on thousands of stocked items

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 oil and gas 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

Oil & Gas Applications



Delivering value through system solutions based on engineering innovation.

Our Value Commitment

Oil and gas companies fundamentally rely on continuous technology development to locate, extract and process their products in diverse locations around the world. Reliability and meeting demanding production and delivery schedules are what Thomas & Betts is committed to helping you do. Tackle your oil and gas facilities' unique challenges with our electrical solutions, services and systems:

T&B Engineered solutions — Our products are designed to perform dependably in marine and hazardous area environments and around high-vibration equipment. They can withstand harsh chemicals, extreme temperatures and ultraviolet penetration.

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 through construction and MRO.

Training and certification — We conduct training programs on specific products and work 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. This global electrical product support system ensures that our solutions are available when and where you need them.



Product Platforms

Thomas & Betts has everything to connect and protect the infrastructure of oil and gas operations. We provide companies with electrical system solutions to help protect their employees, assets and brands while increasing safety, sustainability and revenues.

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, panel builders, contractors and maintenance personnel depend on T&B electrical boxes, cable ties, weatherproof 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 for 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.



***Key oil and gas
business drivers***

- ***Maintaining a safe environment in process areas classified as hazardous locations***
- ***Unforgiving time schedules to meet investment deadlines***
- ***Battling corrosion (in all its many forms)***
- ***Managing unpredictable raw material costs***
- ***Adapting to changing technologies used to find energy sources***
- ***Increasing environmental and community demands***

T&B Engineered solutions for every application area

- Exploration
- Production
- Offshore
- Onshore
- Shale
- Refining
- Infrastructure
- Storage
- OEM/Skid Manufacturer
- Transportation
- Marketing

Thomas & Betts designs, manufactures and supplies technically advanced products for electrical systems. Profitable drilling, extracting, processing, transporting and dispensing operations require reliable, robust and cost-effective equipment. That's why we invest extensive amounts on R&D, training and channel management. Our solutions solve real-world problems. Thomas & Betts offers the industry's most advanced materials distribution system, and our commitment shows in our unmatched products, unequalled service and loyalty from end-users and OEMs.





-  **Safety & Contamination**
-  **Continuous Operation & Sustainability**
-  **Total Project Cost Reduction**
-  **Corrosive & Harsh Environment Protection**
-  **Hazardous Location Protection**
-  **Grounding & Bonding**
-  **Power Quality, Efficiency & Reliability**
-  **Extreme Temperature Protection**
-  **Liquid Ingress Protection**
-  **Services & Training**

Safety & Contamination

Accidents, disasters and occupational-related injuries can occur anytime, anywhere. They most often occur because of human errors with technology or an organizational arrangement. The identification of and preparedness for such accidents would either prevent their occurrence or mitigate the impact in the case that they do occur.

The major stakeholders in safety solutions are (a) the state, (b) the business/organization, (c) employee(s) and (d) the environment/society. Furthermore, there are moral, legal and business implications to safety practices. Every spill is one too many, which is why oil and gas operators, working with regulators, continue efforts to reduce the possibility of spills. Their ultimate goal is having zero spills, zero deaths and zero injuries.

Not only does Thomas & Betts incorporate safety solutions into our manufacturing plants and offices, we also engineer our products and hold training seminars to incorporate safety in the field. Thomas & Betts can train you and your staff in the proper methods and use of tools for various applications.



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

EMERGI-LITE® / Lightalarms™

Emergency Lighting Systems

- Designed to withstand damp, corrosive conditions
- Safe to use in explosive environments
- Energy efficient with long, low-maintenance service life

furse

Grounding and Lightning Protection Systems

- Over 100 years' technical expertise with a strong reputation for innovation, quality and service
- Uniquely placed to provide a total solution to all your grounding, lightning and transient overvoltage protection needs



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



All-Struct®
Quick Pole

EZCODE®
Safety Labels, Tags, Signs
and Barricade Tapes

Emergi-Lite®/Lightalarms™
Emergency Lighting
Systems

Furse®
Grounding and Lightning
Protection Systems

Accidents can happen anytime, anywhere. Preparing for accidents, however, can prevent their occurrence or mitigate the impact in case they do occur.



Thomas & Betts products for safety & contamination

All-Struct®

- Quick Pole Light-Fixture Mounting Assembly

Blackburn®

- E-Z-Ground® Compression, Mechanical and Exothermic Grounding Systems
- Compression Lugs and Splices
- Ergonomic Compression Tools

Cyberex®

- Industrial UPS Systems

Elastimold®

- Fused Loadbreak Elbows

Emergi-Lite®/Lightalarms™

- Emergency Exit Lighting

EZCODE®

- Danger/Warning Labels and Signs, Industrial/Wire Markers, Barricade/Burial Tape

Fisher Pierce®

- Faulted Circuit Indicators

Furse®

- Lightning Protection
- Exothermic Welds

Hazlux®

- Strobe Lighting Fixtures

Hi-Tech®

- Trans-Guard® Fuses, Molded Current-Limiting Fuses, Molded Canister Fuses

Joslyn®

- Surge Protection Devices

Joslyn Hi-Voltage®

- Capacitor Switches, Air Disconnect Switches and Obstruction Light-Lowering Device

JT Packard®

- Electrical and Data System Installation, Inspection and Maintenance Services

Kindorf®

- Seismic Bracing System

Ocal®

- PVC-Coated Conduit and Fittings

Red•Dot®

- Code Keeper® Weatherproof While-in-Use Covers and Boxes

Russellstoll®

- GSUL Ground Indicator System

Sta-Kon®

- Luminaire Disconnects

Ty-Rap®

- Extra-High Temperature and Flame-Retardant UL94V-O Nylon Cable Ties
- Ty-Rap Tote® Cable Tie Dispensers and Ergonomic Installation Tools



Continuous Operation & Sustainability

The costs associated with downtime in oil and gas operations can be as high as \$1 million per hour. If power is lost during production, the current production may have to be scrapped as well as the process equipment.

Due to the high cost of downtime, oil and gas facilities prefer to use better performing materials and products to minimize maintenance, and preventive maintenance is performed at specific intervals instead of waiting for equipment failure.

If you do experience plant downtime, Thomas & Betts offers you:

- The capability to get your electrical system back up and running quickly
- A deep product offering to standardize your electrical system and ensure that you have the products you need on hand to minimize downtime
- High-performance electrical systems to work in clean-in-place (CIP) sanitation processes
- Long-lasting electrical systems to extend the plant life cycle, reduce your capital expenditures and increase operational equipment effectiveness (OEE)
- Installation training certification to ensure plant sustainability
- Qualified technical personnel to help you quickly get your plant back online

T&B® Fittings

Type A Liquidtight Flexible Non-Metallic Conduit

- Non-metallic, steel and stainless steel fittings
- Ideal for continuous flexing or vibration applications
- Create a liquid-, dust- and oil-tight seal
- Suitable for operating temperatures from -20° to 60° C



T&B® Fittings
Type A Liquidtight Flexible
Conduit and Fittings



Industrial UPS Systems

- Developed to UL® standards and designed for a 20-year service life
- Ranges from 10 to 150kVA, incorporating state-of-the-art system topology for higher online system efficiency and longer battery life
- Digital Static Transfer Switch design provides increased redundancy and reliability

Blackburn®

Motor Lead Disconnects

- Quick, reliable change-out of electric motors with no bolting, taping or loose connections
- Complete line of motor lead disconnects for 600V and 5kV applications, covering wire ranges from #16 through 4/0 AWG
- Total assembly fits into tight motor housings
- Featuring the Color-Keyed® Compression System that ensures proper connections



Cyberex®
Industrial UPS Systems



Blackburn®
Motor Lead Disconnects



Performing routine preventive maintenance is not as expensive as the skyrocketing costs of downtime. Make sure your electrical system runs right with Thomas & Betts products.

Thomas & Betts products for continuous operation & sustainability

Blackburn®

- E-Z-Ground® Compression, Mechanical and Exothermic Grounding Systems
- Compression Lugs and Splices
- KUBE® Power Connectors and Motor Lead Disconnects
- Ergonomic Compression Tools

Cyberex®

- Industrial UPS Systems

Joslyn®

- Surge Protection Devices

JT Packard®

- Electrical and Data System Installation, Inspection and Maintenance Services

Kindorf®

- 316 Stainless, Aluminum, PVC-Coated or Non-Metallic Channel, Hangers and Clamps and Seismic Bracing System

Ocal®

- PVC-Coated Conduit and Fittings

PMA®

- Nylon Cable Protection Systems

Russellstoll®

- MaxGuard® Pin-and-Sleeve Connectors, Explosion-Proof Interlocked Receptacles and GSUL Ground Indicator System

Sta-Kon®

- Nylon-, Vinyl- and Non-Insulated Wire Terminals
- Luminaire Disconnects
- Corrosion-Resistant, Nickel-Plated Wire Terminals
- Heat-Shrink Terminals, Ergonomic Comfort Crimp® Tools and Disconnect Installation Tool
- Shrink-Kon® Wire and Connector Insulation Products

T&B® Cable Tray

- Aluminum, Stainless Steel and Fiberglass Support and Wire Management Systems

T&B® Fittings

- Type A Liquidtight Flexible Conduit and Fittings
- XTRA FLEX® Non-Metallic Liquidtight Conduit, Tubing and BULLET® Fittings
- Stainless Steel and Aluminum Hubs and Non-Metallic Liquidtight Conduit and Cord Fittings
- Silver Grip® Tray Cord Fittings
- STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables
- XD Expansion/Deflection Coupling for Rigid Conduit

Thomas & Betts products for continuous operation in your onsite electrical substation

Elastimold®

- High-Voltage Connectors and Solid-Dielectric Switchgear

Homac®

- Substation Connectors

Joslyn Hi-Voltage®

- Capacitor Switches, Air Disconnect Switches and Obstruction Light-Lowering Device



Total Project Cost Reduction

When quality products reduce the overall costs associated with an oil or gas operation, the savings add up in so many ways. Many T&B® Fittings reduce inventory expenses. That further translates to installers not needing to carry so many parts, and labor can be performed in a fraction of the time it normally would take.

Other products enable tremendous savings, too. The Kindorf® Trapnut® strut fastener features either a stainless steel, Galv-Krom® or SilverGalv® finish that stands up to corrosion, enabling oil and gas operations to save on replacement and labor costs. The Cobra® One-Piece Cable and Pipe Clamp installs quickly and securely right out of the box, attaches to equal trade sizes of EMT and rigid conduit and greatly reduces installation time.

For reducing installation time with teck cable by up to 50%, and for making connections in all those hard-to-reach places, the STAR TECK® EXTREME® DIRECTOR™ Fitting comes with a swish-plate design that enables the fitting to adjust from 90° to 180°.



T&B® Fittings

Ranger® Cord Connectors

- Allow for 1/4" more range of cord, providing an opportunity to reduce inventory
- Take twice the cable range of ordinary strain relief connectors
- Straight, 45° and 90° designs

BlueKote® LU® Universal Conduit Elbow

- Provides a 4-to-1 SKU reduction for conduit body applications
- Reduces installation time and risk of installer strain

STAR TECK EXTREME® DIRECTOR™

- Fitting adjusts from 90° to 180°
- Saves on Installation time by up to 50%

Blackburn®

Compression Lugs

- Accommodate both code and flex cable on the same lug
- Eliminate the need for additional SKUs to accommodate lugs for both cable types
- Featuring the Color-Keyed® Compression System that ensures proper connections



T&B® Fittings
Ranger® Cord Connectors

T&B® Fittings
BlueKote® LU® Universal
Conduit Elbow

T&B® Fittings
STAR TECK EXTREME®
DIRECTOR™

Blackburn®
Compression Lugs



Thomas & Betts understands the needs of oil and gas companies, which is why we deliver complete solutions that help reduce costs at every stage of operation and maintenance.

Thomas & Betts products for total project cost reduction

Blackburn®

- Compression Lugs and Splices
- Ergonomic Compression Tools

Joslyn Hi-Voltage®

- Capacitor Switches, Air Disconnect Switches and Obstruction Light-Lowering Device

Kindorf®

- 316 Stainless, Aluminum, PVC-Coated or Non-Metallic Channel, Hangers and Clamps

T&B® Fittings

- STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables
- XD Expansion/Deflection Coupling for Rigid Conduit
- LU® Conduit Bodies – BlueKote® and Stainless Steel



Corrosive & Harsh Environment Protection

Most corrosion at refineries is not caused by hydrocarbons that are processed but by various inorganic compounds — such as hydrogen sulfide, hydrochloric acid, sulfuric acid and water — used in the process. Feed-stock contaminants and process chemicals are two principal sources of these corrosives. The use of corrosion-resistant materials and coatings is the key to extending the life and reliability of your electrical system components.

According to NACE International, corrosion costs the U.S. oil and gas production industry an estimated \$1.3 billion annually. Problems 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

Ocal®

OCAL-BLUE® PVC-Coated Conduit

- PVC-coated, hot-dipped galvanized conduit and threads
- Fully complies with UL® 6, NEMA RN-1 and ANSI C80.1
- Only manufacturer with UL® Verified Compliance
- PVC-Coated Conduit System provides superior corrosion protection against many harmful elements
- Interior blue polyurethane provides corrosion protection around copper wire or fiber optics



OCAL®
OCAL-BLUE®
PVC-Coated Conduit



Hazlux®
HazCote® Kynar-Coated
Lighting Fixtures



Hazlux®

HazCote® Kynar-Coated Lighting Fixtures

- Enclosed, gasketed, sealed fixtures for adverse, wet and marine locations
- Cast aluminum with HazCote® corrosion protection
- Polymeric fixtures also available

Ty-Rap®

Stainless Steel Cable Ties

- Strong, fireproof and easy to apply — for safe cable bundling
- Resist corrosion and UV light, with the ability to withstand temperature extremes
- Provide a strong, safe installation with a unique dual-locking mechanism

KOPEX-EX™

Stainless Steel Liquidtight Fittings

- Rated IP66
- Operating temperature range of -60° C to 130° C

Stainless Steel Flexible Conduit

- Available for oil-resistant, high-temperature and low and limited fire hazard applications
- Made from Type 316 stainless steel



Ty-Rap®
Stainless Steel Cable Ties



Kopex-Ex™
Stainless Steel Flexible Conduit
and Liquidtight Fittings

A large offshore oil rig is shown in the background, extending from the water surface up to a clear blue sky. The rig features a complex network of white steel beams, yellow cranes, and various platforms. The water is a deep blue, and the overall scene is brightly lit.

Offshore sites face corrosion from saline water and various chemicals. Onshore petrochemical plants are subject to corrosion from separation, filtration, extraction and distillation processes involving the use of chemical agents.

Thomas & Betts products for corrosive & harsh environment protection

Adaptaflex®

- Stainless Steel Flexible Conduit, Cord and Cable Fittings

Hazlux®

- HazCote® Kynar-Coated Lighting Fixtures

Kindorf®

- 316 Stainless, Aluminum, PVC-Coated or Non-Metallic Channel, Hangers and Clamps

Kopex-Ex™

- Explosion-Proof Raceway Systems

Nicote®

- Flameproof IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable
- Barrier IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable

Ocal®

- PVC-Coated Conduit and Fittings
- OCAL-BLUE® NEMA Type 4X Form 8 Conduit Bodies

PMA®

- Nylon Cable Protection Systems

Red•Dot®

- Code Keeper® Weatherproof While-in-Use Covers

Reznor®

- Washdown Unit Heater

Sta-Kon®

- Corrosion-Resistant, Nickel-Plated Wire Terminals

T&B® Cable Tray

- Aluminum, Stainless Steel and Fiberglass Support and Wire Management Systems

T&B® Fittings

- Stainless Steel Form 8 and BlueKote® Conduit Bodies
- Stainless Steel and Aluminum Hubs
- Stainless Steel, Aluminum and Non-Metallic Liquidtight Conduit and Cord Fittings
- CorroStall® Aluminum Conduit Boxes
- STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables
- LU® Conduit Bodies – BlueKote® and Stainless Steel

Ty-Rap®

- Coated and Uncoated Stainless Steel Cable Ties
- Ty-Rap Tote® Cable Tie Dispensers and Ergonomic Installation Tools
- Deltec® Outdoor Fastening System
- Ty-Met™ Stainless Steel Cable Ties



Hazardous Location Protection

There are two ways that equipment is made safe. Either the equipment is located in a safe place outside the hazardous location, or the equipment is designed, installed and maintained to the standards applicable to a hazardous location.

All codes define hazardous locations as areas where the possibility of explosion and fire is created by flammable liquids, gases, vapors, dusts, fibers or flyings. In oil and gas facilities, hazardous locations may be present due to liquids, gases or chemicals.

Typical hazardous locations include:

- Onshore and offshore drilling rigs
- Refineries and chemical plants
- Booster stations and valve areas along pipelines
- Loading and unloading areas in terminals
- Storage areas for tanks, barrels and trucks

To protect both your facility and your employees, Thomas & Betts offers a wide variety of high-performance, explosion-proof solutions designed to prevent or contain an explosion in classified hazardous locations.



Area Lighting and Controls

- Portable floodlights
- Flameproof fluorescent and self-contained emergency luminaires
- Warning lights and beacons
- Junction and control boxes



T&B Fittings

STAR TECK® XP Stainless Steel and Aluminum Fittings

- Form a mechanical grip and water- and/or oil-resistant termination
- Provide grounding continuity of cable armor



Stainless Steel Flexible Conduit

- Available for oil-resistant, high-temperature and low and limited fire hazard applications
- Made from Type 316 stainless steel



Metal Cable Glands

- Flameproof and barrier IECEx and ANZEx certified cable glands for steel wire armored cable
- Multiple options available for each mounting thread size

Russellstoll®

MaxGard® Pin-and-Sleeve Connectors

- Copper-free, cast aluminum, epoxy powder-coated housings
- Explosion-proof interlocked receptacles also available



DTS®
Area Lighting
and Controls



T&B® Fittings
STAR TECK® XP Stainless
Steel and Aluminum Fittings



Kopex-Ex™
Stainless Steel
Flexible Conduit



Nicote®
Metal Cable Glands



Russellstoll®
MaxGard® Pin-and-Sleeve
Connectors



Thomas & Betts products for hazardous location protection

All-Struct®

- Quick Pole Light-Fixture Mounting Assembly

Cyberex®

- Industrial UPS Systems

DTS®

- Lighting, Junction Boxes and Controls

Emergi-Lite®/Lightalarms™

- Emergency Exit Lighting

EZCODE®

- Danger/Warning Labels and Signs, Industrial/Wire Markers, Barricade/Burial Tape

Hazlux®

- HazCote® Kynar-Coated Lighting Fixtures
- Explosion-Proof Lighting Fixtures for Hazardous Locations
- Strobe Lighting Fixtures

Joslyn®

- Surge Protection Devices

Kopex-Ex™

- Explosion-Proof Raceway Systems

Nicote®

- Flameproof IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable
- Barrier IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable

Russellstoll®

- MaxGard® Pin-and-Sleeve Connectors and Explosion-Proof Interlocked Receptacles
- GSUL Ground Indicator System

T&B® Cable Tray

- Aluminum, Stainless Steel and Fiberglass Support and Wire Management Systems

T&B® Fittings

- Explosion-Proof Boxes, Elbows, Fittings and XP Explosion-Proof Flexible Couplings
- STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables

There is always a concern at petrochemical installations about the significant presence of gases and vapors. Our explosion-proof solutions can prevent or contain an explosion in classified hazardous locations.



Grounding & Bonding

An electrical system includes various pieces of conductive equipment connected together to keep them at the same potential. Static sparking cannot take place between objects that are at the same electrical potential. Thomas & Betts electrical raceway products provide excellent bonding characteristics for the electrical system.

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.

The National Electrical Code® (NEC®) provides installation rules to follow. Thomas & Betts manufactures a variety of solutions to meet these rules.

NEC and National Electrical Code are registered trademarks of the National Fire Protection Association, Inc.

Blackburn®

E-Z-Ground® Compression Connectors

- High-conductivity copper and bronze allow connectors for direct burial, OEM or telecomm applications
- Featuring the Color-Keyed® Compression System that ensures proper connections

Mechanical Grounding Connectors

- High-strength split-bolt connectors for copper-to-copper connections
- Service post connectors for steel structures, fence posts or transformers using one or two cables
- ViceLock® connectors for cable tray, channel and strut applications

Exothermic Welding System

- Simple, self-contained system to form high-quality electrical connections



Blackburn®
E-Z-Ground®
Compression Connectors

Blackburn®
Mechanical Grounding
Connectors

Blackburn®
Exothermic Welding
System

Boreal™
High-Quality
Flexible Connectors

Fursey®
Grounding and Lightning
Protection Systems



BOREAL

High-Quality Flexible Connectors

- A wide variety of grounding straps and accessories for grounding applications
- Extra-flexible links for heavy-duty applications up to 3600A
- Standard flexible links for medium-duty applications up to 2350A

fursey

Grounding and Lightning Protection Systems

- Over 100 years' technical expertise with a strong reputation for innovation, quality and service
- Uniquely placed to provide a total solution to all your grounding, lightning and transient overvoltage protection needs

By properly connecting all metallic non-current carrying equipment at your oil and gas facility, you greatly reduce the potential for electric shock and explosions.

Thomas & Betts products for grounding & bonding

Blackburn®

- E-Z-Ground® Compression, Mechanical and Exothermic Grounding Systems
- Compression Lugs and Splices
- KUBE® Power Connectors and Motor Lead Disconnects
- Ergonomic Compression Tools
- Dragon Tooth® Insulation-Piercing Connectors
- Shield-Kon® One- and Two-Piece Coaxial Grounding Connectors

Boreal™

- High-Quality Flexible Connectors

Cyberex®

- Industrial UPS Systems

Elastimold®

- High-Voltage Separable Connectors and Solid-Dielectric Switchgear

EZCODE®

- Danger/Warning Labels and Signs, Industrial/Wire Markers, Barricade/Burial Tape

Fisher Pierce®

- Faulted Circuit Indicators

Furse®

- Lightning Protection
- Exothermic Welds

Nicote®

- Flameproof IECEX and ANZEx Certified Cable Gland for Steel Wire Armored Cable
- Barrier IECEX and ANZEx Certified Cable Gland for Steel Wire Armored Cable

Russellstol®

- GSUL Ground Indicator System

T&B® Fittings

- STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables
- XD Expansion/Deflection Coupling for Rigid Conduit



Power Quality, Efficiency & Reliability

The loss of a single data record can mean the permanent loss of a process batch — or the loss of millions of dollars every minute. In this critical industry, the need for stable power is paramount. Count on Thomas & Betts products for Power Quality, Efficiency & Reliability.

Our power solutions provide the peace of mind that comes from knowing your equipment is safe and secure from the consequences of unpredictable power. By designing the world-class standard in power equipment, Thomas & Betts has become a leader in custom-designed digital static transfer switches, power distribution and uninterruptible power systems.

From the clean environment of a data center to the harsh conditions of an offshore oil platform, Thomas & Betts products meet the challenge of providing clean, dependable electric power to the oil and gas industry.



Industrial UPS Systems

- Systems developed to comply with both IEC and UL® applications
- Rugged design for a 20-year service life
- Ranges from 10 to 150kVA, incorporating state-of-the-art system topology for higher online system efficiency and longer battery life
- Digital Static Transfer Switch design provides increased redundancy and reliability



Surge Protection

- Facility-wide protection, from service entrance to equipment level
- Proprietary designs maximize system performance
- Individually fused MOVs increase system reliability
- Available surge ratings: 25kA to 400kA
- Multiple voltage configurations
- Listed to UL® 1449 3rd Edition; RoHS compliant



Complete Power Solutions

- UPS maintenance and battery services
- True 24/7/365 support
- Comprehensive reporting
- Emergency response
- Internally staffed call center



Joslyn®
Surge Protection Devices



Cyberex®
Industrial UPS Systems



JT Packard®
Complete Power Solutions

Power is prone to sags, spikes and surges. But Thomas & Betts power solutions provide clean, dependable electric power to facilities — and they keep your equipment and data safe.

Thomas & Betts products for power quality, efficiency & reliability

Current Technology®

- Surge Protection

Cyberex®

- Industrial UPS Systems

Elastimold®

- High-Voltage Separable Connectors and Solid-Dielectric Switchgear

Fisher Pierce®

- Faulted Circuit Indicators

Joslyn®

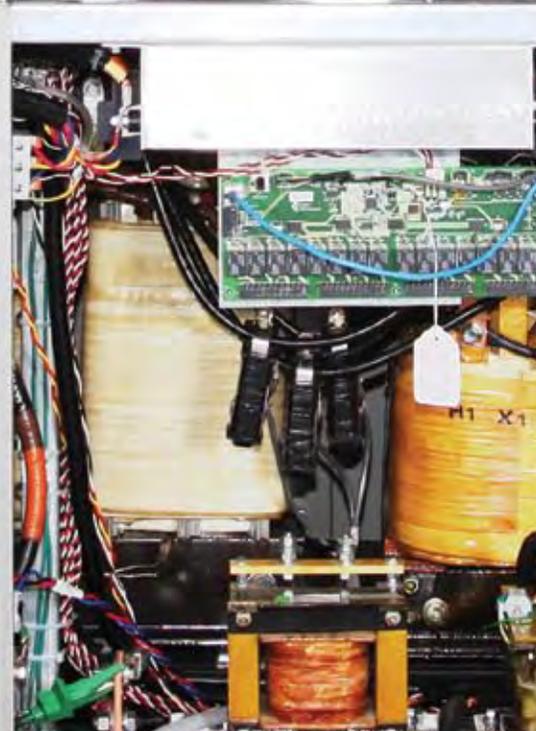
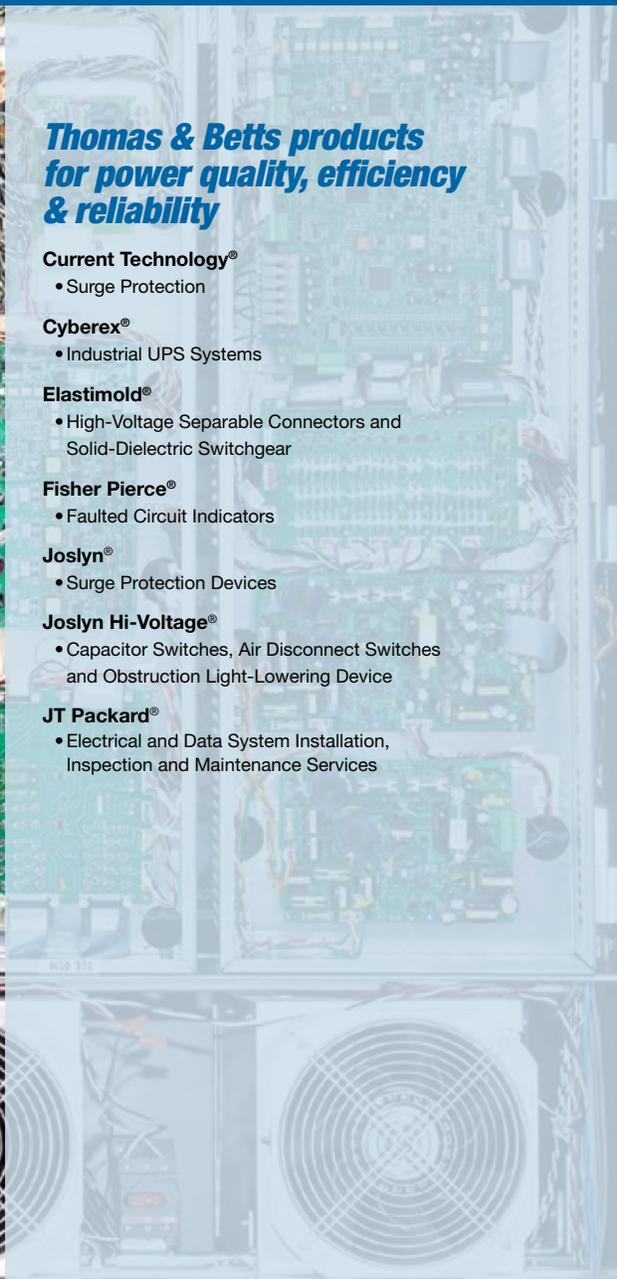
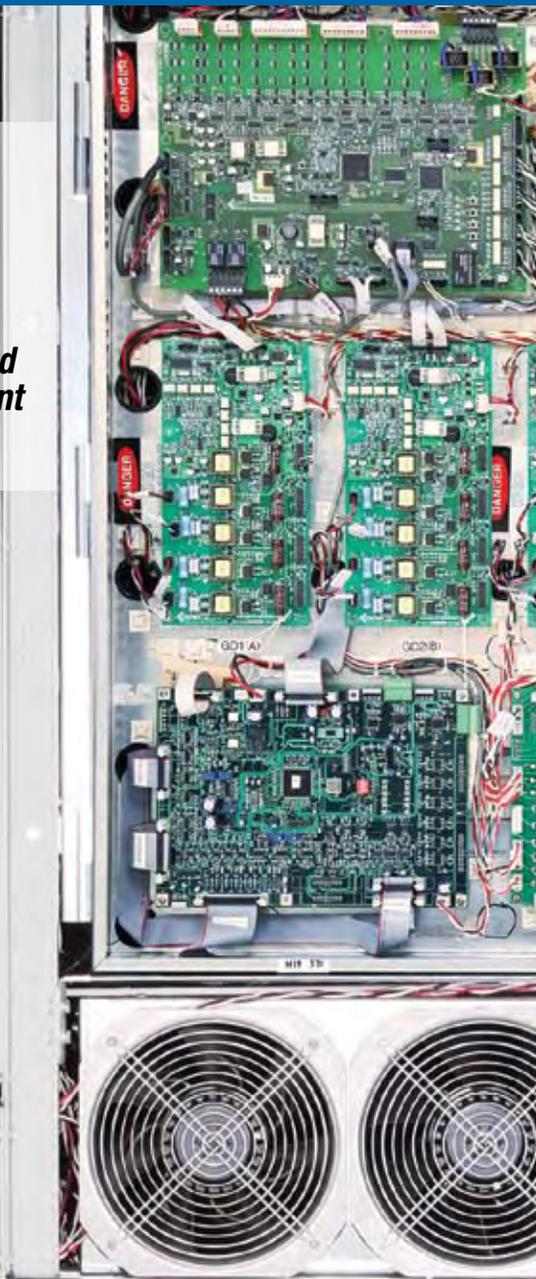
- Surge Protection Devices

Joslyn Hi-Voltage®

- Capacitor Switches, Air Disconnect Switches and Obstruction Light-Lowering Device

JT Packard®

- Electrical and Data System Installation, Inspection and Maintenance Services





Extreme Temperature Protection

Whether you are on the North Slope or an arid desert, electrical systems need to perform consistently. Many of the processes require heat tracing to maintain elevated temperatures throughout oil and gas process systems. Oil and gas operations are constantly exposed to nature, sometimes hot, sometimes cold.

To ensure that connections remain properly shielded against undesirable temperatures, and safeguard the uninterrupted transmission of power and data flows, Thomas & Betts provides tried and tested solutions for a wide variety of applications.

T&B® Fittings

52® Series High-Temperature Flexible Metal Liquidtight Fittings

- Handle temperatures up 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 Flexible Liquidtight Conduit

- Performs in extreme temperature environments up to 150° C
- Conduit sizes from 3/8" to 4"

PMA®

High-Temperature Nylon Conduit and Fittings

- Offer good fire protection (flammability and smoke generation)
- Provide high impact strength even at low temperatures
- Also resistant to weather



Ty-Rap®

Extra-High Temperature Nylon Cable Ties

- For use in temperatures from -40° to 150° C
- Feature “The Grip of Steel®” stainless steel locking device and offer infinite adjustability

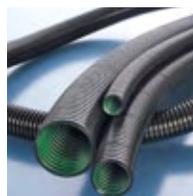
Fluoropolymer Cable Ties

- Perfect for low-smoke applications
- UL® 94V-0 flammability rating
- For use in temperatures ranging from -50° F to 284° F

Sta-Kon®

High-Temperature Wire Joints and Terminals

- Rated for temperatures up to 150° C, 600V maximum
- Molded, one-piece nylon construction for electrical insulation, 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



T&B® Fittings
ATX Liquidtight Flexible
Metal Conduit and Fittings

PMA®
High-Temperature Nylon
Conduit and Fittings

Ty-Rap®
Extra-High Temperature
and Fluoropolymer Ties

Sta-Kon®
High-Temperature Wire
Joints and Terminals



***At remote locations,
temperatures can
go to extremes.
But Thomas & Betts
solutions provide the
protection that electrical
systems need to fight
the cold and beat
the heat.***

Thomas & Betts products for extreme temperature protection

Adaptaflex®

- Stainless Steel Flexible Conduit, Cord and Cable Fittings

EZCODE®

- Danger/Warning Labels and Signs, Industrial/Wire Markers, Barricade/Burial Tape

Kopex®

- High-Temperature Protection

PMA®

- 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 and Flame-Retardant UL94V-O Nylon Cable Ties
- Ty-Rap Tote® Cable Tie Dispensers and Ergonomic Installation Tools



Liquid Ingress Protection

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.

We engineer more into our products, so you get more out of them — important extras not found in ordinary fittings, like a ground cone that improves pull-out strength while reducing the risk of stripping wires, or a sealing ring with tough, durable plating. Our quality liquidtight fittings stay on the job even under the toughest conditions.

Why do we put more effort into our products and quality control? It's simple. The more effort we put in, the better the product. We've been doing it right for over 100 years. And you can be sure that if a product is right for Thomas & Betts, it will be right for you, too.

T&B® Fittings

Stainless Steel Liquidtight Conduit and Cord Fittings

- Stainless steel construction resists corrosion
- Rounded gland nut deflects water from connector
- Continuous sealing ring ensures a liquidtight seal



T&B® Fittings
Stainless Steel Liquidtight
Conduit and Cord Fittings



Ocal®
OCAL-BLUE® PVC-Coated NEMA
Type 4X Form 8 Conduit Bodies



Ocal®

OCAL-BLUE® PVC-Coated NEMA Type 4X Form 8 Conduit Bodies

- Double coated inside and out for corrosion protection
- Stainless steel encapsulated cover screws can be hand-tightened — using only 15 in.-lbs. of torque — to achieve the UL® Listed Type 4X watertight rating

HOMAC®

Flood-Seal® and Squid® Products

- Unaffected by liquid ingress, sun, and soil
- Flood-Seal® compression splice kits' insulating cover seals perfectly every time and is prefilled with an oxide inhibitor that keeps out moisture
- Squid sealing sleeves make seals without tape, compound or heat source

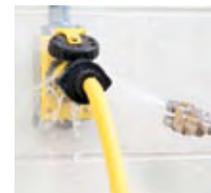
Russellstoll®

MaxGard® Interconnection Systems

- Standard Neoprene O-ringed interior components provide separation at the front of each device
- 24 single-rate device polarizations ensure exact voltage, frequency and phase differentiation
- All system components use mating screw collars



Homac®
Flood-Seal® and
Squid® Products



Russellstoll®
MaxGard® Interconnection
Systems



Thomas & Betts products for liquid ingress protection

Adaptaflex®

- Liquidtight Metallic Conduit Connectors

DTS®

- Lighting, Junction Boxes and Controls

Emergi-Lite®/Lightalarms™

- Emergency Exit Lighting

Hazlux®

- HazCote® Kynar-Coated Lighting Fixtures
- Explosion-Proof Lighting Fixtures for Hazardous Locations
- Strobe Lighting Fixtures

Homac®

- Flood-Seal® and Squid® Products

Kopex®

- Liquidtight Glands

Nicote®

- Flameproof IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable
- Barrier IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable

Ocal®

- PVC-Coated Conduit and Fittings
- OCAL-BLUE® NEMA Type 4X Form 8 Conduit Bodies

PMA®

- Nylon Cable Protection Systems

Red•Dot®

- Code Keeper® Weatherproof While-in-Use Covers

Reznor®

- Washdown Unit Heater

Russellstoll®

- MaxGard® Pin-and-Sleeve Connectors and Explosion-Proof Interlocked Receptacles

Sta-Kon®

- Shrink-Kon® Wire and Connector Insulation Products

T&B Fittings®

- Type A Liquidtight Flexible Conduit and Fittings
- ATX High-/Low-Temperature Liquidtight Conduit and Fittings
- Stainless Steel Form 8 and BlueKote® Conduit Bodies
- XTRA FLEX® Non-Metallic Liquidtight Conduit, Tubing and BULLET® Fittings
- Stainless Steel, Aluminum and Non-Metallic Liquidtight Conduit and Cord Fittings
- Silver Grip® Tray Cord Fittings
- CorroStall® Aluminum Conduit Boxes
- STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables

Water, water everywhere, except in your connections. Thomas & Betts solutions provide superior liquid ingress protection. Our products keep your electrical equipment — and those who use it — safe.



Services & Training

In the highly specialized field of electrical equipment design, installation and inspection, the manufacturer plays a key role in helping customers understand the nuances of their equipment.

From the simple task of fastening a Ty-Rap® cable tie to programming a UPS system, Thomas & Betts provides training in the field or in the classroom to help minimize scrap at the job site and improve installer speed and efficiency.

Blackburn®

- The QTP program provides a guaranteed two-week shipment of Blackburn® products
- Configurator enables special connectors to be designed with a guaranteed two-week shipment
- Product specification specialists and Mobile Technical Specialists are available nationwide to train in the proper use and installation of Blackburn® and Color-Keyed® products
- Inside Tech Support group provides 24/7/365 expertise for Color-Keyed® and Blackburn® products
- Full tool service as well as loaner and tool leasing programs



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



- Grounding and lightning protection system design based on British and IEC standards



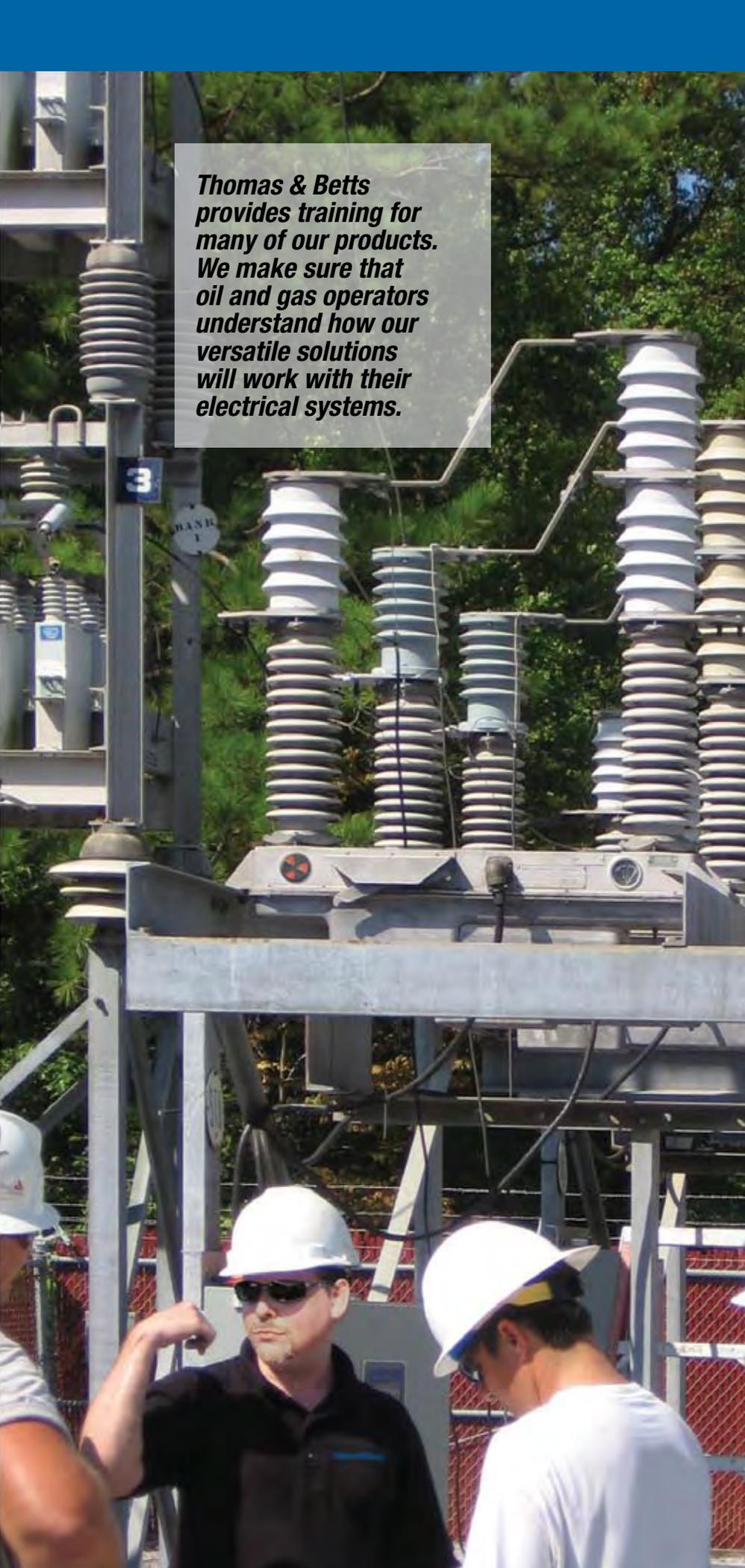
- Power & High Voltage Field Service group provides field maintenance for Joslyn Hi-Voltage® and Elastimold® equipment



- Thermographic scanning
- Power quality survey
- Site coordination
- Pre-installation consultation
- Commission support
- Battery analysis and refresh
- BCM retrofit services
- Load bank test
- Breaker coordination studies
- Arc flash studies
- Multi-vendor UPS services
- Multi-vendor emergency lighting service
- Multi-vendor HVAC/CRAC service

Ocal®

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



Thomas & Betts provides training for many of our products. We make sure that oil and gas operators understand how our versatile solutions will work with their electrical systems.

Thomas & Betts services and training

Thomas & Betts services

Cyberex®

- Industrial UPS Systems

Joslyn Hi-Voltage®

- Capacitor Switches, Air Disconnect Switches and Obstruction Light-Lowering Device

JT Packard®

- Electrical and Data System Installation, Inspection and Maintenance Services

Thomas & Betts training

Blackburn®

- E-Z-Ground® Compression, Mechanical and Exothermic Grounding Systems
- Color-Keyed® System Training

Elastimold®

- High-Voltage Separable Connectors and Solid-Dielectric Switchgear

Furse®

- Lightning Protection
- Exothermic Welds

Ocal®

- Ocal Installation Certification Training

Ty-Rap®

- Ty-Rap Tote® Cable Tie Dispensers and Ergonomic Installation Tools

Additional services & training

- On-Site NEC® Update Training
- On-Site Grounding & Bonding Training

NEC and National Electrical Code are registered trademarks of the National Fire Protection Association, Inc.

High-quality products to address key issues in

Thomas & Betts Brands	Products	Safety & Contamination	Continuous Operation & Sustainability	Total Project Cost Reduction
Adaptaflex®	Stainless Steel Flexible Conduit, Cord and Cable Fittings			
	Liquidtight Metallic Conduit Connectors			
All-Struct®	Quick Pole Light-Fixture Mounting Assembly	•		
Blackburn®	E-Z-Ground® Compression, Mechanical and Exothermic Grounding Systems	•	•	
	Compression Lugs and Splices	•	•	•
	KUBE® Power Connectors and Motor Lead Disconnects		•	
	Ergonomic Compression Tools	•	•	•
	Color-Keyed® System Training			
	Dragon Tooth® Insulation-Piercing Connectors			
	Shield-Kon® One- and Two-Piece Coaxial Grounding Connectors			
Boreal™	High-Quality Flexible Connectors			
Current Technology®	Surge Protection			
Cyberex®	Industrial UPS Systems	•	•	
DTS®	Lighting, Junction Boxes and Controls			
Elastimold®	Fused Loadbreak Elbows, High-Voltage Separable Connectors and Solid-Dielectric Switchgear	•	•	
Emergi-Lite®/ Lightalarms™	Emergency Exit Lighting	•		
EZCODE®	Danger/Warning Labels and Signs, Industrial/Wire Markers, Barricade/Burial Tape	•		
Fisher Pierce®	Faulted Circuit Indicators	•		
Furse®	Lightning Protection	•		
	Exothermic Welds	•		
Hazlux®	HazCote® Kynar-Coated Lighting Fixtures			
	Explosion-Proof Lighting Fixtures for Hazardous Locations			
	Strobe Lighting Fixtures	•		
Hi-Tech®	Trans-Guard® Fuses, Molded Current-Limiting Fuses, Molded Canister Fuses	•		
Homac®	Flood-Seal® and Squid® Products, Substation Connectors		•	
Joslyn®	Surge Protection Devices	•	•	
Joslyn Hi-Voltage®	Capacitor Switches, Air Disconnect Switches and Obstruction Light-Lowering Device	•	•	•
JT Packard®	Electrical and Data System Installation, Inspection and Maintenance Services	•	•	
Kindorf®	316 Stainless, Aluminum, PVC-Coated or Non-Metallic Channel, Hangers and Clamps		•	•
	Seismic Bracing System	•	•	
Kopex®	High-Temperature Protection			
	Liquidtight Glands			

the oil and gas industry

Corrosive & Harsh Environment Protection	Hazardous Location Protection	Grounding & Bonding	Power Quality, Efficiency & Reliability	Extreme Temperature Protection	Liquid Ingress Protection	Services & Training
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T&B Engineered system solutions for OEMs and skid manufacturers

Wire and Cable Management

Kindorf®

- Modular framing systems

Red Dot®

- Code Keeper® Weatherproof While-in-Use Covers

Ty-Rap®

- Nylon and stainless steel cable ties
- Adhesive bases and accessories

Cable Protection Systems

Adaptaflex®

- Stainless steel flexible conduit, cord and cable fittings

Kopex-Ex™

- Electrical conduit systems, glands, stopping plugs, thread converters, accessories

Ocal®

- PVC-coated conduit, fittings and accessories

PMA®

- Nylon-based ATEX-approved conduit system

T&B® Fittings

- XP conduit bodies and fittings
- XP flexible conduit and couplings
- 52® Series high-temperature liquidtight connectors
- ATX flexible metal conduit
- STAR TECK® fittings for armored cable

Power Connection and Control

Blackburn®

- Compression lugs, splices and taps
- Complete selection of compression tooling, including ergonomic hand tools

Russellstoll®

- MaxGard® pin-and-sleeve connectors and explosion-proof interlocked receptacles
- GSUL Ground Indicator System
- Available with optional control contacts

Sta-Kon®

- Wire joints and terminals

Safety Technology

DTS®

- Warning lights and beacons
- Increased safety and flameproof junction and control boxes

Hazlux®

- HID lighting fixtures, strobe lighting fixtures and emergency battery backup lighting



High-quality products to address key issues in

Thomas & Betts Brands	Products	Safety & Contamination	Continuous Operation & Sustainability	Total Project Cost Reduction
Kopex-Ex™	Explosion-Proof Raceway Systems			
Nicote®	Flameproof IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable			
	Barrier IECEx and ANZEx Certified Cable Gland for Steel Wire Armored Cable			
Ocal®	PVC-Coated Conduit and Fittings	•	•	
	OCAL-BLUE® NEMA Type 4X Form 8 Conduit Bodies			
	Ocal Installation Certification Training			
PMA®	Nylon Cable Protection Systems		•	
Red•Dot®	Code Keeper® Weatherproof While-in-Use Covers	•		
Reznor®	Washdown Unit Heater			
Russellstoll®	MaxGard® Pin-and-Sleeve Connectors and Explosion-Proof Interlocked Receptacles		•	
	GSUL Ground Indicator System	•	•	
Sta-Kon®	Nylon-, Vinyl- and Non-Insulated Wire Terminals		•	
	High-Temperature Wire Joints and Terminals			
	Luminaire Disconnects	•	•	
	Corrosion-Resistant, Nickel-Plated Wire Terminals		•	
	Heat-Shrink Terminals, Ergonomic Comfort Crimp® Tools and Disconnect Installation Tool		•	
	Shrink-Kon® Wire and Connector Insulation Products		•	
T&B® Cable Tray	Aluminum, Stainless Steel and Fiberglass Support and Wire Management Systems		•	
T&B® Fittings	Type A Liquidtight Flexible Conduit and Fittings		•	
	ATX High-/Low-Temperature Liquidtight Conduit and 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, Aluminum and Non-Metallic Liquidtight Conduit and Cord Fittings		•	
	Explosion-Proof Boxes, Elbows, Fittings and XP Explosion-Proof Flexible Couplings			
	Silver Grip® Tray Cord Fittings		•	
	Wire-Mesh Strain-Relief Cord and Conduit Grips			
	CorroStall® Aluminum Conduit Boxes			
	STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables		•	•
	XD Expansion/Deflection Coupling for Rigid Conduit		•	•
	LU® Conduit Bodies – BlueKote® and Stainless Steel			•
Ty-Rap®	Coated and Uncoated Stainless Steel Cable Ties			
	Extra-High Temperature and Flame-Retardant UL94V-0 Nylon Cable Ties	•		
	Ty-Rap Tote® Cable Tie Dispensers and Ergonomic Installation Tools	•		
	Deltec® Outdoor Fastening System			
	Ty-Met™ Stainless Steel Cable Ties			

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

All Thomas & Betts products for use in oil and gas facilities 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

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