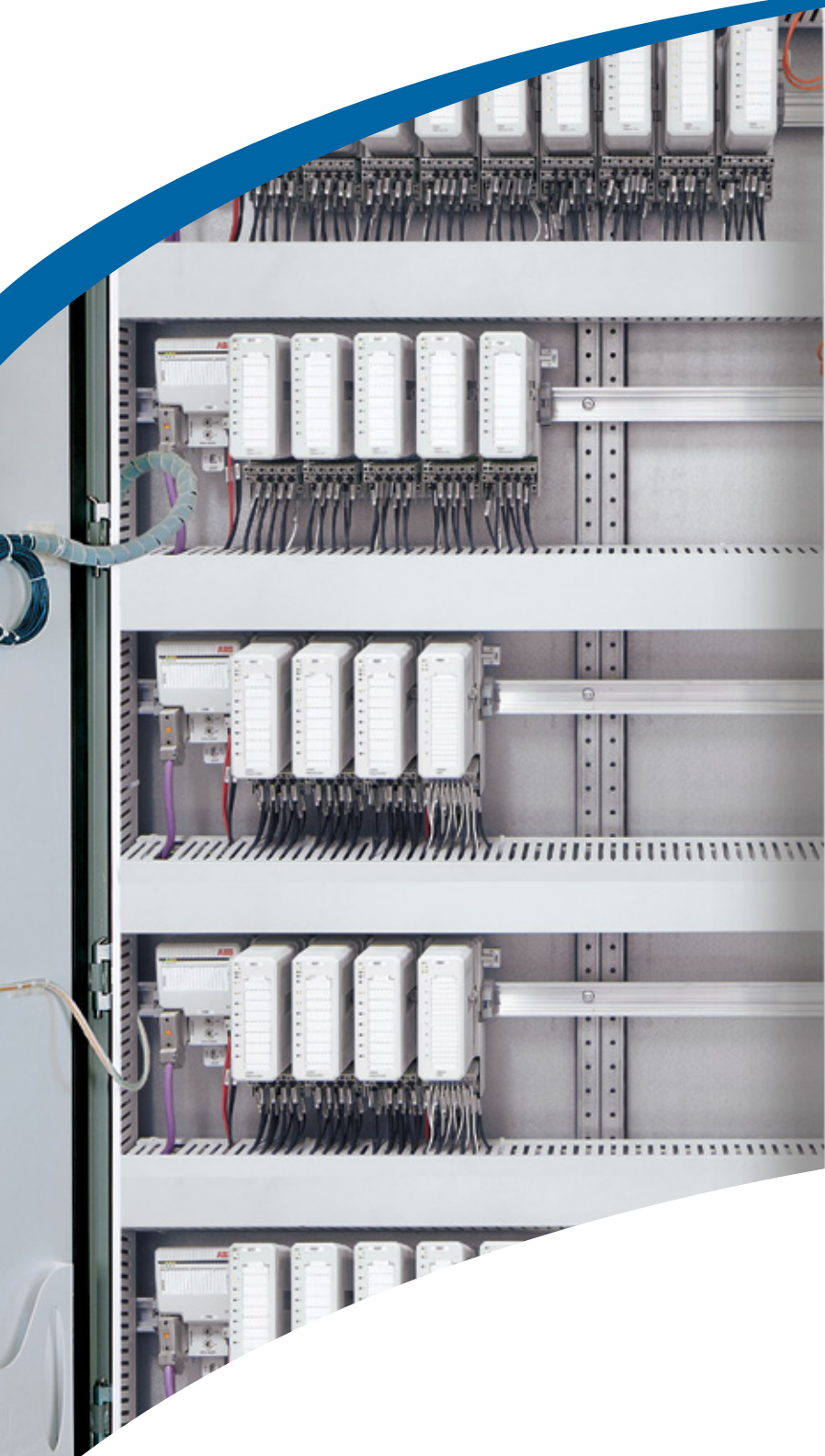


Electrical Solutions for System Integrators and Panel Builders



In the U.S., tens of thousands of facilities use electrical power control panels to keep manufacturing processes as well as environmental and other critical systems working reliably and safely with optimal performance.



Challenge and commitment.

Today's system integrators and panel builders must remain competitive and profitable while facing:

- Reduced or tight budgets
- Fluctuating raw material costs
- Increased competition
- Changing technology and global standards

Electrical control panels are an essential part of manufacturing. They are critical in making sure the right amount of electrical power is sent to the right equipment at the right time to ensure the manufacturing process is able to be performed consistently over and over again.

Electrical control panels are used to control water pumping stations to irrigate farms, to keep our nation's food supply healthy and to keep parks and golf courses saturated with the right amount of water so you can enjoy an outdoor activity.

Electrical control panels are used in commercial building HVAC and lighting systems to ensure workers are comfortable and effective while at work. They are used nearly everywhere power is used, from industrial and commercial markets to institutional and residential markets.

System integrators and panel builders are increasingly being challenged to design a variety of panel types for different environments (approximately 80 percent of panels are unique) and to build and install their electrical control panels on time, at a

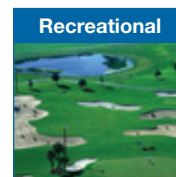
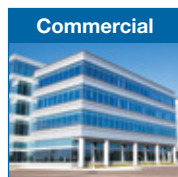
competitive cost and with a high degree of reliability. Their panel boards are often required to operate 24/7 without interruption and in harsh environments.

The critical need for continuous clean power without downtime is key to many manufacturing processes as well as healthcare. The losses from power failure in an industrial plant can be huge; the loss of power in a hospital can threaten life itself.

Thomas & Betts understands system integrators' and panel builders' electrical system issues and has solutions that will help them to:

- Increase personnel and equipment safety
- Improve revenues and profitability
- Ensure high-performance, high-quality and high-reliability electrical systems with extended life
- Reduce labor and installation costs while increasing productivity
- Build and install safer equipment with flexible design options
- Save space in their panels
- Keep up to date with new technologies and global standards
- Meet their customers' specifications and exceed their expectations
- Maintain high brand value and company reputation in order to gain market share

Panel Board Applications



Delivering value through system solutions based on engineering innovation.

Our Value Commitment

System integrators and panel builders must meet demanding delivery schedules while maintaining quality and safety. Key business drivers are building high-performance, reliable and safe electrical panel boards, improving operational efficiencies while maintaining high quality, and completing jobs on time, within budget. Thomas & Betts is committed to helping you meet the unique challenges encountered in system integration and panel building by offering electrical solutions, systems and services that deliver value. These include:

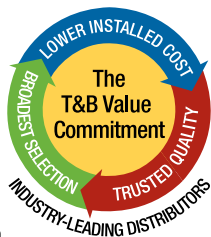
T&B Engineered solutions — Our products are designed to perform dependably under conditions such as constant moisture and liquid ingress, harsh chemicals, extreme temperatures, ultraviolet exposure, hazardous areas, high vibration and continuous operation.

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

Expert support — Thomas & Betts trained sales representatives and technical/tool services experts are available at every stage of a project, from planning and site preparation through construction and MRO.

Training and certification — Thomas & Betts conducts training programs on specific products and systems and works closely with 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

For more than a century, Thomas & Betts has provided electrical system solutions to help customers design and build safe, reliable, high-quality panel boards while increasing operational efficiencies and profitability.

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.

A photograph of a male worker in a red short-sleeved shirt operating a large industrial control panel. The panel is mounted on a wall and features two ABB-branded touchscreens displaying data. Below the screens are several physical buttons and rotary switches, some with labels like 'DRIFT BLADENAD' and 'TA PRESS'. A yellow label on the panel reads '42-230-ML012'. The background shows a large industrial facility with multiple levels of white metal walkways and stairs, suggesting a complex manufacturing or processing plant.

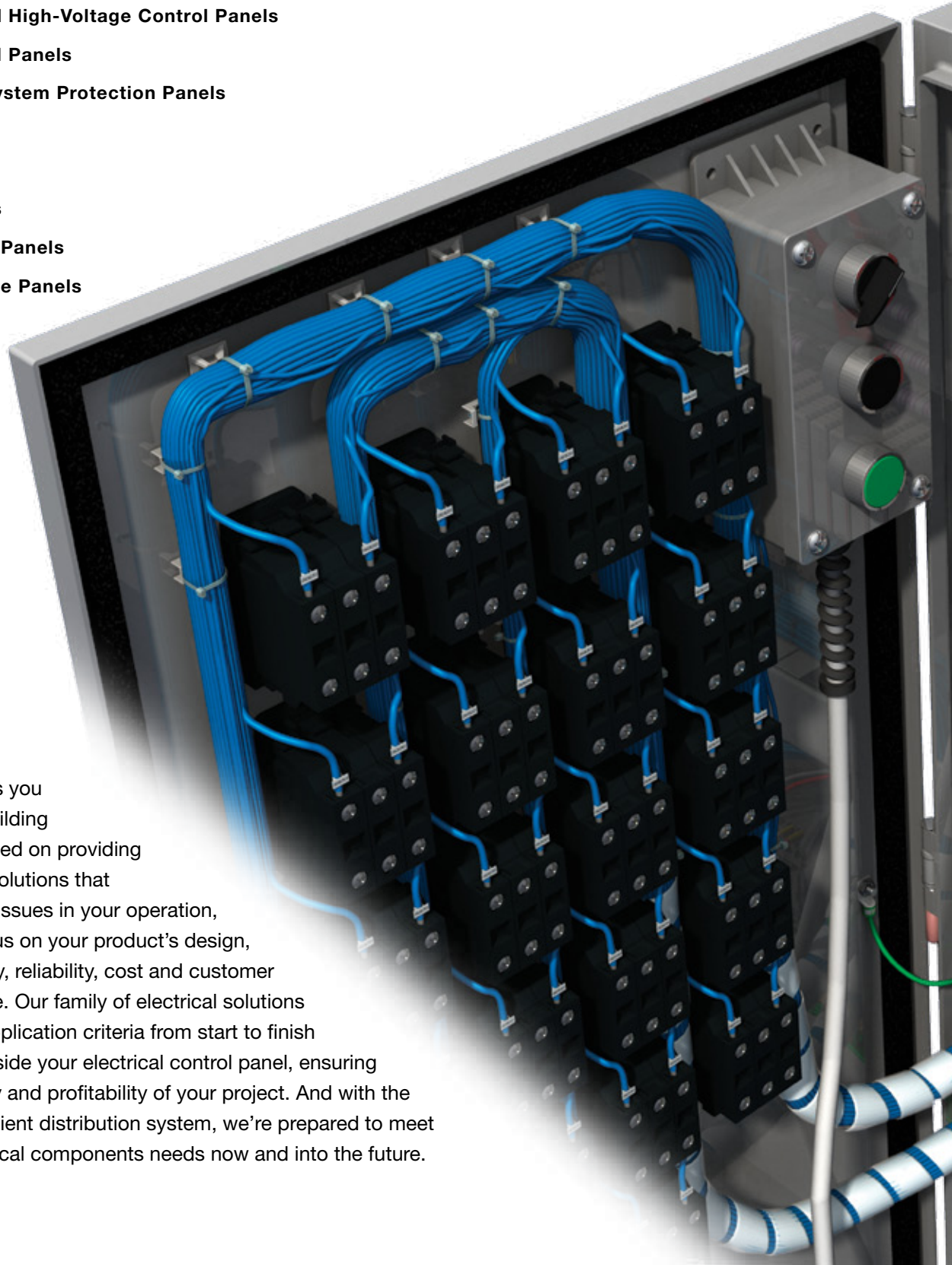
***Key Business Drivers
for System Integrators
and Panel Builders***

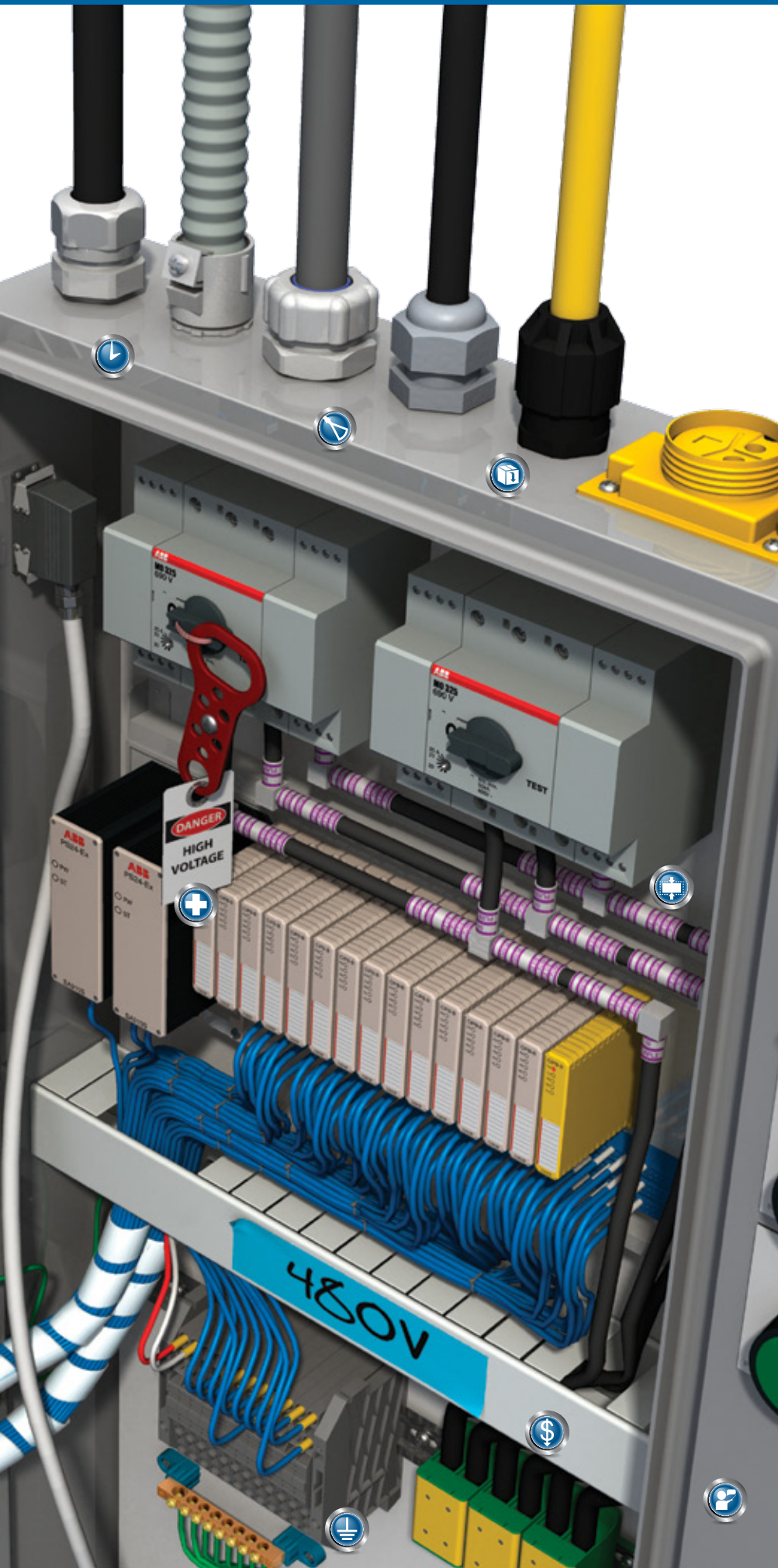
- ***Build high-performance,
reliable and safe
electrical panel boards***
- ***Improve operational
efficiencies and
revenues while
maintaining high quality***
- ***Complete jobs on time
and to specifications***

T&B Engineered solutions for every panel

- **Low, Medium and High-Voltage Control Panels**
- **Industrial Control Panels**
- **Fire and Alarm System Protection Panels**
- **HVAC Panels**
- **Lighting Panels**
- **Telephone Panels**
- **Pumping System Panels**
- **Operator Interface Panels**

Thomas & Betts understands the everyday challenges you face in the panel-building market. We're focused on providing you with electrical solutions that address the critical issues in your operation, enabling you to focus on your product's design, performance, quality, reliability, cost and customer installation schedule. Our family of electrical solutions matches specific application criteria from start to finish both inside and outside your electrical control panel, ensuring the quality, reliability and profitability of your project. And with the industry's most efficient distribution system, we're prepared to meet your ongoing electrical components needs now and into the future.





Electrical System Issues for System Integrators and Panel Builders

 ***Continuous Operation
& Sustainability***

 ***Safety &
Contamination***

 ***Total Project
Cost Reduction***

 ***SKU Reduction***

 ***Space Savings***

 ***Liquid Ingress
Protection***

 ***Grounding & Bonding***

 ***Services & Training***



Continuous Operation & Sustainability

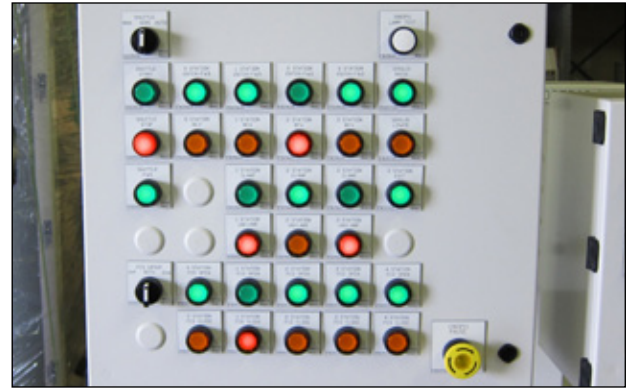
System integrators and panel builders are under pressure to create high-reliability panels with technical features that solve complex processing problems. Panels must be produced quickly, able to run continuously in a variety of environments with high performance and at a lower installed cost. Loose connections are a serious issue. Thomas & Betts offers high-quality electrical system solutions for consistent, reliable connections to maintain your brand reputation. Our products comply with industry standards, which helps your Factory Acceptance Testing (FAT) go smoothly and eliminates rework. In addition, we offer components designed to provide long, reliable service in harsh, wet, corrosive and extreme-temperature environments. To minimize downtime, we offer the following solutions:

- Long-lasting electrical systems to extend lifecycle, reduce expenditures and increase Overall Equipment Effectiveness (OEE)
- High-performance electrical systems to increase reliability
- Installation training certification

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



T&B® Fittings

Liquidtight Flexible Conduit Fittings

- Withstand harsh, wet and corrosive environments
- Safe Edge® ground cone accepts raceway variations
- Suitable for both grounding and bonding applications
- UL® Listed and CSA Certified

Liquidtight Cord Connectors

- Provide exceptional strain relief and create a dependable seal against dust, oil and other liquids
- Designed to handle the unique connection demands of flexible cords and power cables
- UL® Listed and CSA Certified

Carlson®

Non-Metallic Enclosures

- NEMA and JIC designs
- Lightweight, impact-resistant, non-metallic material withstands harsh, wet and corrosive environments

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



Sta-Kon®
Crimped Wire Termination Systems



T&B® Fittings
Liquidtight Flexible Conduit Fittings



T&B® Fittings
Liquidtight Cord Connectors



Carlson®
Non-Metallic Enclosures



ABB
AF Series Contactors



What is the cost of down-time for your company?

In what environments are your panels located?

Panel boards are found in both indoor and outdoor applications, exposed to various environmental conditions, such as high and low temperatures, ultraviolet light, rain, snow, liquids, chemicals and corrosive agents.

Thomas & Betts products for continuous operation & sustainability

ABB

- AF Series Contactors
- Tmax and Emax Circuit Breakers
- Pro M Miniature Circuit Breakers and Surge Protection Devices
- Terminal Blocks
- Jokab Safety Vital 1 Safety Controllers and Relays

Blackburn® Compression

- Compression Connectors Featuring the Color-Keyed® Installation Tooling System — Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs
- KUBE® Flag, Tee and Cross Connectors
- Battery-Powered and Hydraulic Compression Tools

Blackburn® Grounding

- Flexible Braids

Carlson®

- Non-Metallic Enclosures

Kindorf®

- Modular Metal Framing System and Accessories
- Seismic Bracing System

Ocal®

- Corrosion-Resistant PVC-Coated Conduit and Fittings

PMA®

- Flexible Nylon Cable Protection Systems

Russellstoll®

- DuraGard® Industrial Interconnect System — Plugs, Receptacles and Connectors
- UniGard® IEC 309 Rated Pin-and-Sleeve Plugs, Connectors and Receptacles

Sta-Kon®

- Crimped Wire Termination Systems — Rings, Forks, Splices, Disconnects and Wire Joints
- Insulated and Non-Insulated Ferrules and Pin Terminals
- Shrink-Kon® Heat-Shrink Wire Protection Insulation and Self-Fusing Tape

Steel City®

- Device Boxes and Covers

T&B® Fittings

- Liquidtight Conduit and Fittings Systems
 - Type A Stainless Steel or Non-Metallic
 - Type B Non-Metallic
 - Type C Stainless Steel or Aluminum
 - ATX High-/Low-Temperature
- Liquidtight Cord Connectors — Steel, Stainless Steel, Aluminum and Non-Metallic
- Silver Grip® Tray Cord Fittings
- XTRA FLEX® Non-Metallic Liquidtight Conduit, Tubing and BULLET® Fittings
- Wire-Mesh Strain-Relief Cord and Conduit Grips

Ty-Duct®

- Non-Metallic Wiring Duct, Bench-Mount Cutter, Tools and Accessories

Ty-Rap®

- Abrasion-Protection Sleeving
- Spiral Wrap Harnessing



Safety & Contamination

NFPA 70E is the U.S. “Standard for Safety in the Workplace” that governs worker safety. UL508A is the primary listing agency for U.S. industrial control panels. Safety issues for system integrators and panel builders encompass both the well being of personnel building the panels and protection of the employees and assets of customers who use the panels. Many new safety products are being designed into panels to identify and monitor critical processes, make them “touch safe” with arc flash protection, indicator lights, safety relays, touch screens, viewing windows, door ports, deadfront barriers and interlocked safety switches that offer emergency stop circuitry for added protection. For the safety of your employees, Thomas & Betts offers a variety of ergonomic manual, battery-powered and pneumatic/hydraulic installation tools for terminals, lugs and cable ties, providing consistency, efficiency and comfort and helping to reduce the risk of injury. We also provide safety products to help protect your customers’ employees while working in your panel. Thomas & Betts solutions help you increase safety to protect:

- Your panel technicians
- Your equipment
- Your customers

Blackburn® Compression | Sta-Kon® | Ty-Rap®

Ergonomic Application Tooling

- Consistent installation of lugs, terminals and cable ties
- Save time and increase reliability and profitability with hydraulic and pneumatic tooling
- Reduced handle force and ergonomic design lowers the risk of repetitive motion injuries
- Promotes safety by properly matching the correct tool with the electrical component it’s designed to install



**Blackburn® Compression
Sta-Kon® | Ty-Rap®**
Ergonomic Application
Tooling



T&B® Fittings
TITE-BITE® and STAR
TECK® Cable Fittings
and Wire-Mesh Grips



EZCODE®
Safety Labels, Tags,
Signs, Wire Markers
and Barricade Tapes



PMA®
Halogen-Free Nylon
Liquidtight Conduit
Systems



ABB
Jokab Safety
Products



T&B® Fittings

TITE-BITE® and STAR TECK® Cable Fittings and Wire-Mesh Grips

- Metal-clad and armored cable fittings provide exceptional mechanical strain relief, and strain-relief conduit and cord grips prevent severe bends and pull-out
- UL® Listed and CSA Certified

EZCODE®

Safety Labels, Tags, Signs, Wire Markers and Barricade Tapes

- Help to ensure personnel and workplace safety, as well as regulatory compliance
- Highly visible and long-lasting materials
- Custom labels, tags and signs available

PMA®

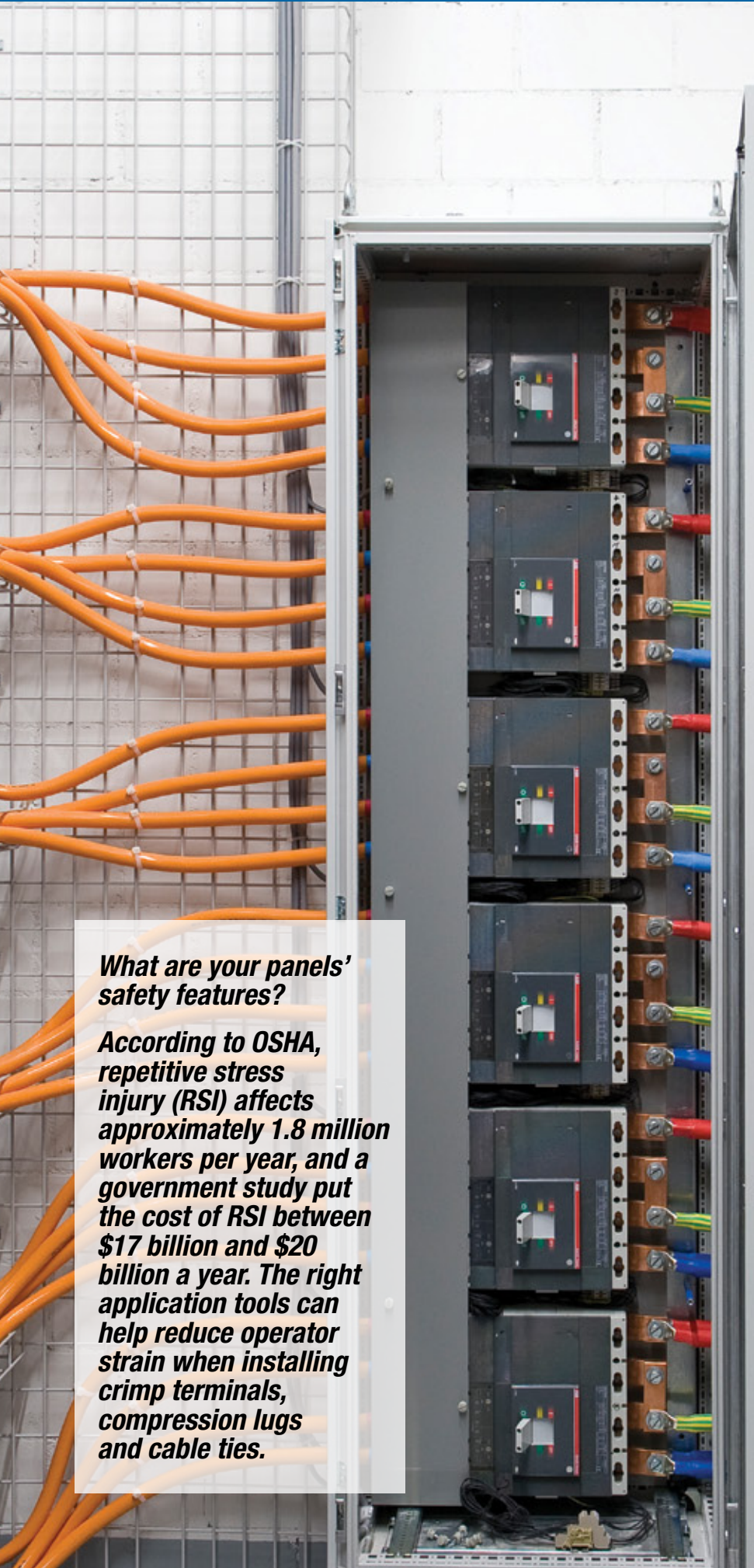
Halogen-Free Nylon Liquidtight Conduit Systems

- Free of halogen and cadmium — will not expose workers to hazardous smoke fumes
- Non-metallic fittings with metallic and non-metallic threads providing IP66, IP68 and IP69K ingress protection

ABB

Jokab Safety Products

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



What are your panels' safety features?

According to OSHA, repetitive stress injury (RSI) affects approximately 1.8 million workers per year, and a government study put the cost of RSI between \$17 billion and \$20 billion a year. The right application tools can help reduce operator strain when installing crimp terminals, compression lugs and cable ties.

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
- Jokab Safety Quick Guard Safety Fencing

Blackburn® Compression

- Battery-Powered and Hydraulic Compression Tools

EZCODE®

- Safety Labels, Tags, Signs, Wire Markers and Barricade Tapes

Kindorf®

- Seismic Bracing System

Kopex-Ex™

- Hazardous Location Conduit Systems

PMA®

- Halogen-Free Nylon Liquidtight Conduit Systems
- Hazardous Location ATEX Conduit Systems

Sta-Kon®

- Automated, Hydraulic, Pneumatic, Battery-Powered and Manual Application Tools
- Insulated and Non-Insulated Disconnects
- Shrink-Kon® Heat-Shrink Wire Protection Insulation and Self-Fusing Tape

T&B® Fittings

- Wire-Mesh Strain-Relief Cord and Conduit Grips
- STAR TECK® Fittings for Jacketed Metal-Clad and Teck Cables
- TITE-BITE® Metal-Clad and Armored Cable Fittings

Ty-Duct®

- Halogen-Free Wiring Duct

Ty-Rap®

- Low-Smoke and Flame-Retardant UL94V-0 Cable Ties
- Detectable Cable Ties
- Manual and Pneumatic Cable Tie Installation Tools
- Ty-Rap Tote® Cable Tie Dispensers
- Abrasion-Protection Sleeving
- Spiral Wrap Harnessing



Total Project Cost Reduction

Increasing profitability while maintaining quality, reliability and safety requires continuous improvement of operational efficiencies. With global commerce increasing, many U.S. system integrators and panel builders are using more IEC components, which often cost less. The labor-to-materials-and-equipment mix changes with the level of panel design complexity, and with labor representing as much as 50 percent of panel cost, installation time reduction is an ideal way to reduce costs and increase profit margin. Thomas & Betts offers total project cost reduction solutions to help you achieve savings in:

- Labor
- Materials
- Equipment
- Logistics

Ty-Duct®

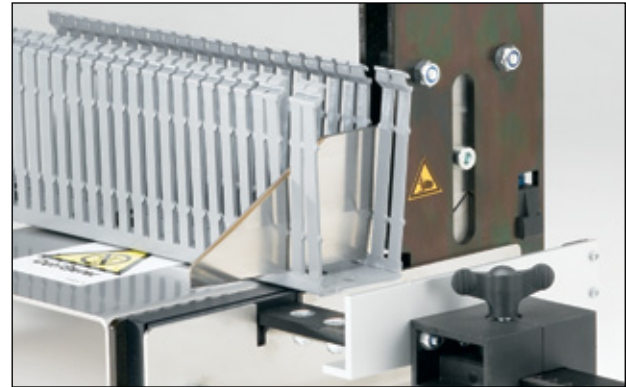
Non-Metallic Wiring Duct, Tools and Accessories

- Triple-restricted slots and universal mounting clip enable fast and neat internal wire bundling
- Two-point contact cover with writable protective film installs/removes easily, yet won't accidentally slip off
- Bench-mount cutter provides fast, dust-free operation

PMA®

PACOF Divisible Flexible Nylon Conduit

- Ideal for use with panel door joints
- Fast, easy installation for significant labor savings
- Can be opened and closed again in longitudinal direction at any time
- Specially modified polyamide 6 construction — self-extinguishing and free from halogen and cadmium
- Operating temperature of -40° C to 100° C



Carlon®

Non-Metallic Enclosures

- NEMA and JIC designs
- Lightweight, impact-resistant, non-metallic material withstands harsh, wet and corrosive environments

Blackburn® Compression

Compression Connectors, Grounding Systems and Ergonomic Compression Tools

- Featuring the Color-Keyed® Installation Tooling System that ensures proper connections
- Design/quote/order custom lugs easily using the Product Configurator — with guaranteed two-week shipment
- HEX-FLEX® die system yields superior terminations with fewer crimps for flex cable

ABB

Terminal Blocks

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

Compact Pilot Devices

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



Ty-Duct®
Non-Metallic Wiring Duct and Universal Mounting Clips



PMA®
PACOF Divisible Flexible Nylon Conduit



Carlon®
Non-Metallic Enclosures



Blackburn® Compression
Compression Connectors, Ergonomic Tools and Dies



ABB
Terminal Blocks



Thomas & Betts

In what areas of your operation could you reduce costs to increase your profit margin?

Approximately 80% of panels are custom-built. The average panel is 3 ft. x 3 ft. in size and takes 40 hours to build.

Thomas & Betts products for total project cost reduction

ABB

- AF Series Contactors
- Tmax Circuit Breakers
- Pro M Miniature Circuit Breakers and Surge Protection Devices
- Compact Pilot Devices
- ProLine Touch-Safe Panel Boards
- SMISLINE Modular Power Distribution System
- Terminal Blocks

Blackburn® Compression

- Compression Connectors Featuring the Color-Keyed® Installation Tooling System — Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs
- Battery-Powered and Hydraulic Compression Tools
- HEX-FLEX® Die System

Blackburn® Grounding

- Grounding Systems
- Flexible Braids

Carlton®

- Non-Metallic Enclosures

Kindorf®

- Modular Metal Framing System and Accessories
- Trapnut® Strut Fastener and Cobra® Clamp

PMA®

- PACOF Divisible Flexible Nylon Conduit

Sta-Kon®

- Automated, Hydraulic, Pneumatic, Battery-Powered and Manual Application Tools

T&B® Fittings

- Multi-Hole Cord Grips — Metallic and Non-Metallic
- Blackjack® Grounding Bushings
- LU® Universal Conduit Elbows — BlueKote® and Stainless Steel
- Form 8 Conduit Bodies — BlueKote® and Stainless Steel
- STAR TECK® Fittings for Jacketed Metal-Clad and Teck Cables

Ty-Duct®

- Non-Metallic Wiring Duct, Bench-Mount Cutter, Tools and Accessories

Ty-Rap®

- Ergonomic Manual and Pneumatic Cable Tie Installation Tools
- Multi-Colored Nylon Cable Ties
- Fasteners and Mounting Accessories
- Ty-Rap Tote® Cable Tie Dispensers



SKU Reduction

Carrying excess inventory is as much of a drag on company profitability as inefficient production processes. The more item SKUs (stock keeping units) you maintain, the greater the complexity of tracking systems and expense to manage inventory — both of which result in revenue loss. Thomas & Betts has a heritage of innovation, and an important characteristic of many new Thomas & Betts products is their ability to replace multiple existing SKUs with one. Our SKU reduction solutions help you:

- Save space in your store room
- Reduce inventory items to manage
- Increase cash on hand

T&B Fittings

Blackjack® Grounding Bushings

- Dual rated for threaded and unthreaded conduit, aluminum and copper wire, cutting inventory in half
- Speeds installation and improves aesthetics

Ranger® Cord Connectors

- Cable range of 0.25" — twice that of ordinary strain-relief connectors — thus reducing inventory
- Smaller overall size to fit into tight spaces
- Choice of aluminum, steel, stainless steel and non-metallic materials

LU® Universal Conduit Elbows

- Can replace LL, LR, LB and C conduit bodies for a 4-to-1 SKU reduction
- Radius is the same as bent conduit — therefore, rated for 40% wire fill
- UL® Listed as an enclosure — splices allowed inside
- Available in BlueKote® finish, stainless steel or with Ocal® PVC coating



T&B Fittings

STAR TECK EXTREME® DIRECTOR™ Jacketed Metal-Clad Cable Fittings

- Innovative range-taking design reduces inventory and speeds installation
- Allow angle adjustment from 90° to 180° to eliminate the need to use a conduit elbow to make bends
- Easy to install — no disassembly required

Blackburn® Compression

HEX-FLEX® Die System

- Reduces installation time by providing a superior termination with fewer crimps for flex cable
- Featuring the Color-Keyed® Installation Tooling System that ensures proper connections

SMART® Tools

- Die-less, 12-ton compression tools use indent-style crimp
- Crimp up to 900 kcmil copper or 750 kcmil aluminum
- Available in manual hydraulic, battery-powered and hydraulic head styles

ABB

AF Series Contactors

- Electronic coil design consolidates SKUs from seven to one
- Field-installable modular accessories for onsite configuration



T&B® Fittings
Blackjack® Grounding Bushings



T&B® Fittings
Ranger® Cord Connectors



T&B® Fittings
LU® Universal Conduit Elbows



T&B® Fittings
STAR TECK EXTREME® DIRECTOR™ Jacketed Metal-Clad Cable Fittings



Blackburn® Compression
HEX-FLEX® Die System and SMART® Tools



ABB
AF Series Contactors



Thomas & Betts products for SKU reduction

ABB

- AF Series Contactors
- Tmax Circuit Breakers
- Compact Pilot Devices

Blackburn® Compression

- Compression Connectors Featuring the Color-Keyed® Installation Tooling System — Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs
- HEX-FLEX® Die System
- SMART® Tools

Kindorf®

- Modular Metal Framing System and Accessories

T&B® Fittings

- Blackjack® Grounding Bushings
- Ranger® Cord Connectors
- LU® Universal Conduit Elbows — BlueKote® and Stainless Steel
- STAR TECK EXTREME® DIRECTOR™ Jacketed Metal-Clad Cable Fittings
- Multi-Hole Cord Grips — Metallic and Non-Metallic

In what ways could you reduce inventory and increase cash on hand?

Reducing SKUs enables you to lower inventories, improve efficiencies and apply resources more effectively and appropriately. Plus, fewer SKUs means less time to maintain, stock and fulfill inventory — time savings that also translate to lower operating costs.



Space Savings

When it comes to panels, space is money. The switch from analog to digital components requires less space and reduces wiring, saving space, labor, time and money. Thomas & Betts offers products designed to maximize panel real estate, enhance wire management and help boost your panels' aesthetics. In addition, we also provide high-temperature solutions built to withstand higher ambient temperatures inside crowded enclosures. Our space-saving panel solutions are designed to:

- Offer space savings of up to 300%
- Make your panels easier to build and maintain
- Keep your panel technicians and customers safer
- Reduce the size and cost of your panel enclosure and wiring

Blackburn® Compression

Narrow-Tongue Lugs

- Consistent narrow width from barrel to tongue to fit into tight spaces
- Featuring the Color-Keyed® Installation Tooling System that ensures proper connections

KUBE® Flag, Tee and Cross Connectors

- Space-saving 90°, tee and cross connections
- Use with standard compression lugs and splices and install with standard compression tools

T&B® Fittings

CHASE® Fittings

- Compact, low-profile fittings — ideal for limited space
- Line encompasses nipples and hubs for rigid conduit, as well as liquidtight conduit fittings and cord connectors

Multi-Hole Cord Grips

- Space- and labor-saving metallic or non-metallic cord fittings for panels
- Up to 4-to-1 SKU reduction — purchase, stock and install one fitting versus four



Pos-E-Kon®

Rectangular Pin-and-Sleeve Connectors

- Best use of space for multiple contacts in heavy-duty housings
- Rugged, industrial-grade connectors provide universal raceway flexibility
- Easy-lock, cam-action latch eliminates guesswork and speeds installation

Ty-Rap®

Cable Ties, Mounting Accessories and Tools

- Rounded, low-profile head and smooth, molded body
- Available in a variety of high-performance materials to handle harsh and plenum environments
- Complete line of mounting bases, spiral wrap harnessing, abrasion-protection sleeving and installation tools

ABB

SMISSLINE Modular Power Distribution System

- Allows installation of many modular devices in a small footprint
- Wiring located under devices to save space
- Universal bus system for DIN-mounted power products



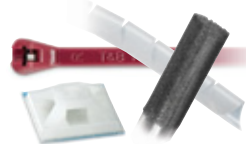
Blackburn® Compression
Narrow-Tongue Lugs and
KUBE® Flag Connectors



T&B® Fittings
CHASE® Fittings and
Multi-Hole Cord Grips



Pos-E-Kon®
Rectangular Pin-and-
Sleeve Connectors



Ty-Rap®
Cable Ties, Mounting
Accessories and Tools



ABB
SMISSLINE Modular Power
Distribution System

Would you like more space in your panels?

Innovations like Blackburn® KUBE® Flag, Tee and Cross Connectors can save significant real estate in your panel, because a KUBE® Connector can achieve a 90° turn in a fraction of the space required by flex cable bending radius restrictions.

Thomas & Betts products for space savings

ABB

- AF Series Contactors
- Tmax Circuit Breakers
- Pro M Miniature Circuit Breakers and Surge Protection Devices
- Compact Pilot Devices
- SMISSLINE Modular Power Distribution System

Blackburn® Compression

- Narrow-Tongue Lugs
- 45° and 90° Angled Lugs
- Stacking Lugs
- KUBE® Flag, Tee and Cross Connectors

Pos-E-Kon®

- Rectangular Pin-and-Sleeve Connectors

Sta-Kon®

- Pin Terminals
- Insulated and Non-Insulated Ferrules

T&B® Fittings

- Multi-Hole Cord Grips — Metallic and Non-Metallic
- Blackjack® Grounding Bushings
- CHASE® Fittings — Nipples, Conduit Hubs, Liquidtight Conduit and Cord Fittings
- Liquidtight Conduit Fittings
- Ranger® Cord Connectors
- Revolver® Liquidtight Grounding Fittings
- STAR TECK EXTREME® DIRECTOR™ Jacketed Metal-Clad Cable Fittings

Ty-Duct®

- Non-Metallic Wiring Duct, Bench-Mount Cutter, Tools and Accessories

Ty-Rap®

- Abrasion-Protection Sleeving
- Spiral Wrap Harnessing
- Cable Ties, Fasteners and Mounting Accessories
- Ergonomic Manual and Pneumatic Cable Tie Installation Tools



Liquid Ingress Protection

Electrical control panels are used in a variety of environments that can negatively affect their performance and lifespan, such as areas that have liquids and steam present from manufacturing processes or outdoor weather exposure. Lubricants and oils used on manufacturing equipment can also find their way into electrical systems. Panels installed in food and beverage processing plants may be exposed to high-pressure washdown cleaning procedures, while panels found in pulp and paper mills must be able to withstand the steam found in most paper processing areas.

When specifying electrical components for electrical control panels, consider the following issues relating to wet environments and liquid exposure:

- Liquid ingress can deteriorate or short out an electrical system immediately or over time
- Electrical system components designed with round and sloped surfaces help to shed liquids and contaminants, rather than creating a shelf where they can collect

Thomas & Betts offers you electrical system solutions that protect against liquid, moisture and dust ingress, which will help reduce corrosion and downtime, increasing electrical system lifecycle and improving operating revenues.

T&B® Fittings

Liquidtight Conduit Fittings

- Withstands harsh, wet and corrosive environments
- Provides a water- and oil-tight seal where flexible metal conduit enters a box or enclosure
- Safe Edge® ground cone design accepts variations in raceway convolutions
- Suitable for both grounding and bonding applications
- UL® Listed and CSA Certified



T&B® Fittings
Liquidtight
Conduit Fittings



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



T&B® Fittings
Liquidtight
Cord Connectors



Sta-Kon®
Shrink-Kon®
Self-Fusing Tape



Sta-Kon®
Shrink-Kon®
Heat-Shrink Insulation



T&B® Fittings

Type A Liquidtight Flexible Non-Metallic Conduit and Fittings

- Create a liquid-, dust- and oil-tight seal
- Ideal for continuous flexing applications
- Suitable for operating temperatures from -20° to 60° C
- Fittings available in non-burning, non-dripping thermoplastic, steel and stainless steel materials

Liquidtight Cord Connectors

- Provide exceptional mechanical strain relief
- Create a dependable seal against dust, oil and other liquids
- Designed to handle the unique connection demands of flexible cords and power cables
- UL® Listed and CSA Certified

Sta-Kon®

Shrink-Kon® Self-Fusing 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.)

Shrink-Kon® Heat-Shrink Insulation

- Provides superior conductor, connection and termination protection
- Helps to ensure continuous, reliable operation



Thomas & Betts products for liquid ingress protection

ABB

- Compact IP69K Pilot Devices
- Disconnect Switches with NEMA 4X Handles

Carlon®

- Polycarbonate NEMA and JIC Enclosures

PMA®

- Flexible Nylon Cable Protection Systems

Sta-Kon®

- Heat-Shrink Terminals
- Shrink-Kon® Wire and Connector Insulation Products

T&B® Fittings

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

Ty-Rap®

- Coated and Uncoated Stainless Steel Cable Ties

What NEMA and IP ratings are required to prevent liquids from getting into your electrical control panels?



Grounding & Bonding

A stable power supply is the backbone of any facility. Power failure or instability can cause safety, production and operational issues, significantly impacting a company's bottom line. Ineffective grounding can lead to voltage variances that damage electrical equipment or electronic devices, resulting in power loss and costly downtime. Many power problems stem from incorrect bonding of transformers, main electrical panels, subpanels, UPS systems and generators. Proper grounding and bonding are critical to ensuring safety, preventing service disruptions and providing electrical continuity and reliability. Thomas & Betts grounding and bonding solutions are designed to:

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

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

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

Bonding Locknuts

- Ensure positive bonding of conduit to enclosure
- Available in steel or aluminum



Blackburn® Grounding

Grounding Systems

- Superior grounding and bonding of electrical systems and equipment
- EZGround™ compression connectors provide a consistent, irreversible bond
- Mechanical connectors require no special tools to install

Flexible Braids

- Variety of flexible straps and accessories for grounding
- Extra-flexible links for heavy-duty applications to 3,600A
- Standard links for medium-duty applications to 2,350A

Sta-Kon®

Shield-Kon® Coaxial Grounding Connectors

- One- and two-piece coaxial connectors for grounding
- Save time and reduce assembly costs
- Low profile and compact size

ABB

Pro M Residual-Current Circuit Breakers

- UL® 1053 equipment ground fault protection
- Broad trip-current range of 10–500mA for equipment protection flexibility



T&B® Fittings
Revolver® Liquidtight
Grounding Fittings



T&B® Fittings
Blackjack® Grounding Bushings
and Bonding Locknuts



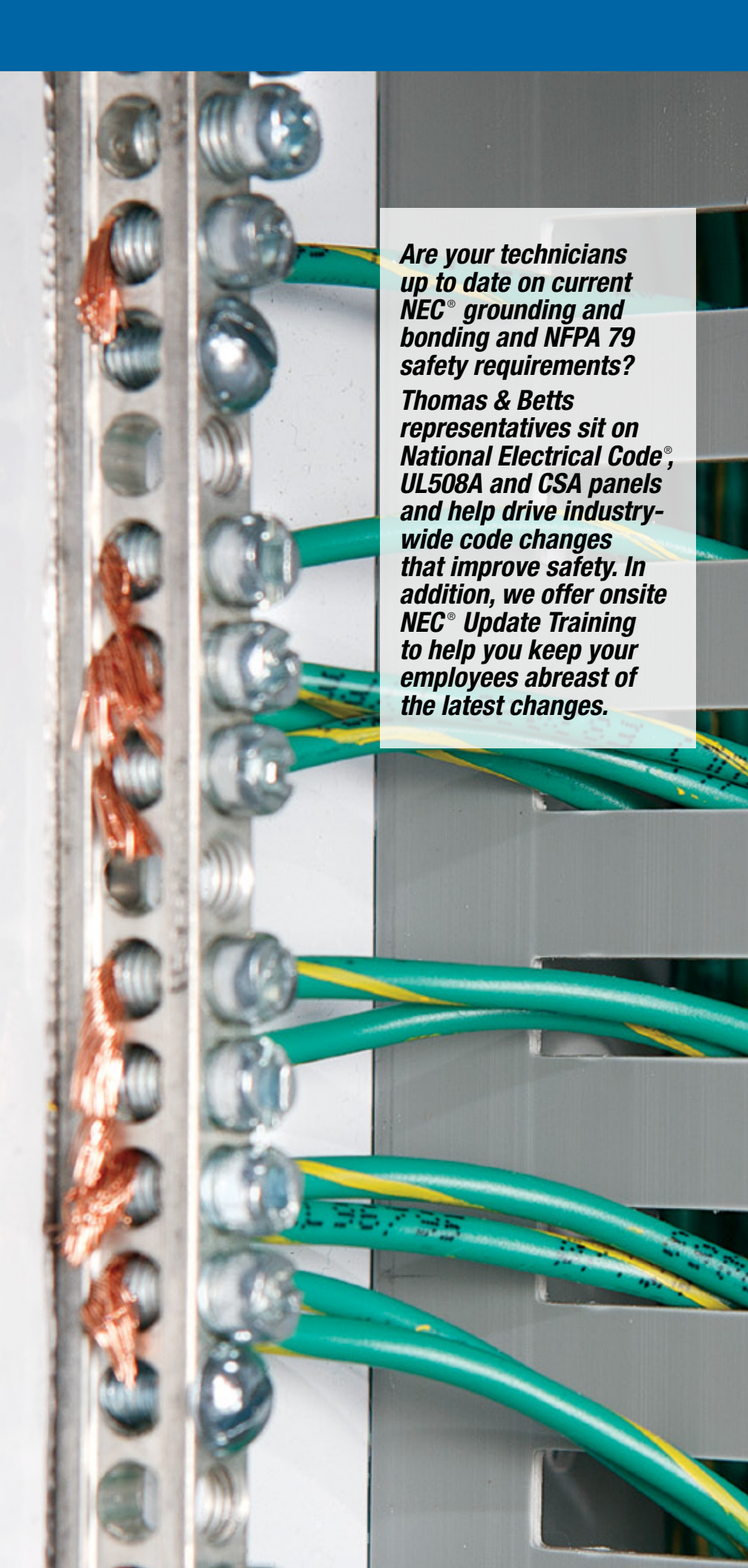
Blackburn® Grounding
Grounding Systems
and Flexible Braids



Sta-Kon®
Shield-Kon® Coaxial
Grounding Connectors



ABB
Pro M Residual-Current
Circuit Breakers



Are your technicians up to date on current NEC® grounding and bonding and NFPA 79 safety requirements?

Thomas & Betts representatives sit on National Electrical Code®, UL508A and CSA panels and help drive industry-wide code changes that improve safety. In addition, we offer onsite NEC® Update Training to help you keep your employees abreast of the latest changes.

Thomas & Betts products for grounding & bonding

ABB

- Pro M Residual-Current Circuit Breakers
- Grounding Terminal Blocks

Blackburn® Compression

- Compression Connectors Featuring the Color-Keyed® Installation Tooling System — Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs

Blackburn® Grounding

- Grounding Systems
- Flexible Braids
- Aluminum and Copper Lay-In Lugs

Blackburn® Mechanical

- ADR Mechanical Connectors

Sta-Kon®

- Shield-Kon® Coaxial Grounding Connectors

Steel City®

- Solid and Stranded Wire Grounding Pigtails and Clips

T&B® Fittings

- Blackjack® Grounding Bushings
- Revolver® Liquidtight Grounding Fittings
- STAR TECK EXTREME® DIRECTOR™ Jacketed Metal-Clad Cable Fittings
- TITE-BITE® and STAR TECK® Metal-Clad and Armored Cable Fittings
- Bonding Locknuts

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



Services & Training

Electrical systems are becoming increasingly complex, thus requiring skilled technicians. The consequences of an improperly installed or maintained electrical system can range from costly downtime to a significant disaster, such as an arc flash or an explosion. Proper training can help you avoid these expensive and often dangerous situations.

Proper installation, maintenance and training not only help to ensure the safety of your workforce and reduce the occurrence of downtime, they also extend the lifecycle of your electrical system by reducing unnecessary wear and tear on your assets.

New high-tech equipment used in panels requires skilled technicians for programming and design. Most of their training comes on the job, and Thomas & Betts provides services and training that will help you to:

- Maximize worker safety
- Reduce installation time
- Increase panel life and performance
- Grow your brand equity and gain repeat business
- Improve your revenues and profitability

Onsite Grounding & Bonding Training

- Covers proper electrical safety protection and grounding of electrical services, equipment and raceway systems
- Conforms to National Electrical Code® (NEC®) regulations, UL508 and NFPA 79 safety standards

T&B Tool Services

- Technical support and calibration services
- Tool rental programs available



Blackburn® Compression Blackburn® Mechanical Blackburn® Grounding

- The QTP program provides guaranteed two-week shipment of select Blackburn® products
- Product Configurator enables online design of custom connectors
- Product specification specialists are available nationwide to train in the proper use and installation of Blackburn® products
- Tech Services group provides expertise for call-in customers

Additional Services & Training

- Free Online CAD Library for downloadable 2D and 3D models in more than 90 native CAD file formats
- Mobile Solutions Vehicle for onsite demonstrations of connectors, grounding and other products
- NEC® Update Training provides an overview of the latest changes to the National Electrical Code®

ABB

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



Thomas & Betts
Tool Rental Programs



Blackburn® Compression
Product Configurator



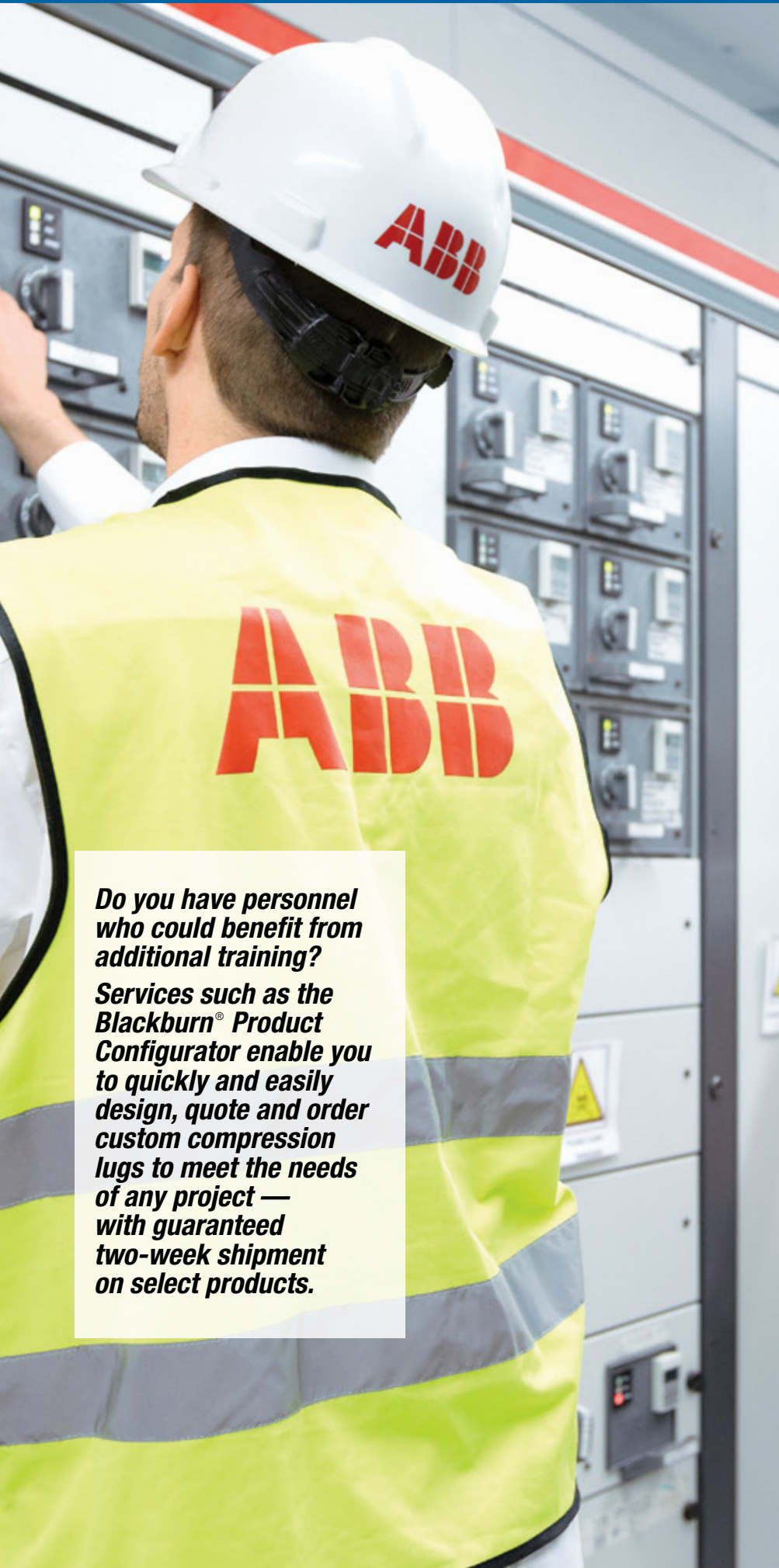
Thomas & Betts
Mobile Solutions Team



Thomas & Betts
Onsite NEC®
Update Training



ABB
Site Services



Thomas & Betts services & training

ABB

- Warranty Extension for Breakers and Switches
- Preventive, Predictive and Corrective Maintenance
- Field Retrofit Services

Blackburn® Compression

- Product Configurator
- Quick Turnaround Program (QTP) for Select Power Connectors

Homac®

- Part/Project Builder

JT Packard®

- Electrical Power and Data System Installation, Inspection and Maintenance

Additional services & training

- Online CAD Library
- Tool Services
- Tool Rental Programs
- Mobile Solutions Team
- Onsite NEC® Update Training
- Onsite Grounding & Bonding Training
- Product Specification Specialists

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



Do you have personnel who could benefit from additional training?

Services such as the Blackburn® Product Configurator enable you to quickly and easily design, quote and order custom compression lugs to meet the needs of any project — with guaranteed two-week shipment on select products.

T&B Engineered system solutions for system integrators and panel builders

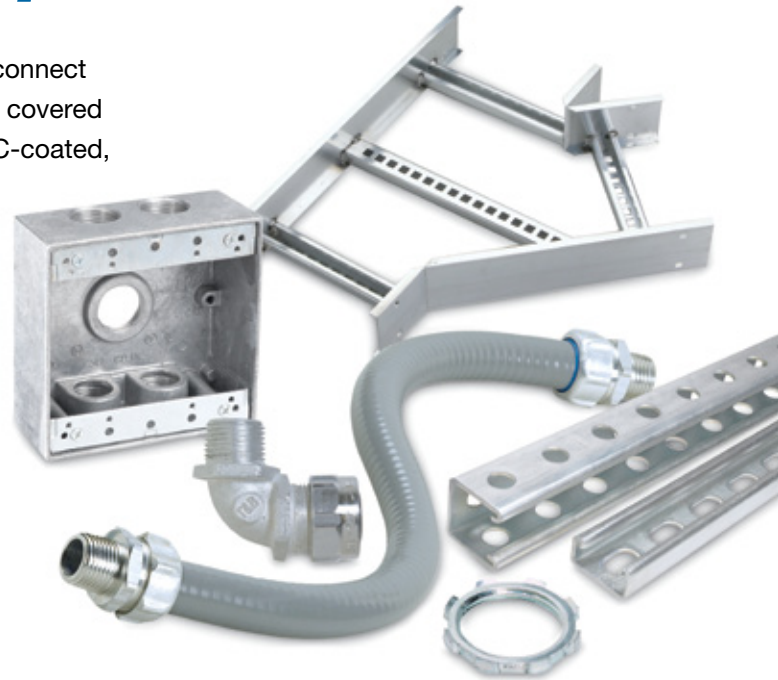
When it comes to corrosion-resistant materials to support, connect and protect your electrical system, Thomas & Betts has you covered with a complete solution, whether you prefer aluminum, PVC-coated, non-metallic or stainless steel.

Aluminum Solutions

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

T&B Fittings T&B Cable Tray Kindorf



Non-Metallic Solutions

The T&B® Fittings brand includes non-metallic cord and cable connectors, while the Carlon® brand from Thomas & Betts encompasses one of the most comprehensive lines of PVC conduit and fittings available in the industry.

- Cord and cable connectors
- Conduit outlet bodies and Schedule 40 and 80 elbows
- Couplings, adapters and accessories

T&B Fittings Carlon®



PVC-Coated Solutions

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

Ocal®

Stainless Steel Solutions

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

T&B Fittings T&B Cable Tray Kindorf Ty-Rap®



Wire and Cable Management Systems

Through its Ty-Rap® brand, Thomas & Betts offers a complete high-performance wire and cable management solution to meet the needs of system integrators and panel builders in dealing with any environment.

- Extra-high temperature nylon cable ties
- UV- and weather-resistant outdoor cable ties in black and other colors
- Ergonomic installation tools and Ty-Rap Tote® dispensers

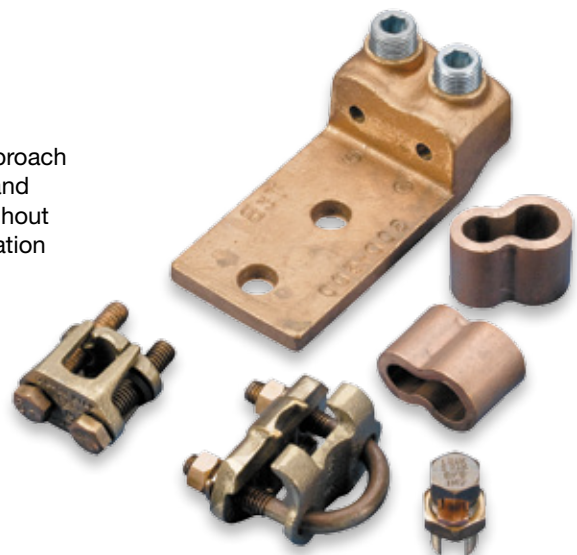
Ty-Rap®

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

Blackburn® Grounding



High-quality products to address key issues in

Thomas & Betts Brands	Products	Continuous Operation & Sustainability
ABB	AF Series Contactors and Tmax and Emax Circuit Breakers	•
	Pro M Miniature Circuit Breakers and Surge Protection Devices	•
	ProLine Touch-Safe Panel Boards	
	Arc Guard Arc Flash Mitigation System, Arc-Resistant Low Voltage Switchgear and Motor Control Centers	
	Compact Pilot Devices	
	Disconnect Switches with NEMA 4X Handles	
	SMISLINE Modular Power Distribution System	
	Jokab Safety Relays, PLCs, Safety Sensors, Switches, Rope Pulls, E-Stops and Safety Light Curtains	•
	Jokab Safety Quick Guard Safety Fencing	
	Terminal Blocks	•
Blackburn® Compression/ Blackburn® Grounding/ Blackburn® Mechanical	Compression Connectors Featuring the Color-Keyed® Installation Tooling System – Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs	•
	KUBE® Flag, Tee and Cross Connectors	•
	Battery-Powered and Hydraulic Compression Tools and Die Systems	•
	Grounding Systems, Flexible Braids, ADR Mechanical Connectors, Aluminum and Copper Lay-In Lugs	•
Carlton®	Non-Metallic Enclosures	•
EZCODE®	Safety Labels, Tags, Signs, Wire Markers and Barricade Tapes	
JT Packard®	Electrical Power and Data System Installation, Inspection and Maintenance	
Kindorf®	Modular Metal Framing System and Accessories	•
	Seismic Bracing System	•
	Trapnut® Strut Fastener and Cobra® Clamp	
Kopex-Ex™	Hazardous Location Conduit Systems	
Ocal®	Corrosion-Resistant PVC-Coated Conduit and Fittings	•
PMA®	Flexible Nylon Cable Protection Systems – Halogen-Free, ATEX and Divisible Styles	•
Pos-E-Kon®	Rectangular Pin-and-Sleeve Connectors	
Russellstoll®	DuraGard® Industrial Interconnect System and UniGard® IEC 309 Rated Pin-and-Sleeve Plugs, Interconnections	•
Sta-Kon®	Automated, Hydraulic, Pneumatic, Battery-Powered and Manual Application Tools	
	Crimped Wire Termination Systems – Rings, Forks, Splices, Disconnects and Wire Joints	•
	Insulated and Non-Insulated Ferrules and Pin Terminals	•
	Shield-Kon® Coaxial Grounding Connectors	
	Shrink-Kon® Heat-Shrink Wire Protection Insulation and Self-Fusing Tape	•
Steel City®	Device Boxes and Covers	•
	Solid and Stranded Wire Grounding Pigtails and Clips	
T&B® Fittings	Blackjack® Grounding Bushings	
	CHASE® Fittings – Nipples, Conduit Hubs, Liquidtight Conduit and Cord Fittings	
	LU® Universal Conduit Elbows – BlueKote® and Stainless Steel	
	Form 8 Conduit Bodies – BlueKote® and Stainless Steel	
	CorroStall® Aluminum Conduit Boxes	
	Liquidtight Cord Connectors – Steel, Stainless Steel, Aluminum and Non-Metallic and Silver Grip® Tray Cord Fittings	•
	Liquidtight Conduit and Fittings Systems – Types A, B, C, ATX High-/Low-Temp. and XTRA FLEX®	•
	Multi-Hole Cord Grips – Metallic and Non-Metallic	
	Ranger® Cord Connectors	
	Revolver® Liquidtight Grounding Fittings	
	STAR TECK® Fittings for Jacketed Metal-Clad and Teck Cables	
	TITE-BITE® Metal-Clad and Armored Cable Fittings	
	Wire-Mesh Strain-Relief Cord and Conduit Grips	•
Bonding Locknuts		
Ty-Duct®	Non-Metallic and Halogen-Free Wiring Duct, Bench-Mount Cutter, Tools and Accessories	•
Ty-Rap®	Abrasion-Protection Sleeving and Spiral Wrap Harnessing	•
	Multi-Colored Nylon Cable Ties, Fasteners and Mounting Accessories	
	Low-Smoke, Flame-Retardant UL94V-0 and Detectable Cable Ties	
	Coated and Uncoated Stainless Steel Cable Ties	
	Ergonomic Manual and Pneumatic Cable Tie Installation Tools and Ty-Rap Tote® Cable Tie Dispensers	

Industry codes and specifications

Thomas & Betts products for use in system integration and panel building 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