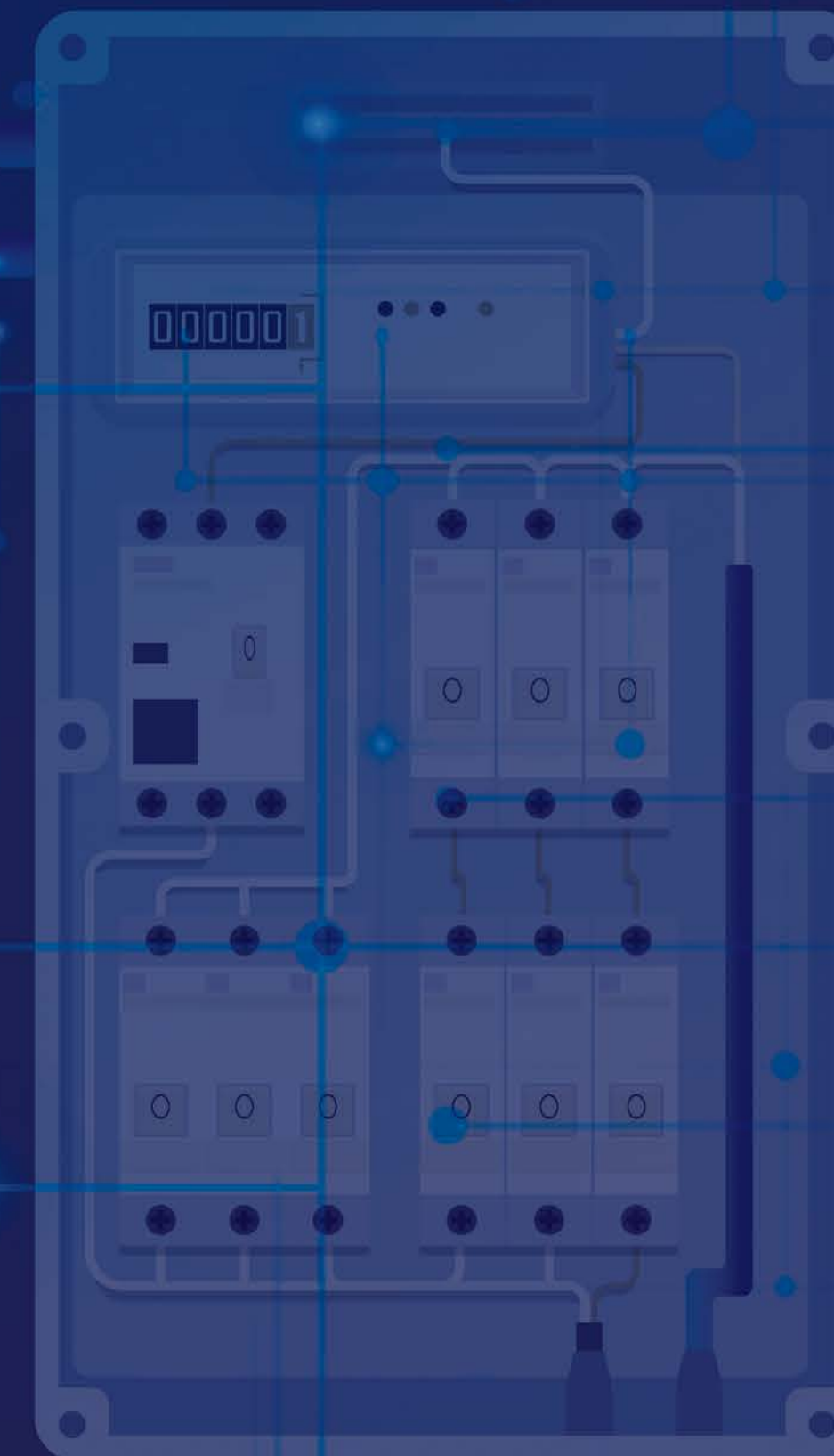




Powering Up Distribution

ABM POWER SOLUTIONS

How ABM, a NETA accredited company, creates impactful power uptime solutions and achieves rapid emergency response for distribution centers across the country.



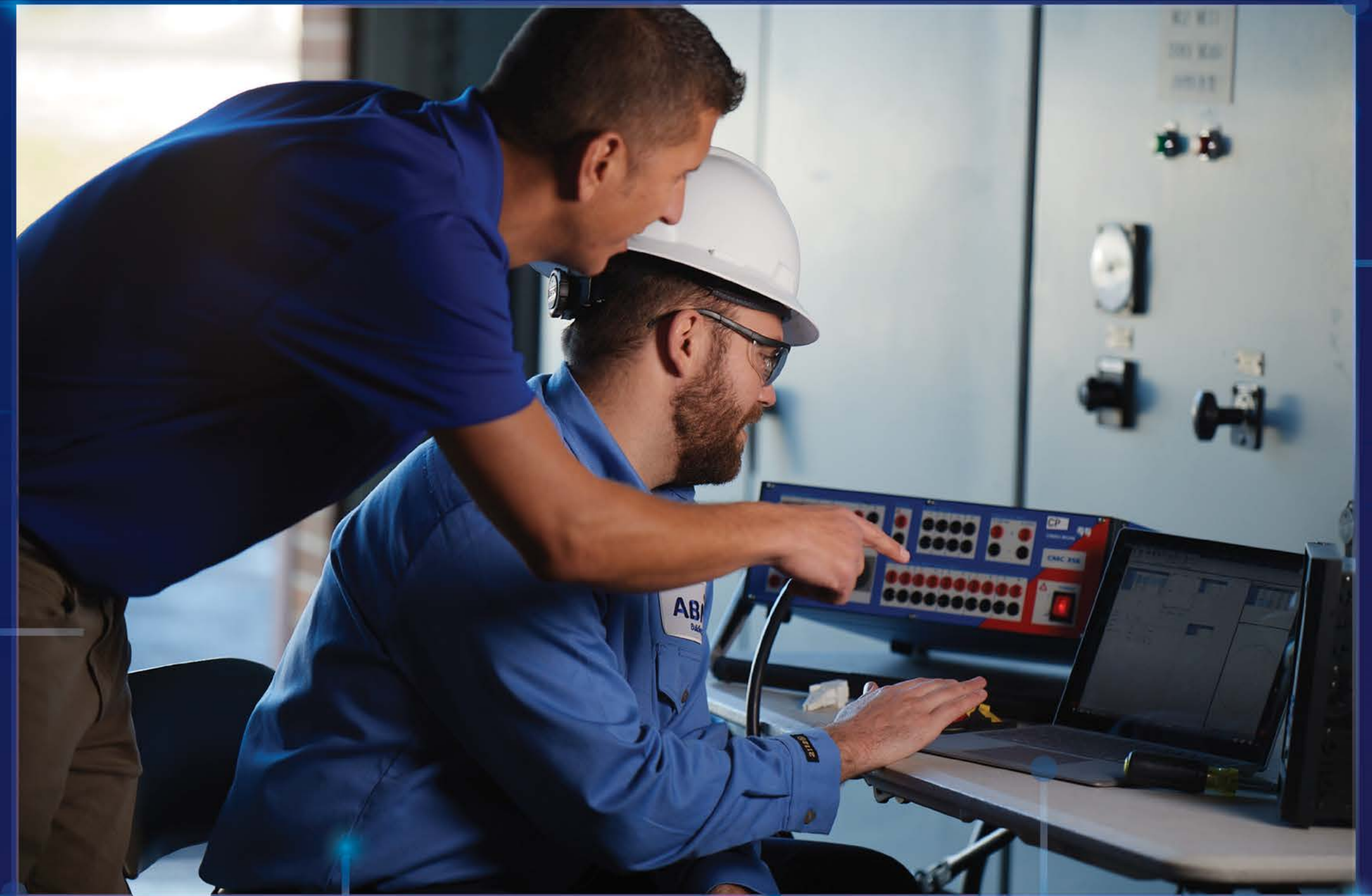


DRIVING IMPROVED DISTRIBUTION THROUGH ON-SITE TECHNICAL SUPPORT

The e-commerce boom created by the emergence of COVID-19 placed never-before-seen stressors on distribution centers nationwide, like increased consumer demand, greater shipment volumes, and the rapid development of new distribution locations.

Power failures can affect distribution operations in various ways, including posing safety risks to personnel, loss of production capability, damage to equipment due to electrical outages, and more.¹ For distributors that pride themselves on swift deliveries and satisfied customers, a power outage can delay order shipments, resulting in dissatisfied consumers. In fact, 72.5% of poor delivery service will result in a customer becoming likely to stop recommending the retailer.²

When it comes to selecting a power solutions partner that understands the ins and outs of your facility, providers lacking certification can short-circuit your operations. NETA certified technicians have broad-base electrical knowledge, and are trained to inspect, test, maintain, and calibrate all types of electrical equipment across a wide variety of industries.³



ABM has served technology clients for decades, providing 250+ million square feet with reliable electrical solutions. Our collection of powerful, real-world examples displays ABM's unique ability to provide rapid power solutions while ensuring the highest quality and safety standards are met, keeping our distribution clients delivering first-class products to a dedicated customer base.

ELECTRICITY 101

- **Ground Fault:** An unintentional electrical path between a power source and a grounded surface, often occurring when equipment is damaged or defective.⁴
- **Circuit Breaker:** A switching device which interrupts the faulty current and performs the function of a switch thus protecting the electrical system from damage.⁵
- **Selective Coordination:** Required for systems related to life safety and is achieved when an overcurrent on a circuit is interrupted.⁶
- **Switchgear:** The apparatus used for switching, controlling, and protecting electrical circuits and equipment.⁷
- **Arcing:** When electricity jumps from a one connection to another. This flash of electricity can reach temperatures of 35,000°F.⁸
- **Main Switchboard:** An assembled unit of electrotechnical components used for receiving, measuring, and distributing electrical energy.⁹
- **Shunt Trip Circuit:** Adds protection to your electrical system by automatically cutting the electric supply in your circuit.¹⁰
- **Undervoltage Protection:** Undervoltage protection is commonly used to protect motors from damage during abnormal conditions.¹¹



CHARLOTTE, NORTH CAROLINA

01

LARGE RETAIL DISTRIBUTION COMPANY IN CHARLOTTE, NORTH CAROLINA

After a distribution center experienced a partial loss of power that disrupted production and caused critical business functions to go down, ABM was enlisted to help. Our electrical power services team was engaged by the client to engineer a solution, select protection products, and coordinate electrical devices to eliminate the root cause of the outage.

After an investigation conducted by the ABM Electrical Team, it was concluded that the cause of the power outage was attributed to a faulted rooftop unit (RTU) and, more specifically, a phase-to-ground fault that occurred in one specific unit.





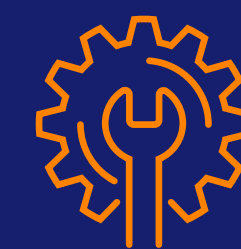
ABM TECHNICAL SOLUTIONS: BY THE NUMBERS

- 2,400+ ABM technicians nationwide
- 30% average reduction in electrical maintenance costs
- 350+ local offices around the U.S., ready to reach your operations
- 25% average increase in DC production efficiency due to regular maintenance

The client, who relies heavily on automated machinery, was unable to tolerate intermittent power disruptions from RTU faults and the subsequent impact to production caused by power outages of this magnitude.

ABM technicians modified the existing main switchgears to accept upgraded circuit breakers and their associated sensors during a scheduled low voltage, preventative maintenance outage.

The new circuit breakers were tested to ensure they functioned properly and could detect and isolate all overcurrent events, including all phase-to-ground faults.



Since the implementation of the upgraded circuit breaker solution, several RTU faults have occurred and have been immediately mitigated by ABM's electrical solution, resulting in a significant increase in uptime and on-time deliveries. This retrofit design is now being considered at additional sites to prevent this type of fault and ensure facility uptime.



FRESNO, CALIFORNIA

02

LARGE RETAIL DISTRIBUTION COMPANY IN FRESNO, CALIFORNIA

In November 2021, a distribution facility in Fresno experienced a partial loss of power that disrupted production and caused business critical functions to halt. Additionally, the site was unable to transfer to generator power, exacerbating the power outage. The ABM Power Solutions team was engaged to determine the cause of the outage and the failed generator, in addition to restoring power.

Following a thorough investigation, ABM technicians discovered the root problem of the malfunction—deteriorated, outdated devices (phase loss relay and control power battery system) installed by a former site contractor. The undervoltage relay was left in place and the wiring was capped off for future permanent removal.



ABM discovered the workmanship oversight issue and swiftly restored the power system to working order.

03

LARGE RETAIL DISTRIBUTION COMPANY IN CHARLOTTE, NORTH CAROLINA

Following an alert that a power outage had occurred at the distribution center, an ABM Power Solutions Team was dispatched to quickly investigate and remedy the issue. Upon arrival, the ABM team determined that the cause of the power outage was attributed to a faulty circuit breaker. This particular breaker fed power to part of the robotics floor, adding urgency to an already stressful situation. On the robotics floor, a power outage can mean consequences like profit losses, unhappy customers due to late package arrival, safety risks, and more.

CHARLOTTE, NORTH CAROLINA



After isolating power and creating an electrically safe work environment, the panel was inspected by the ABM team. The team determined electrical arcing occurred around the circuit breaker mounting terminals. Electrical arcing can have devastating consequences for building machinery and maintenance personnel. In serious cases, an arcing incident can cause injuries such as third-degree burns, cardiac arrest, hearing loss, blindness, and even death.¹²

In an electrical system such as the one found at the site, selective coordination is used to isolate fault currents to the circuits they are attributed to. This coordination allows for the smallest affected area possible to have power removed and the fault current cleared.



Within an hour, the ABM Power Solutions team sourced and installed a new circuit breaker and created a safe condition for the panel to be re-energized. The team’s swift response to the failed circuit breaker was critical in limiting downtime for the robotics floor and keeping distribution flowing.

ABM ELECTRICAL POWER SOLUTIONS INCLUDE:

- | | |
|--|---|
|  Electrical Asset Management Program |  Personnel Safety Training |
|  Acceptance Testing, Startup, and Commissioning |  Maintenance and Reliability Testing |
|  Engineering |  Emergency System Services |
|  Power Quality Services |  NFPA Compliance |
|  OSHA Arc Flash Training and Certification |  ATS and Circuit Breaker Overhaul Services |
| |  Upgrade, Modernization, and Life Extension Services |



TO LEARN MORE ABOUT SOLUTIONS LIKE THESE, CONTACT THE ABM POWER SOLUTIONS TEAM

A power outage, however minor, can have lasting consequences to any business. Companies like these base their success on rapid shipping and customer satisfaction, requiring a power solutions partner that can handle their vast electrical networks and keep distribution flowing.

ABM's extensive network of NETA certified technical personnel differentiates our team as a power solutions partner. In addition to access to cutting edge equipment and resources, advantages of partnering with ABM include ease of access to our technical personnel, a national call center, and a centralized communication method.

SOURCES

1. What is the Real Cost of Power Outages to Businesses? | Milsoft Utility Solutions
2. How Poor Delivery Experience Impacts Online Customer Behavior (getcircuit.com)
3. Study Guide: NETA Certified Electrical Test Technician (testguy.net)
4. GFCI Fact Sheet | CPSC
5. Circuit Breaker: Definition, Working Principle, Types, FAQs (byjus.com)
6. Selective coordination | Eaton
7. What is Switchgear? | Features, Components and Classification (studyelectrical.com)
8. What Is Electrical Arcing? (cloverelectric.com)
9. Main switchboard (MSB) | Irbis (irbis-technology.lv)
10. What is a Shunt Trip Breaker and How Does It Work? (galvinpower.org)
11. Application of Undervoltage Protection to Critical Motors.docx | Tamu
12. What Is Electrical Arcing? | acelectricohio.com



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