

Electrical solutions for port infrastructure

Revitalizing the nation's economic gateways through port modernization solutions

As gateways for domestic and international trade, American ports are critical to our nation's future. According to the [United States Environmental Protection Agency \(EPA\)](#), 95 percent of cargo entering the U.S. arrives through more than 360 commercial ports nationwide, and ports play an important role in our national defense and emergency preparedness. In order to properly support these demands, the nation's aging port system requires significant modernization. Improving reliability and efficiency, promoting environmental sustainability, enhancing safety and reducing maintenance costs at ports are all vital to our nation's security and economy.

Whether it's a port expansion project, an infrastructure upgrade or a site modernization, Eaton stands ready to support America's federal stimulus initiatives and address the critical needs of ports.



Powering Business Worldwide

To keep operations afloat, ports across America rely on continuous, clean power. Even the slightest interruption can jeopardize business continuity, increase risks to safety and security and lead to expensive delays. Eaton experts are on deck to help ports function at peak performance — from performing a comprehensive range of studies and audits, to identifying weak points in the system, to designing, installing and maintaining the electrical infrastructure.



Increase reliability and resiliency

Even a few seconds of downtime can produce major economic repercussions for ports, halting critical functions and impacting systems that depend on high availability and 24/7 communication capabilities. Eaton can improve reliability and increase the lifespan and performance of equipment through system studies, predictive monitoring and regularly scheduled maintenance that enables potential problems to be diagnosed and repaired.

- Preventative maintenance services
 - Class 1, 2 and 3 reconditioning of low-voltage (LV) and medium-voltage (MV) power circuit breakers
 - Electrical system testing
- Cybersecurity services
- Integration of backup to onsite power utilizing a microgrid energy system
- Emergency services
- Equipment supply
 - MV and LV switchgear
 - Uninterruptible power supply
- Mitigation of issues found in studies
 - Surge protection
 - Voltage transients with snubber systems
- Predictive diagnostics
 - Partial discharge remote monitoring
- Power systems engineering audits and assessments
- Harmonic mitigating transformers



Modernization

U.S. ports are in need of significant modernization, with new and updated infrastructure required to enable bigger ships to deliver more cargo quickly and efficiently. At the same time, port personnel are spread thin. Eaton's Engineering Services group can help. Regardless of the scope of the upgrade, we have the expertise to support port facilities in modernizing operations.

- Direct replacement of equipment
 - End-of-life equipment parts
 - Replacement parts
- Retrofit of existing equipment
 - MV and LV retrofits
 - LV trip unit retrofits
 - Control upgrades
 - MCC retrofits
- New equipment
 - LV and MV motor starters upgrades
 - Electric vehicle power distribution smart breakers
 - Motor control centers
- Switchgear automation
- Preventative maintenance
- Turnkey projects
 - Large design/build projects
 - Small custom projects

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Improve energy efficiency

Because port operations can impact air quality, water quality and land use, operators must invest in cleaner technologies to meet growing federal and international standards, as well as develop environmentally friendly operating practices. From infrastructure upgrades that add solar, to deploying solutions that provide sitewide metering and monitoring, port operators must actively find ways to harness energy and use electricity more efficiently.

- Power quality audits
- Power factor correction
- Harmonic studies
- Electric vehicle charging infrastructure equipment, software and engineering services solutions
- LV and MV variable frequency drives
- Distributed Energy Resources (DER) system controls
- Smart energy storage integration and management
- Design and installation of energy management and monitoring systems
 - Power monitoring systems (EPMS)
 - Monitoring solutions: power quality and energy management
 - Demand management and peak shaving



Enhance safety

Eaton understands that nothing is more important than safety. With one of the largest and most experienced teams of power systems engineers and field service specialists in the industry, we are uniquely qualified to help ports achieve safety objectives through a comprehensive offering of services and solutions.

- Arc flash studies and training
 - Arc flash compliance programs
 - Mitigation products
 - Remote racking
 - Ground and test devices
 - Arc Flash Reduction Maintenance System™
- PowerChain Management™ audits
- Performance based maintenance
- Grounding studies
- Coordination and short-circuit studies
- Life safety and notification systems
- Surge protective devices
- Arc quenching and mitigating switchgear

To get started or to learn more about Eaton's solutions for federal stimulus funding, visit Eaton.com/Ports or email stimulus@eaton.com