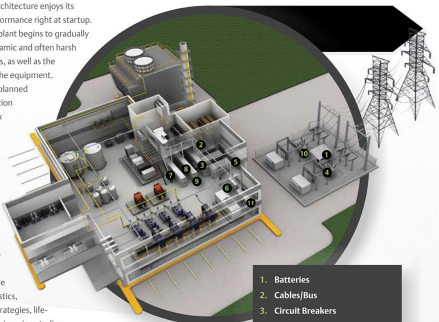


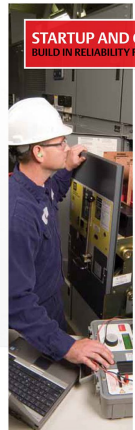
# EMERSON'S COMPLETE LIFE CYCLE SUPPORT

Every plant goes through a natural life cycle. A typical facility with a traditional architecture enjoys its highest efficiency and performance right at startup. Once online however, the plant begins to gradually deteriorate due to the dynamic and often harsh environment of the process, as well as the normal wear-and-tear on the equipment. Sometimes, there is an unplanned shutdown causing production to stop entirely. Once back online, the plant's gradual deterioration continues unabated. Contrast this with the life cycle of an optimized plant where Emerson's Electrical Reliability Services will help your plant start up faster. Throughout the life cycle, this plant will see continual improvement in performance made possible through predictive diagnostics, preventive maintenance strategies, life-extension services, and engineering studies. In the optimized plant, unplanned outages are virtually eliminated and replaced by more efficient turnarounds—improving your plant's performance today, tomorrow, and beyond.



1. Batteries
2. Cables/Bus
3. Circuit Breakers
4. Grounding
5. Meters
6. Motor Control Centers
7. Relays
8. Switches
9. Switchgear
10. Transformers
11. Uninterruptible Power Supply

Commissioning is your chance to do it right from the start. Engaging our services to start up the entire electrical distribution system aligns the right equipment and systems to ensure your new operation will reach peak performance quickly and easily. Choosing a single service partner eliminates the problems that occur in a multiple vendor scenario.



## STARTUP AND COMMISSIONING BUILD IN RELIABILITY FROM THE START

68% of early equipment failures can be traced to design, installation, or startup deficiencies. Emerson can help you avoid these pitfalls by developing an overall commissioning plan with step-by-step procedures that provide clear guidance. This ensures that newly installed equipment and systems in your facility meet the design intent and operate efficiently as an integrated system. Properly done, commissioning projects can pay dividends in the form of decreased rework, fewer change orders, lower operation and maintenance costs, and lower utility bills.

- Installation
- Acceptance Testing/Calibration
- Commissioning
- Performance Baseline
- Documentation and Manuals
- Code Compliance Evaluation
- Personnel Training

It's undisputed. If you have equipment, you will have problems. In fact, 60% of breakdowns are due to poor maintenance. What if you could foresee problems like these—days or even months before they occur? Maintenance Services from Emerson enables you to do just that. Our reliability based maintenance program will provide comprehensive predictive and preventive maintenance strategies to help you target your maintenance resources when and where they are needed most.



## MAINTENANCE SERVICES ENSURE EFFICIENT AND RELIABLE OPERATION

During the second phase of the plant life cycle, maintenance activities play a critical role in ensuring the efficient and reliable operation of your facility and processes. An optimized preventive maintenance strategy evaluates the condition of your equipment and determines the most cost-effective and manageable solution—ensuring asset performance, safety, and reliability. Predictive diagnostics can deliver the information you need to make smarter, more profitable decisions about each asset in your electrical distribution system. You will be able to identify when a failure may occur so you can plan an outage instead of dealing with unexpected and costly downtime.

- Electrical Testing
- Preventive Maintenance
- Predictive Diagnostics
- Partial Discharge Testing
- Smart Turnarounds™ and Outages
- Emergency Response Services
- Troubleshooting

Life-Extension Services provide a wide-range of retrofit and upgrade solutions to maximize the value of existing equipment and improve overall system performance. Retrofits add operational flexibility, interchangeability, and enhanced communication capabilities to your electrical assets. In many cases, retrofits and upgrades offer new technology at a fraction of the cost of replacement.

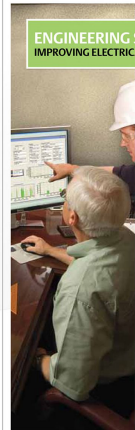


## LIFE-EXTENSION SERVICES MAXIMIZE THE VALUE OF EXISTING ASSETS

The components of your electrical distribution system will eventually become worn or obsolete, especially when considering today's rapid rate of technological advancement. The cost to keep these assets in operation can continue to rise despite best efforts to maintain the equipment. Emerson can assist you in designing a cost-effective solution to upgrade and retrofit existing assets with the latest technology—at a fraction of direct replacement costs. Your plant will benefit from enhanced efficiency and reliability from your electrical components, which can have a measurable impact on your bottom line.

- Repair
- Retrofits
- Upgrades
- Replacements
- Rebuilds

Performing engineering studies is essential to verify that your assets are functioning properly and safely, which determines the overall reliability of your system. They are also the key to uncovering the profit potential in your existing assets or helping you select new equipment. Emerson uses state-of-the-art hardware and software to analyze the needs of your power system and facility, giving you the critical information required to make informed decisions.

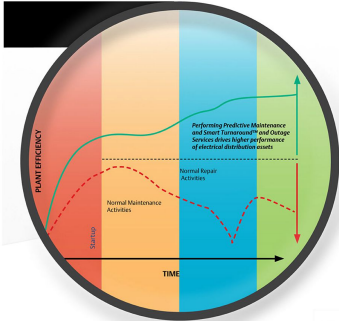


## ENGINEERING SERVICES IMPROVING ELECTRICAL SYSTEM PERFORMANCE

What if you could increase profits just by tweaking your current assets? Before spending one more dollar on any capital investments, consider the benefits of Emerson's Electrical Engineering Services. Engineering Services can find the root cause of lost performance and uncover the profit in your electrical assets. By utilizing your existing assets more effectively, you can expect enhanced performance and increased availability. Engineering studies verify system protection, fault ratings of electrical equipment, and the overall reliability of your systems—and more importantly increase the safety of your personnel.

- Engineering Studies
- Arc Flash Solutions
- Short Circuit/Coordination Studies
- Power Factor Studies
- Power System Reliability Studies
- Grounding Studies

Emerson provides comprehensive strategies that help you reach maximum performance and reliability from your electrical assets.



The reliability and performance of your critical electrical assets directly affects your facility's performance and profitability. The health and performance of your assets determines your success. Emerson's unique approach to asset reliability can help you reach your goals. Wherever you are in your plant's life cycle—startup, maximizing your operations, life-extension, or a turnaround—healthy assets are the way to a healthier bottom line. With Emerson as your partner through the complete life cycle, you'll be on the path to realize the true potential of your electrical assets including:

- Increased efficiency
- Lower overall costs
- Higher availability
- Reduced risk of failure and downtime
- Enhanced safety

**\$1.47 billion**  
Approximate total of losses recorded for 3,500 incidents over a 10 year period that were caused by electrical equipment breakdowns and subsequent fires due to electrical ignition  
— Factory Mutual Insurance Company

For more information contact us at:  
877.468.6384  
www.electricalreliability.com

## Electrical Reliability Services



### National Service Provider

Ensuring consistent implementation of corporate-wide safety and reliability programs can be difficult when managing multiple service partners across large geographic areas. Emerson can help. With strategically located service centers across the U.S. and the largest national service force comprised of the industry's best technical talent, we can mobilize a team of experts to manage and execute your national projects, to your specifications, and across multiple plant locations—giving you a single point of contact and peace of mind.

### Advanced Tools and Technology

Plant assets today are more sophisticated than ever before. It is impossible to fully optimize your assets without an advanced maintenance strategy that utilizes the latest preventive and predictive technologies. To stay ahead of these changing needs, Emerson continues to invest in the most advanced tools and technologies to deliver the best and most cost-effective maintenance solutions available.



### Unbiased, Objective Results

As an independent service provider, we are committed to providing objective, unbiased test results and recommendations. And, as a full member of the International Electrical Testing Association (NETA), a recognized leader and ANSI standards developer for the electrical testing industry, you are assured that all testing is performed objectively, according to NETA/ANSI specifications, using calibrated instruments traceable to the National Institute of Standards and Technology (NIST).

### Setting the Standard

We actively participate in national standards organizations such as the International Electrical Testing Association (NETA), the National Fire Protection Association (NFPA) and the Institute of Electrical and Electronics Engineers (IEEE) to assist in the development of standards important in our industry. Our vast experience in electrical system maintenance and safety allows our team of experts to be a trusted partner in promoting the field of engineering and reliability management.



### Experience You Can Trust

For more than 40 years we have been delivering electrical testing, maintenance and engineering services to more than 15,000 valued repeat customers in the industrial, refining, chemical, power, oil & gas, water / wastewater, food & beverage, life sciences, data centers, education, and healthcare industries. Take a look at our proven track record and discover how we can help you achieve the results that really count—improving your bottom line.

## EMERSON. YOUR PARTNER IN ELECTRICAL EQUIPMENT RELIABILITY.



### Vision and Promise

In today's competitive environment, it's important to recognize plant asset reliability is at the core of every successful operation. Emerson's Electrical Reliability Services team brings together a unique combination of world-class services, innovative technologies, and the best technical talent to help customers improve their electrical asset reliability and performance. Our vision extends beyond your plant's immediate maintenance needs to a larger view that is focused on maximum performance from your electrical assets.

### Single-Source Solution

Electrical power is the force that drives your plant. It's vital to your operations—but can also be dangerous and costly. When your electrical assets fail, profits and people can suffer. Trust Emerson to deliver the most complete solutions for electrical system reliability and safety. From testing for problems that could disable your system, to complete turnaround execution, you'll quickly understand how we are your single source solution for all your electrical reliability needs.



### Safety

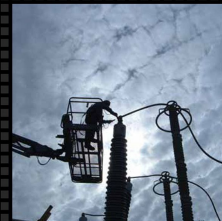
Safe work practices and environments are our number one priority. Emerson strictly adheres to all safety and compliance regulations to ensure the safety of our personnel and yours. As a result, Emerson maintains one of the best safety ratings in the industry. Every technician is trained to Occupational Safety and Health Administration (OSHA) standards for personal and environmental safety, including training in more than 60 Environment, Safety, and Health (ESH) topics and procedures.

### Speed and Agility

Whether it's an emergency or a planned outage, you need service partners who can respond when and where you need them. With more than 500 professional engineers, electrical engineers, field technicians, and support professionals in the United States alone, you are assured that no matter where you are in the U.S. you are covered by the most knowledgeable and efficient team available. With local, responsive support, we'll bring your facility back online safely, quickly and to your satisfaction.



## Emerson Network Power



### Emerson Network Power Electrical Reliability Services

610 Executive Campus Drive  
Westerville, Ohio 43082 USA  
877.468.6384  
www.electricalreliability.com

EmersonNetworkPower.com

### Emerson Network Power. The global leader in enabling Business-Critical Continuity™.

- |                |  |                              |                               |
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| ■ Connectivity | ■ Embedded Power                         | ■ Power Switching & Controls | ■ Services                    |
| ■ DC Power     | ■ Infrastructure Management & Monitoring | ■ Precision Cooling          | ■ Surge Protection            |

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