

# Life-Extension Services

Equipment Upgrades and Replacements

## Benefits

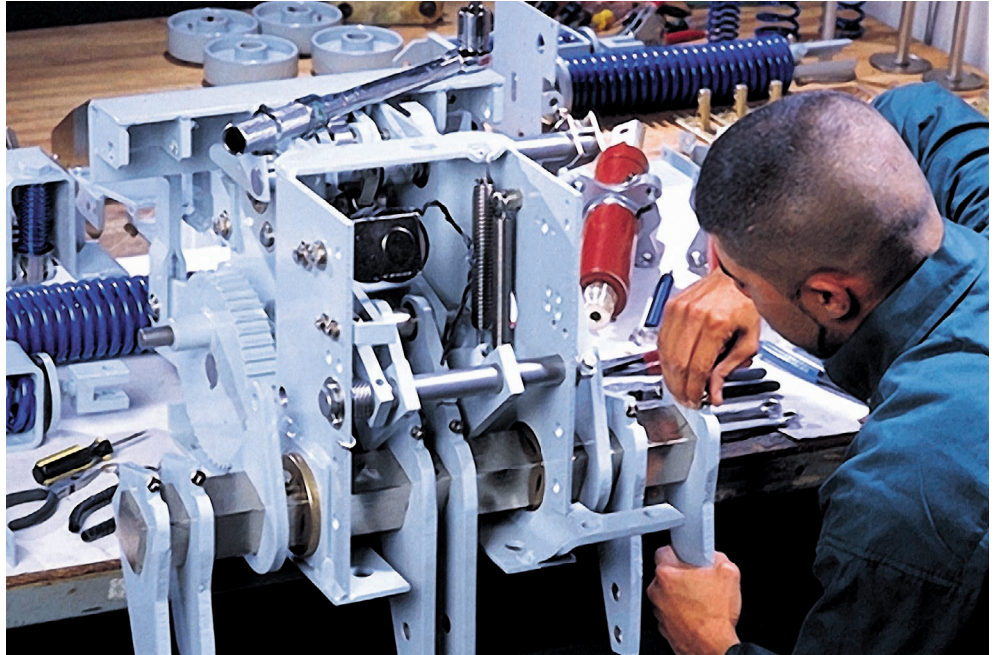
### Retrofit, Renew or Replace

The components comprising your electrical distribution system will eventually become worn or obsolete, especially when considering today's rapid rate of technological advancement. Depending on where you are in your plant's lifecycle, the cost to keep these assets in operation can continue to rise despite best efforts to maintain the equipment. Additionally, the cost of a complete system replacement can be prohibitive.

The experts at High Voltage Maintenance (HVM) can assist you in designing a cost-effective solution to upgrade and retrofit your existing electrical assets with the latest technology — at a fraction of the cost of replacement. Your aging plant can quickly benefit from the enhanced digital and safety capabilities available with today's latest protection devices and component upgrades. This results in enhanced efficiency and reliability from your electrical components, effectively extending the life of your assets.

### Benefits

- Enhance electrical system reliability and communication capabilities
- Reduce maintenance and operating costs
- Ensure compliance with all applicable standards
- Increase safety level
- Gain superior technology and monitoring ability



## Cost-effectively extend the useful life of your assets and return them to optimum operating levels

Aging electrical equipment presents a variety of concerns for today's asset managers. These systems have higher maintenance requirements, that not only cost more but also pose higher safety risks for your personnel. The risk for failure is greater, potentially leading to millions in lost profits.

Let the experts at HVM help you identify and recommend solutions for effectively extending the life of your electrical assets, while maximizing your investment. We have the solutions and expertise to upgrade many types of equipment with the latest technology. By upgrading components, you benefit from advanced technologies that improve efficiency; digital microprocessors that enhance stability and communications; and other features that increase personnel safety.

Additionally, these benefits can be achieved at a savings of up to two-thirds the cost of a direct replacement.

Our life-extension services include:

- Refurbish services
- Recondition services
- Rebuild services
- Retrofit services
- Electromechanical relay upgrades
- Direct replacement breakers
- Transformer repair or replacement

## Refurbish Services

Periodic preventive maintenance is recommended for all electrical equipment to protect it from adverse effects of heat, dust, moisture, and other contaminants. This maintenance also identifies incipient problems before failure occurs. Our refurbish services include:

- A complete visual and mechanical inspection
- Cleaning and lubricating of all mechanisms
- Electrical preventive maintenance testing per InterNational Electrical Testing Association (NETA) specifications
- Mechanical function testing
- Electrical function testing

## Recondition Services

As equipment ages, components begin to wear and insulation deteriorates leading to electrical leakage, tracking, and possible flashover. Damage is normally evident on the surface of insulating members and if it has not progressed to significant depths, can usually, be resurfaced. Our recondition services enable you to renew your aging equipment without the cost of rebuilding or replacement, thus extending useful life and improving reliability. These services include all refurbish services plus the following:

- “As found” inspection and electrical testing
- Complete disassembly
- Thorough inspection of all parts for physical integrity
- Replacement of worn parts
- Removal and inspection of arc chutes

- Bead-blasting and polishing of components
- Reconditioning of current-carrying elements
- Reassembly per manufacturer’s specifications

## Rebuild Services

Once your electrical equipment has reached the end of its useful life, our rebuild services allow you to renew your existing assets at a fraction of the cost of replacement. These services are for switches, starters, contactors, and motor control centers, and include re-plating, polishing, replacing of hardware, and painting. Once completed, the asset can be installed into its existing cell, minimizing downtime. The rebuilt units are thoroughly tested, calibrated, and evaluated to ensure longevity and reliability. Our rebuild services include all recondition services plus:

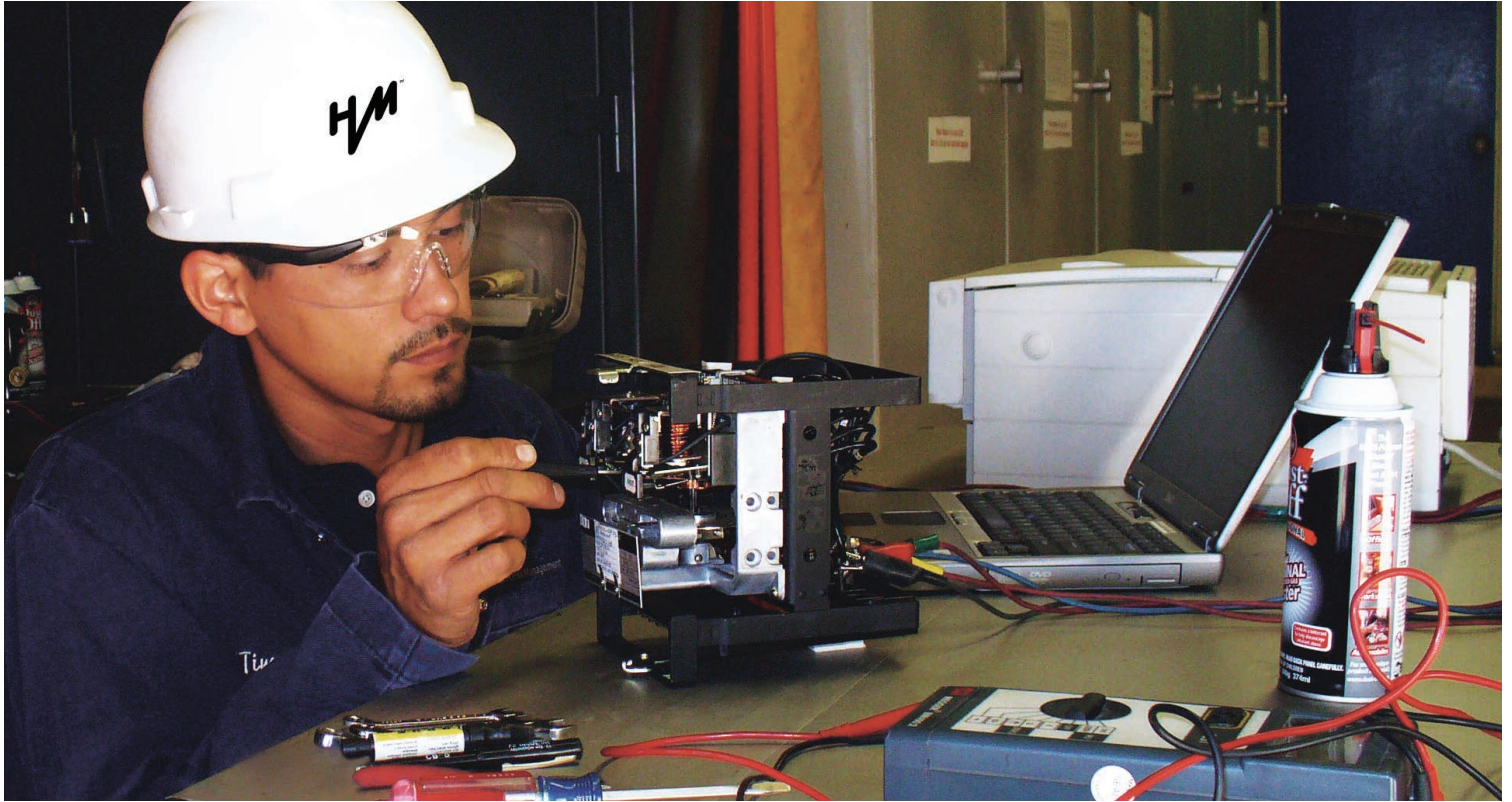
- Re-plating of all steel components
- Stripping and powder coating of all painted steel parts
- Replacing of hardware, bearings, bushings, and damaged or worn control wiring
- Bench testing of all components prior to reassembly
- Re-varnishing of all insulators

## Retrofit Services

Retrofit your old outdated equipment with new technology and experience the benefits of improved reliability, performance, and personnel safety. Low-voltage breakers can be upgraded with new solid-state trip units featuring digital communication, adjustable settings, and enhanced protection capabilities, allowing for more robust and efficient operation than previous generations of breakers. Retrofitted breakers also have the ability for remote operation and increased energy management capabilities, reducing the overall operating costs of the equipment. Medium-voltage breakers are updated and retrofitted with vacuum and SF6 technology delivering improved reliability and decreased maintenance intervals. The large, heavy arc chutes and hot ionized gases are eliminated, making the retrofitted breaker much safer. Interrupting rating time is also improved, as well as momentary and continuous current ratings, bringing them up to the level of typical replacement breakers. Our retrofit services include:

- Basic refurbish preventive maintenance testing
- Removal of existing trip unit
- Installation of new microprocessor-based trip unit
- Verification of trip unit operation by primary injection





### Electromechanical Relay Upgrades

Representing one of the best values in equipment upgrades is the replacement of electromechanical relays (EM) with new solid-state digital packages from trusted names such as Schweitzer Engineering Laboratories, GE, Basler, Multilin, and more. Digital relays are beneficial from the moment they are installed as they are designed to fit into existing switchgear lineups and can easily replace an entire rack of existing EM relays, while dramatically improving performance. Digital relays feature LCD displays for real-time metering and system monitoring, advanced communication ports, and remote alarm and fault data monitoring capabilities. They also enable reduced maintenance and calibration costs.

### Direct Replacement Breakers

Advances in circuit breaker technology have allowed asset managers to exchange older, often obsolete equipment for upgraded replacements without disrupting existing switchgear. Most replacement breakers are designed to fit into the existing switchgear cells with minimal modifications and will interface with the existing switchgear structure while maintaining safety interlocks inherent in the original design. Benefits of replacement circuit breakers typically include:

- Enhanced electrical system reliability
- Less cost and downtime compared to new equipment installation
- Reduced maintenance and operating costs
- No need for obsolete or hard-to-find spare parts — available for most manufacturers' low-voltage ANSI switchgear

- Short-circuit and overload protection due to various digital trip devices
- Extended range of short-circuit and continuous current capabilities
- Increased safety through the addition of ground fault protection
- Alignment with all applicable ANSI standards
- Increased safety due to arc flash limiting breakers, through-door racking, and trip unit display



## Transformer Repair or Replacement

Transformers are considered one of the most valuable assets in the entire electrical distribution system. They are regarded as a highly dependable asset with a life expectancy of up to 100 years. However, the general transformer population is aging and the growing trend to load transformers to higher levels is ultimately increasing the risk of failure. Our experienced engineers can help you evaluate the condition of your aging transformers and develop a solution to reduce your risk of failure while improving capacity and performance.

Our transformer life-extension services include:

- Turnkey installation and replacement/relocation
- Condition assessment
- Assembly, vacuum oil fill, and testing
- Bus repair and replacement
- Load tap changer repair and replacement
- Regasketing or leak repair
- Insulating fluid/oil reconditioning
- Cooling upgrades
- Spare parts

## Summary

Life-extension services can cost-effectively extend the useful life of your assets and return them to optimum operating levels. Trust an electrical systems expert to assist you in designing the best solution for your system and budget, whether it includes refurbishment, reconditioning, retrofit, replacement, and/or repair services.

## Experts in Electrical Reliability

HVM is equipped to provide complete life-extension services for all your critical electrical assets regardless of age or manufacturer. Our services are designed to fit your budget and your specific operating requirements and application.

From preventive maintenance and trip unit upgrades to complete retrofits, rebuilds, and replacement breakers, we can help you improve the reliability and performance of your equipment.

Our accredited technicians perform life-extension services in the field or in our state-of-the-art rebuild shop. We implement strict quality control programs, adhere to ANSI standards, and provide a one-year warranty on parts and labor.

## Ordering Information

To learn more about HVM's Life-Extension Services, please contact us at 1-866-HVM-TEAM or visit [HVMcorp.com](http://HVMcorp.com).

**HVMcorp.com | HVM Headquarters**, 5100 Energy Drive, Dayton, OH, 45414, USA | 1-866-HVM-TEAM (486-8326)

© 2021 Vertiv Group Corp. All rights reserved. Vertiv™ and the Vertiv logo are trademarks or registered trademarks of Vertiv Group Corp. All other names and logos referred to are trade names, trademarks or registered trademarks of their respective owners. While every precaution has been taken to ensure accuracy and completeness here, Vertiv Group Corp. assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions. Specifications, rebates and other promotional offers are subject to change at Vertiv's sole discretion upon notice.