

Custom Retrofit and Specialty Switchgear





CUSTOM RETROFIT AND SPECIALTY SWITCHGEAR

Custom retrofits by Phoenix Electric **extend the service life** of your aging assets through **cost-efficient and time-saving** refurbishment or upgrade.

As an **experienced manufacturer of specialty switchgear and engineered control systems,**

Phoenix Electric is in a unique position to provide custom retrofit solutions for medium and low voltage balance-of-plant equipment in your power generating facilities, including protection and control systems and accessories.

Phoenix Electric has served **utility and industrial customers** for over thirty years.

Cost Effective Refurbishment

RETROFIT SCOPE

Phoenix Electric specializes in the design, engineering, and manufacturing of custom retrofit switchgear and accessories. We tailor each design to the particular application and to your specific requirements. Once the technical solution has been defined we will coordinate the project execution from engineering, to manufacturing, assembly testing and commissioning.

The scope of our custom retrofits typically includes replacing or upgrading the following equipment:

- Aging vacuum, air-blast and oil circuit breakers
- Busbars, insulators and barriers
- Instrument transformers
- Terminations and accessories
- Protection, control and interlocking systems

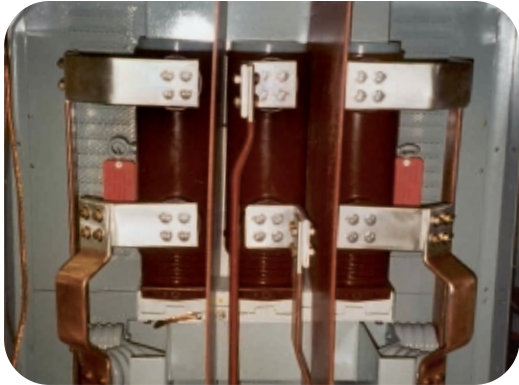
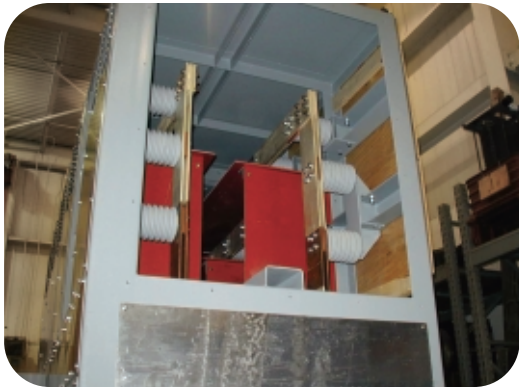
Phoenix Electric offers you the unique know-how and flexibility to tailor a retrofit solution to your specific needs.

RETROFIT BENEFITS

Faced with aging or underrated equipment and an increase of maintenance and repair efforts, owners and operators of power equipment have to invest in replacement or refurbishment to support an acceptable level of availability and safety. A customized retrofit solution can achieve virtually the same improvements as complete replacement in less time and at a lower cost.

Your benefits:

- Improved return-on-investment
- Increased personnel and equipment safety
- Reduced down-time
- Less maintenance
- Customized to your requirements



of Existing Systems

RETROFIT PROCESS

Phoenix Electric follows a detailed, step-by-step procedure that ensures optimum performance while minimizing service disruption and maximizing re-use of your existing equipment:

Assessment:

- Review of the mechanical and electrical requirements of the existing installation and define desired improvements
- Site visit to assess the condition and take measurements of the existing equipment

Recommendation:

- Recommendations as to replacement, re-use or modification
- Conceptual design and scope definition

Review and Approval:

- Review and approval of drawings and equipment specifications with the owner
- Finalization of design and scope

Execution:

- Scheduling and project management
- Detail design, engineering and customer approval
- Equipment and component specification and procurement
- Manufacturing, assembly, testing and commissioning



RETROFIT EXAMPLE

Phoenix Electric has engineered and successfully implemented custom retrofit solutions in numerous substations and power generating facilities around the United States. Our unique approach helps our clients lower their operating costs, increase plant availability and improve safety.



BEFORE

Faced with an increasing amount of forced shut-downs of the pumping units, the owner of a water pumping station in the western United States was looking for cost-efficient ways to re-establish the reliable water supply to hundreds of farms and industrial plants and to millions of households.

Phoenix Electric, as part of a team that also included a major equipment manufacturer and a large civil contractor, reviewed the installation and designed a comprehensive retrofit solution for the ailing pump-controlling switchgear. The existing air-blast circuit breakers were replaced with modern, truck-mounted SF6 breakers to reduce maintenance and facilitate inspection. The internal cubicle insulation was refurbished and the bus connections and insulators were upgraded. Finally, Phoenix Electric designed an improved protection, control and interlocking system with remote communication capabilities for increased personnel and equipment safety.



AFTER

RETROFIT TESTIMONIAL

“Custom retrofit turned out to be an excellent investment for us. We modernized our station with minimum impact to ongoing operations. Since our switchgear retrofit, we have not experienced any pump failures and our operational costs for maintenance and repair have been reduced substantially.”

FAQ's

Q: Retrofit, refurbishment, repair – what is the difference?

A: Repair or refurbishment of a product, such as a circuit breaker is a valid approach if your problems can be pinpointed to just this one device. Retrofit looks beyond individual components at your complete system to find an optimized solution to your problems. To us, "Retrofit" means assessing the condition of existing equipment and agreeing on which components need to be replaced or modified and which ones can be re-used, all based on the owner's future requirements. This comprehensive approach requires engineering expertise and system and equipment knowledge. Phoenix Electric offers you the know-how and flexibility to tailor a retrofit solution to your specific needs.

Q: What is involved in retrofitting power equipment?

A: Phoenix Electric works closely with you throughout the entire retrofit process, reviewing the equipment to be retrofitted and proposing components to be replaced. Depending on your requirements, our scope can include the following:

- Replace existing air-blast or oil circuit breakers with modern vacuum circuit breakers
- Upgrade buswork, connection points and accessories
- Modify the existing switchgear cubicle as necessary
- Replace instrument transformers as required
- Modernize the control system and upgrade the interlock system

Our review and subsequent drawing submittal includes details on the proposed replacement components, mechanical outlines, control schematics and wiring diagrams, and interlocking drawings. Upon approval, Phoenix Electric will coordinate and supervise procurement, manufacturing, installation and testing as required.

Q: What are the advantages of retrofitting?

A: Customized retrofit maximizes the re-use of existing equipment and is therefore more economical than a complete new installation. It upgrades our clients' power systems to the latest available breaker, protection and control technology, increasing functionality and improving reliability and safety. At the same time, the retrofit installation can be sequenced to minimize interruptions.



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