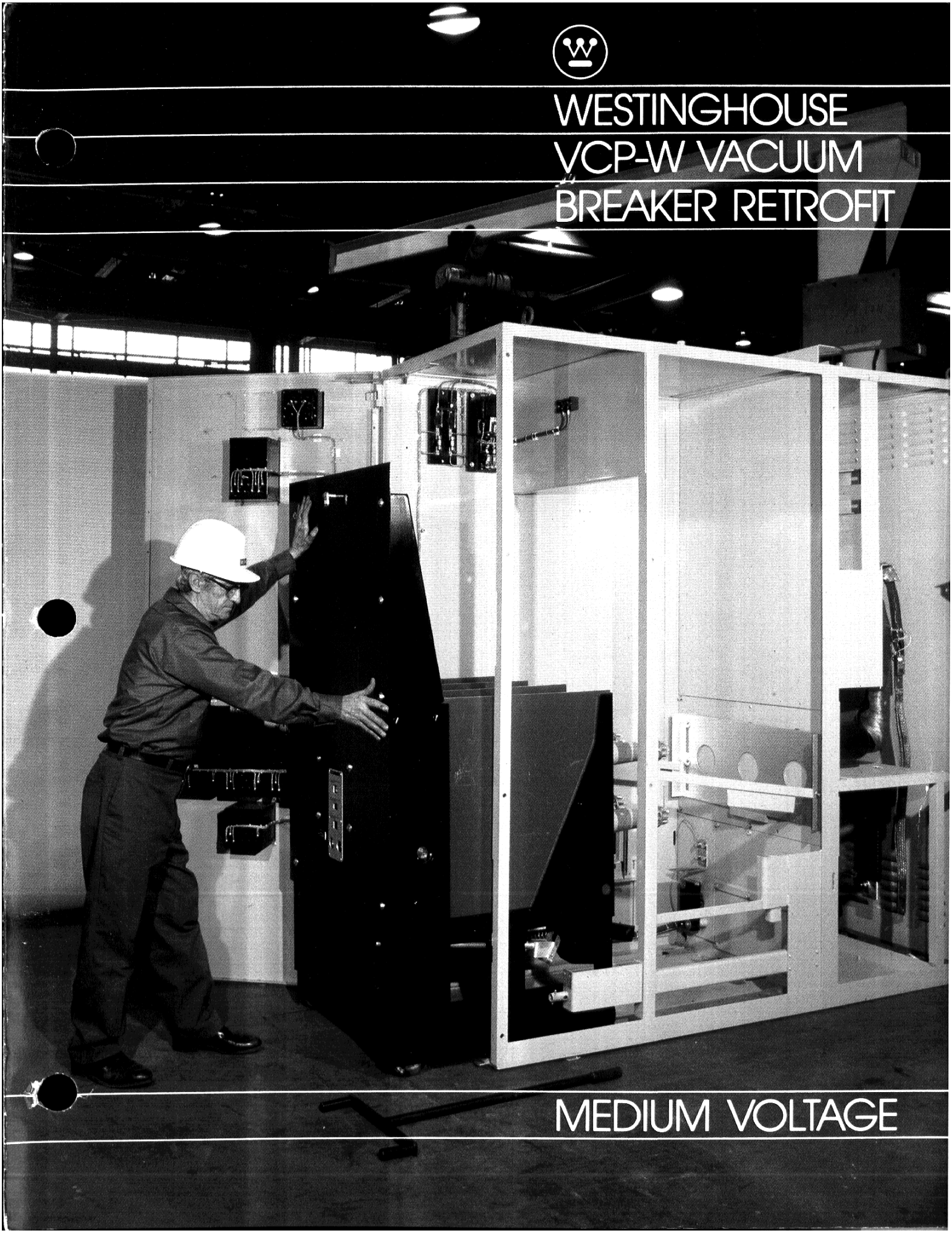
WESTINGHOUSE VCP-W VACUUM BREAKER RETROFIT



MEDIUM VOLTAGE

Westinghouse Vacuum Interruption Technology. The Life Extending Option for Older Air Magnetic Circuit Breakers.

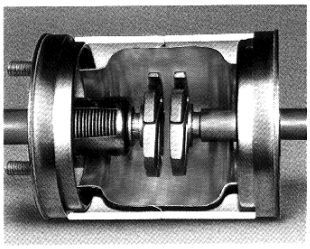
The Problem:
Serious switchgear problems begin as a result of both age and use, manifesting themselves as failures in operation, catastrophic insulation failure, and the non-availability or high costs of replacement parts.

While mechanical failures can be serious, electrical or insulation failures in a switchgear system are normally catastrophic due to the high fault levels available in the distribution system. Unlike mechanical and electrical components, the insulation life of switchgear is not operations dependent — but rather, time and temperature dependent. For instance, a circuit breaker that is energized but never required to operate may not experience a deterioration in mechanical performance, however, even though the device is not called on to open and close, its electrical insulation will degrade nonetheless. So regardless of the integrity of other mechanical or electrical elements, insulation degradation by itself will ultimately lead to failure. And while manufacturers design switchgear to meet expected performance levels and service life under controlled parameters, in real life actual applications make it difficult to predict exactly when failure may occur.

Switchgear owners faced with this situation have often turned to total replacement of installed equipment as an only solution. But for installed, on-line systems this option requires an extensive system outage as well as major modifications to power and control wiring — making it neither practical or cost-effective.

The Westinghouse Retrofit Solution:

In contrast, vacuum breaker retrofit by Westinghouse affords equipment owners a cost-effective, easy-to-install, high-performance solution to aging circuit breakers. An option that extends breaker



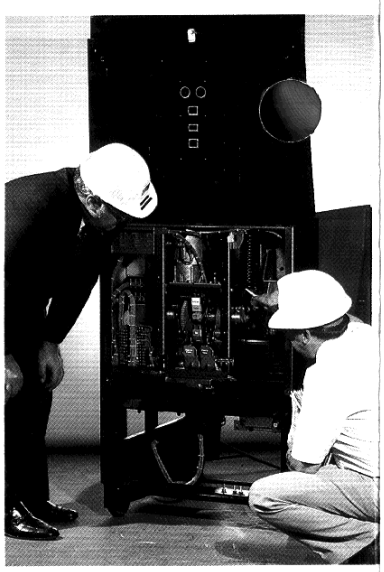
Westinghouse VCP-W Vacuum Technology

life, reduces on-line maintenance — and offers the technology, simplicity and reliability of current-production vacuum breaker design.

You should consider all the following vacuum retrofit advantages when it's time to improve the performance of your installed equipment.

- **Upgrade to modern vacuum breaker technology improves unit reliability —** Westinghouse VCP-W vacuum breaker retrofits feature a simpler mechanism design with fewer parts than air magnetic breakers; lower forces and travel; sealed interrupters isolated from environmental contaminants - all of which promote increased operational reliability. Westinghouse VCP-W vacuum technology can be successfully applied to virtually any medium voltage circuit breaker, regardless of make or manufacturer. This includes:
  - General Electric
  - Allis Chalmers
  - Siemens Allis
  - Federal Pacific
  - ITE
  - Westinghouse
- **Upgraded performance and ratings —** The additional electrical and mechanical life afforded by vacuum retrofits offers added performance margins in any application. Moreover, the smaller size of VCP-W breakers may allow for increased current and/or interrupt ratings in the existing cubicle.

  Westinghouse type VCP-W vacuum interrupters are available in ratings of 5, 7.5 and 15 Kv with maximum interrupting capacities of 250, 500 and 1,000 MVA respectively.
- **Equipment life is extended** — By utilizing a Westinghouse vacuum breaker retrofit, you gain the mechanical and electrical life of a new circuit breaker.



Custom-Engineered Quality

Completed Westinghouse Retrofit

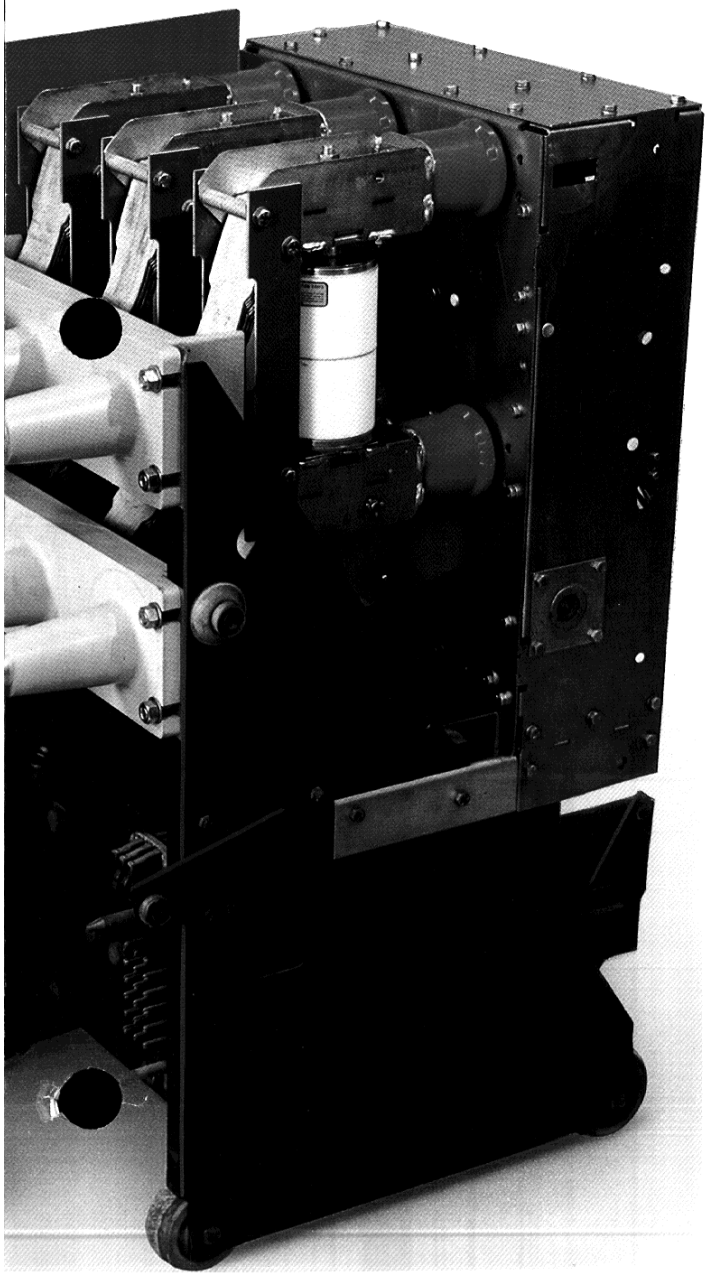
• **Reduced maintenance —** Front access and simplified design of the Westinghouse [redacted]W vacuum breaker [redacted]mizes service maintenance requirements, including test and inspection. Contacts are sealed within the vacuum envelope and require no maintenance. In addition, arc chutes, hinged electrical joints and puffer units have been eliminated, further reducing required maintenance.

• **Reduced spare parts and costs —** Up to 50% fewer parts, coupled with the ready availability of current-production vacuum breaker components, means minimal inventory requirements and lower cost with faster turnaround for spares. This can be critical when you consider that parts for older circuit breaker can be extremely expensive with long delivery times — if they are available at all.

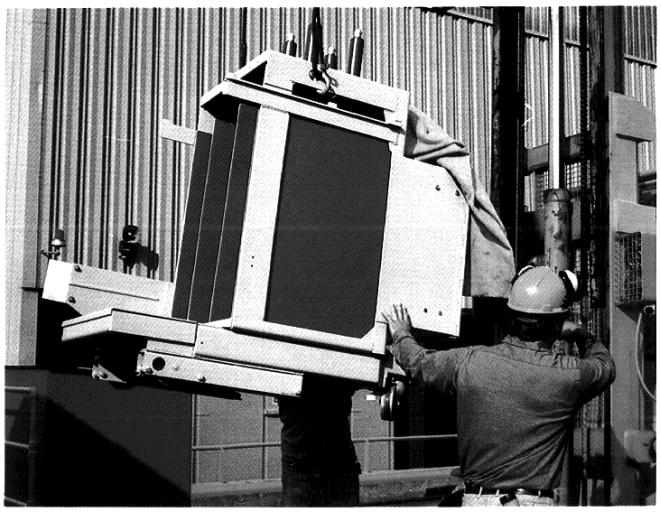
• **Extend availability of obsolete spares —** Unnecessary breaker parts removed from service through retrofitting become a valuable source of obsolete, hard-to-find, expensive replacement components needed to maintain non-retrofitted units.

• **Single-unit retrofits allow staggered modernization as needed —** Circuit breakers can be individually retrofitted as needed, allowing gradual system modernization in accordance with available time and financial resources. Cash flow can be better managed.

All of this translates into Westinghouse vacuum breaker retrofit as the logical solution to the problem of aging, existing switchgear. Retrofitting gives you the modern technology and new insulation life not available by simple repair, while eliminating the costly modifications and plant outages required to install totally new switchgear.



Completed General Electric Retrofit



Expert Installation and Maintenance

Vacuum breaker retrofits combine the modern switchgear technology of the Westinghouse Commercial Operations and Technology & Quality Divisions, coupled with the field engineering experience of the Engineering & Instrumentation Services Division to provide a custom-designed, engineered system for circuit breaker retrofit applications.

Questions about a circuit breaker vacuum retrofit? Contact your Westinghouse sales representative for the details.

Reference Publications

Service Directory 49-000
Engineering Service Locations

AD 32-265
Type VCP-W Medium Voltage Metal Clad Switchgear

DB 32-255
Vac-Clad Metal Clad Switchgear

IB 32-255
Type VCP-W Vacuum Circuit Breakers

B-799
Vac-Clad Brochure

B-671
Westinghouse Vacuum Interrupters

The Westinghouse Engineering & Instrumentation Services Division (E&ISD) is one of the largest and most experienced industrial service organizations in the nation. With more than 80 fully-staffed Engineering Service Offices throughout the U.S., E&ISD has complete capabilities to provide a range of electrical and mechanical equipment services in four broad categories: Power Equipment Services, Electronic Equipment and Systems Services, Systems Evaluation and Training Services, and Process Control Instrumentation Services.

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