ABB High Voltage Service is the largest and leading support service organization in North America for high voltage breakers, switchgear, and related assets. We offer complete services for each life cycle phase from installation to decommissioning. Replacement parts, life extensions, uprates or upgrades, field service, technical assistance, and training - we offer the most comprehensive and cost effective alternatives to the purchase of new power equipment.

### Reliability:
ABB HV Service has perfected solutions to keep a switchgear fleet running with maximum uptime.

### Technical Knowledge:
ABB HV Service personnel are regarded as experts in the high voltage industry.

### Maximizing Asset Value:
ABB HV Service’s portfolio of capabilities emphasizes cost reduction, life extension, reliability, and increased revenue through improved switchgear performance.

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| **Spare Parts**             | - Access to $20 Mil USD in stock current production and legacy parts  
- ABB #1 OEM aftermarket supplier for HV circuit breaker and GIS proudly supporting the following brands: ABB, Westinghouse, ITE, ASEA, BBC, & Gould | - Factory based resources ensure form, fit, and function  
- Parts meet or exceed OEM specifications  
- Every kit individually tailored to shop order and breaker serial number  
- A spare parts program for every life cycle phase  
- OEM parts increase equipment reliability |
| **Repair**                  | - 5 & 10 year maintenance  
- Time-based maintenance  
- Condition-based maintenance  
- Emergency repairs  
- Maintenance contracts | - Limited resources – we can help  
- Tribal knowledge retiring – ABB still has the knowledge  
- Extends operating life  
- Maintenance kits available for easy parts access |
| **Installation & Commissioning / Turnkey** | - Full range of I & C services: Technical assistance to full turnkey  
- I & C of any OEM high voltage equipment  
- DTB, LTB, GIS, hybrid breakers, GCB, capacitor banks  
- Manage entire project  
- Common projects: limited customer resources, retrofit, new product installations, ABB legacy equipment, AIS & GIS brownfield expansions, project too small for large EPC’s | - ABB knows industry best practices  
- Highly trained personnel for smoother, faster, worry-free installation  
- Extended warranty if ABB commissions, assists, or installs  
- Unified via one project manager  
- Improved project turn-around time  
- Streamlined process  
- Less personnel required  
- Increased jobsite safety |
| **SF6 Gas Management**      | - Complete SF6 gas management services:  
- Field leak detection, multiple gas analysis  
- Recycling, consolidation, purification, compliant disposal, and gas buy-back  
- Start-up & decommissioning services  
- SF6, equipment for sale or rent  
- Training | - Reduce analysis & leak detection costs  
- Properly account for “heels” – avoid over-reporting emissions  
- Outsource non-core process to switchgear experts  
- Convenience of one vendor managing SF6 fleet  
- Increase equipment reliability |
| **Diagnostic Analysis**     | - Visual & audible inspections  
- SF6/Oil analysis  
- Thermography  
- Contact resistance  
- Leak detection  
- Timing/Travel test  
- Radiography / Partial discharge | - Diagnostic toolbox captures complete view of switchgear health  
- Minimally invasive methods keep switchgear seal in tact  
- Applies to current production & legacy ABB breakers, & other OEM breakers |
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| **Fleet Assessment**             | - Diagnostic tool set analyzes fleet to determine optimal options for retaining, rebuilding, or removing specific assets  
- Defined decision making process                                                                                                                            | - Applies budget throughout equipment with greatest impact  
- Determine short and long term strategies to maximize fleet performance & reliability                                                                 |
| **Radiography**                  | - Mobile X-Ray technology of SF₆ switchgear to find leaks, extent of worn contacts, or broken internal parts  
- Provides detailed images of critical internal components without breaking seal or risking emissions  
- No disassembly  
- Switchgear not exposed to outside contaminants  
- Performed on any SF₆, OEM HV switchgear                                                                                                                     | - Little to no outage time, hours versus days  
- O & M costs reduced 50% versus traditional inspection  
- Allocates financial resources more effectively by pinpointing necessary repairs  
- More extensive review of internal components  
- Verifies integrity of the circuit breaker, GIS, or other SF₆ asset                                                                                      |
| **Remanufactured ABB Mechanism** | - Configured to specific breaker serial number  
- Credit for re-buildable core  
- Upgrade pump element, valve, & change-over valve to new design  
- Replace seals & factory leak test  
- Install new splashguard  
- Delivered ready to be installed                                                                                                                                 | - 30 to 40% lower cost than new mechanism  
- Ability to keep AHMA which is no longer in production  
- Improves switchgear performance & reliability with major components operating as new  
- Upgrade & retrofit options for specific mechanisms  
- Some units stocked  
- Exchange program improves delivery time (specific mechanisms)                                                                                           |
| **Remanufactured / Replacement Interrupter** | - Delivered ready to be installed  
- Complete one piece assembly  
- Factory tested and aligned (no inside tank alignment)  
- 72 kV – 169 kV: new replacement unit  
- 245 kV to 800 kV: unit rebuilt at ABB Service facility                                                                                                                                 | - “Ready-To-Go” interrupters reduce outage time by two days  
- Improved switchgear performance with units rebuilt in production facility vs. field  
- Opportunity to Up-rate 40 kA breaker to 63 kA  
- Rebuilt interrupter 30% to 40% lower cost than a new unit                                                                                               |
| **Monitoring**                   | - Monitoring systems for SF₆ circuit breaker’s interrupter wear, integrity of SF₆ gas, mechanical system, electrical control system, and auxiliaries  
- Software monitors health of specific asset  
- Wireless connectivity  
- Short / long-term data storage                                                                                                                                 | - Reduced costs via condition vs. time based maintenance  
- Alerts user when maintenance is needed  
- Continually monitors switchgear performance & reliability  
- Reduces SF₆ usage  
- Universal applicability to any SF₆, OEM equipment  
- Available as a factory option or field retrofit                                                                                                          |
| **Retrofit & Refurbishment**     | - Upgrade of switchgear components  
- Replacement of older/obsolete equipment  
- SF₆/Oil/Air-blast  
- Circuit breakers/GIS/GCB                                                                                                                                 | - Minimized outage time  
- Decreased maintenance activity & cost  
- Increased plant & system availability & reliability  
- Save time & costs by maintaining substation or plant footprint  
- Improved personnel safety                                                                                                                                  |
| **Equipment Overhauls**          | - Rebuild circuit breaker or mechanism  
- NAM certified remanufacturing facility  
- Extensive OEM inventory on stock  
- Large crew of expert service personnel available, many with specialized knowledge, e.g. Westinghouse, ITe, mechanisms, SF₆, gas, etc.                                                                 | - Doubles life of breaker or mechanism in most cases  
- Fraction of the price of installing new equipment  
- Significantly shorter lead-time than new equipment  
- Improved performance & reliability with redesigned components                                                                                           |
| **Additional OEM Service**        | - Service performed on any HV equipment, including non-ABB equipment  
- Most common services: installation & commissioning, diagnostic testing, & routine inspection, decommissioning, monitoring, & SF₆ gas management services                                                                 | - Utilize one crew of switchgear experts across entire fleet  
- Quickly perform routine maintenance on entire fleet  
- Minimize costs and downtime during new construction                                                                                                    |
| **Product Training**             | - Multiple formats: Hands-on training facility, on-site seminar, & field training  
- Specialized training available  
- PDHs / CEUs                                                                                                                                               | - Improve trouble shooting skills  
- Gain technical knowledge needed to reduce time & cost of maintenance  
- Develop the skills needed to lengthen your equipment’s operating life  
- State-of-art training facility with hands-on learning workshop                                                                                         |

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