



Life Cycle Extension - BreakMaster and BreakMaster V Load Interrupter Switch (LIS) Retrofit Kits

Services for Safe, Smart, & Sustainable Electrification

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Electrification Business Areas

Leading technology portfolio that generates strong global position

Distribution Solutions



Medium and low voltage control & protection products, systems & switchgear, grid hardware, power and asset management

in Medium Voltage

Smart Power



Low voltage circuit breakers & switches, enclosures, motor starter application, power protection, energy management

in Low Voltage

Smart Buildings



Miniature circuit breakers, distribution enclosures, load centers, residential circuit breakers, wiring accessories, building automation

in Electrification

Installation Products



Wire & cable management and protection, termination, medium voltage for utilities, conduits, fittings & other accessories

in electrical products that connect and protect

Services



Installation and commissioning, spares and consumables, maintenance, engineering and consulting, extensions, upgrades and retrofit

in electrical equipment installed base

E-mobility



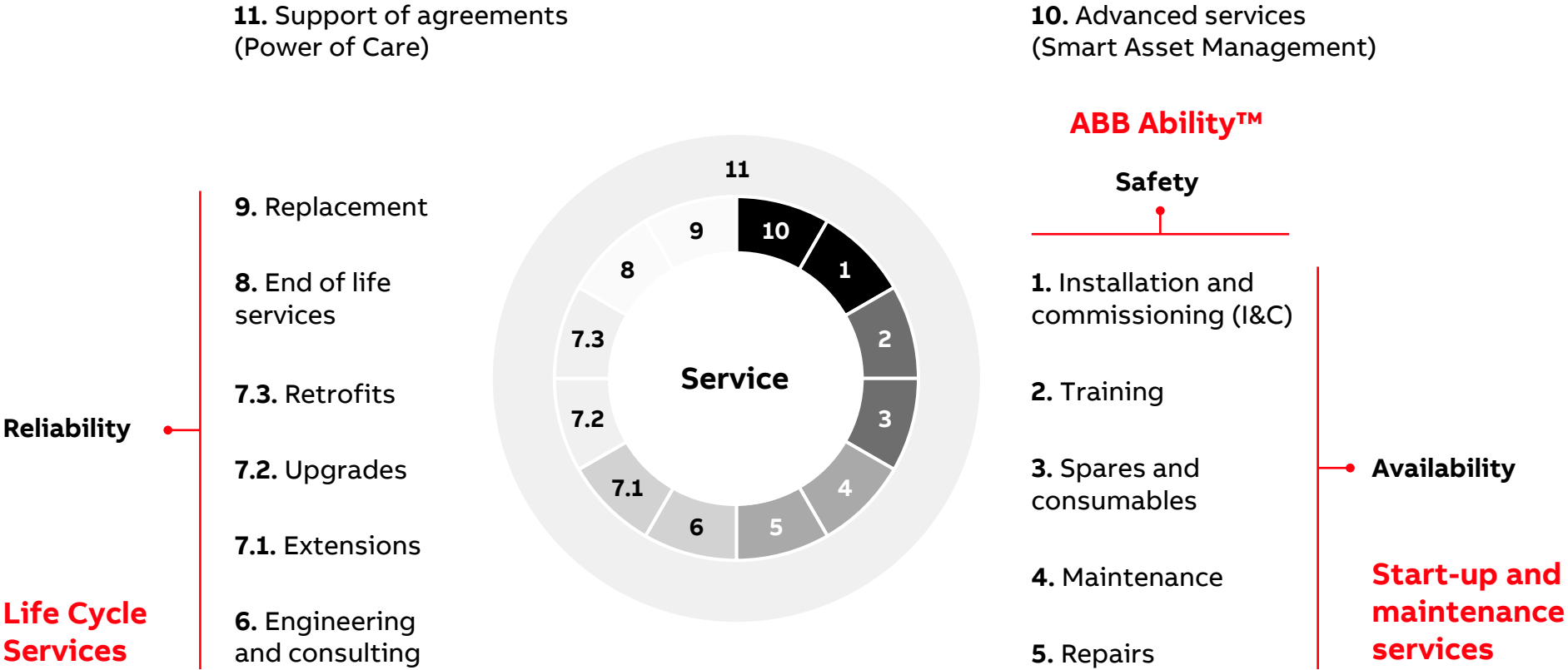
DC fast and high-power chargers, DC & AC Wallbox, bi-directional charging, heavy vehicle and bus charging, site and load management solutions, remote diagnostics and service

in charging infrastructure for cars, buses & heavy vehicles



Capabilities

Service at a Glance



Vision

Provide a **superior customer experience** both internal & external



Our Mission

- Reduce total cost of ownership
- Maximize revenue for our customers
- Provide safe, smart, and reliable solutions for the entire asset life cycle

US Electrification Service

Core Focus Areas

Complete One-Line Solution for Low and Medium Voltage



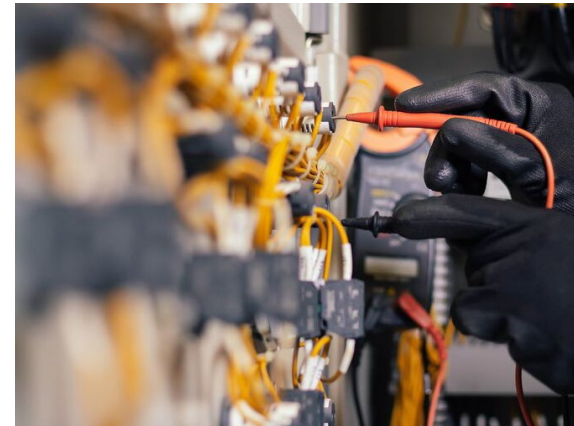
Electrical Power Distribution Field Services

- Preventative Maintenance
- Installation and Commissioning
- Customer Training
- Disaster Recovery
- Testing Services



Power Consulting Services

- Arc Flash Mitigation Solutions
- Arc Flash Studies
- Short Circuit Current Limiting Devices
- Safety Personnel Training



Life Cycle Extension

- **Circuit Breaker Retrofits / Retrofills**
- **Upgrades**
- Protection and Control Upgrades
- Switchgear Add-ons and Upgrades
- Repairs



Performance Enhancement

- ABB Ability™ energy and asset manager
- Condition Based Assessment Studies
- Real Time Equipment Monitoring (temperature, humidity, partial discharge)
- Remote Service Offerings
- Service Agreements

Life Cycle Extension

- BreakMaster LIS
- BreakMaster V LIS

Medium voltage load interrupter switchgear (LIS)

BreakMaster and BreakMaster V

Main features/ratings

- Product built in Monterrey, Mexico since 2001
- ANSI C37.20.3, C37.20.4, C37.22
- 5-15 KV, 600 and 1200 A, 40 kA and 61 kA short circuit
- ASCE 7-10, IBC 2018, CBC 2019, and IEEE-693-2018 seismic certification
- Single, duplex, selector, lineup, ATS, lineup with utility, single-VCB, lineup-VCB offerings
- UL/cUL option available
- NEMA 1, 2 or 3R enclosures available
- Available from Field Services or direct from the factory

Additional information

- [Webpage link](#)
- Segments/industries: oil and gas, pulp and paper, automotive, industrial processes, wastewater, petro-chemical

Current product lines



BreakMaster



BreakMaster V

Metal-enclosed load interrupter switchgear (LIS)

BreakMaster and BreakMaster V

Definition

Load interrupter switchgear (LIS) consists of an air insulated disconnect switch mounted on a metal enclosure. BreakMaster LIS is used to provide safe switching and circuit protection where an infrequent means of disconnecting is required.

LIS can provide fault current protection by using various types of fuses. It is commonly used in a single circuit for on/off control of a transformer, duplex switching, and selector switch applications.

A switchgear can also be grouped in a lineup configuration with other medium voltage distribution equipment.

Additional information

- [Webpage link](#)

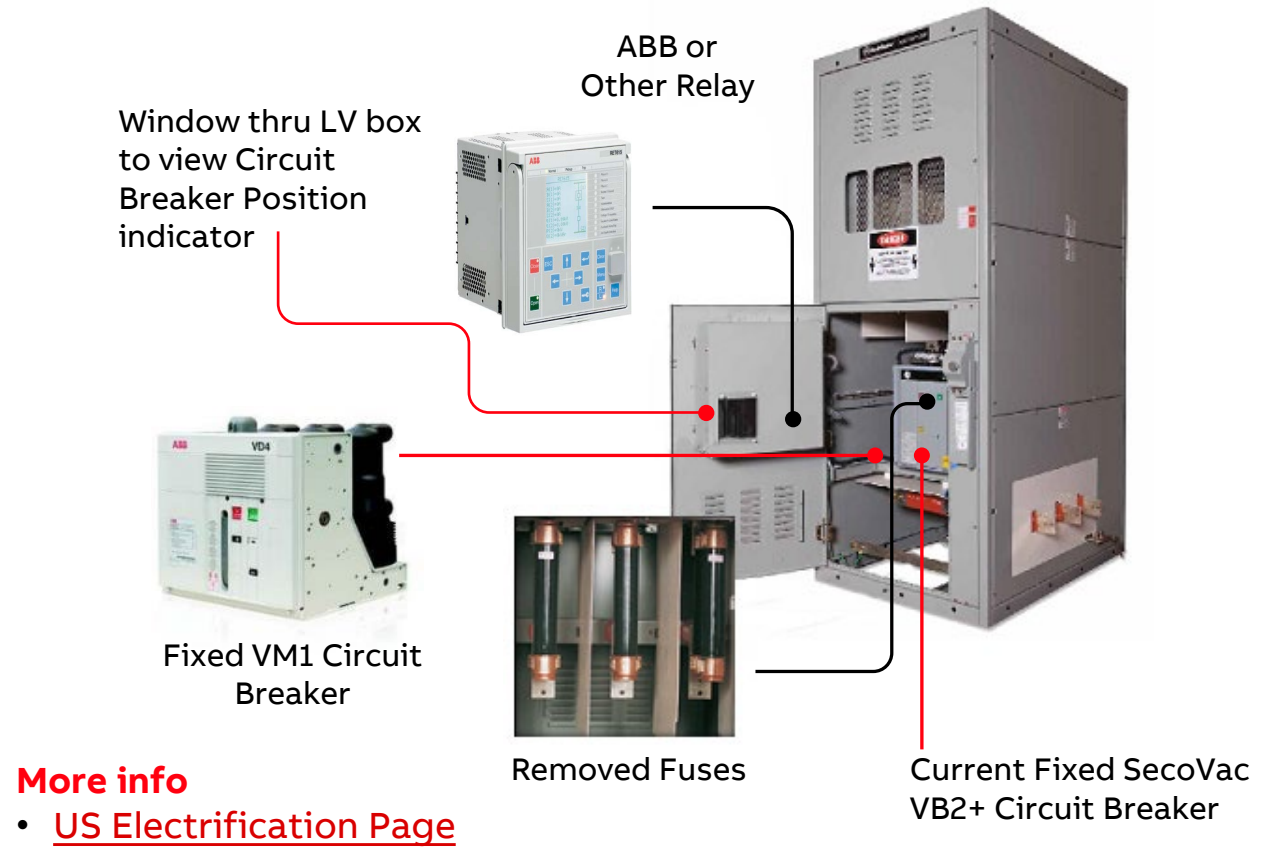


Medium Voltage Switch Upgrades

Breakmaster V – Still an active product!

Arc energy and equipment protection

- Reduced Arc Flash levels from the transformer down to the LV system
- Transformer protection via the latest relay technology (bus and transformer differential protection)
- Relay options that provide upstream and/or downstream communications
- Minimal downtime for installation and commissioning (approx. 12–14 hours)
- A separate low voltage door to permit access for circuit breaker operation without the need to open the high voltage compartment
- Available as New or as Retrofit (pre-order measurements required)
- Currently using a SecoVac circuit breaker; **will transition to VM1 circuit breaker**
- Services Florence, SC can still supply spare Seco parts



LIS retrofit solution

BreakMaster V retrofit kit

The Breakmaster V retrofit kit includes the medium voltage circuit breaker, protective relay and all associated hardware required to retrofit an existing Breakmaster LIS switch with a circuit breaker to replace its existing fuses. The kit is usually installed at the customer site by ELSE field service during a scheduled outage. Refer to the table below for circuit breaker ratings.

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Circuit breaker rating tables

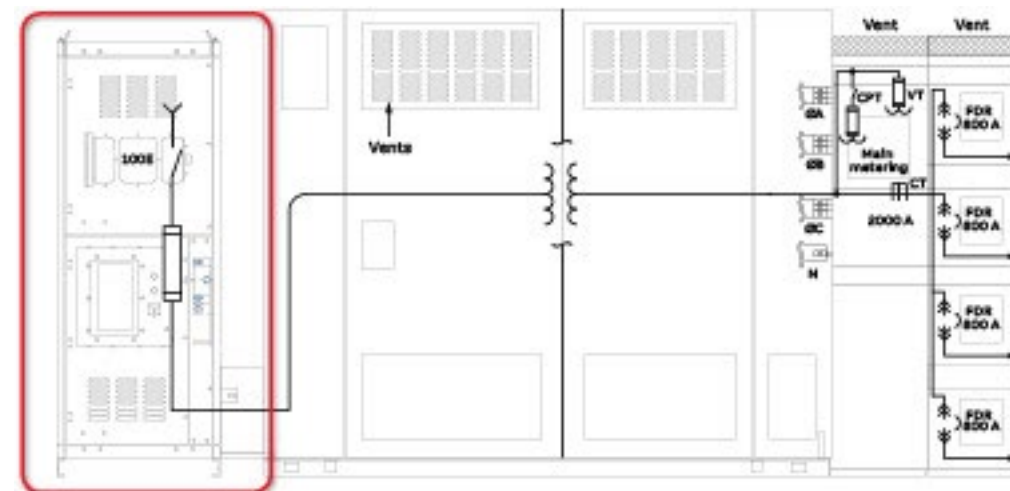
Rated voltage, kV	Up to 15
Frequency, Hz	50 / 60
Rated current, A	1200
Rated power frequency withstand voltage (1 min), kA	38
Rated lightning impulse withstand voltage (peak values), kV	95
Rated short circuit breaking current, kA	31.5
Rated short time withstand current (3 sec), kA	31.5
Rated peak withstand current, kA	82
Close and latch rating	82
Operating sequence, kA	10,000 operations
Rated auxiliary control voltage, V	30–50 V DC or 100–250 V AC/V DC
Opening time cycles	3
Closing time, ms	45–60

Standards and approvals

American National Standards Institute (ANSI)

applicable sections of:

- ANSI/IEEE C37.20.3, C37.20.4, C37.22 — as existing and installed
- IEC-62271-200 standard
- National Electrical Code (NEC)



LIS retrofit solution

Value proposition

Use of circuit breaker technology vs. fuse technology greatly reduces the energy let-through during a fault condition. This reduces hazard levels for personnel and is likely to reduce downstream equipment damage.



Upgrade Equipment

Update existing Breakmaster fused switches with improved circuit breaker technology



Reduce Arc Flash Hazard Levels

By replacing existing fuse disconnects with a circuit breaker, faults are cleared much faster and NFPA 70E hazard level is typically reduced



Sustainability

Minimize natural resource usage and CO₂ emissions by extending the life of existing equipment



Keep Running

Breakmaster V retrofits keep your load interrupter switch operational. Easy installation during a planned outage

Relion® relay

New protection for existing panel (direct replacements for GE Multilin Family)

Reduce intervention time:

- moving from chronometric to logic selectivity
- faster protection and circuit breaker operations

New protection functionality:

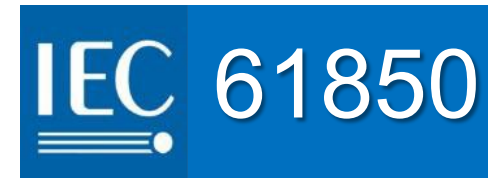
- Advanced ground fault protections, ...
- Directional protection, frequency,
- Fault locator
- Auto diagnostic

Ready for switchgear diagnostic and asset condition

12-year “no questions asked” warranty policy

More info

- [Relion relay webpage](#)

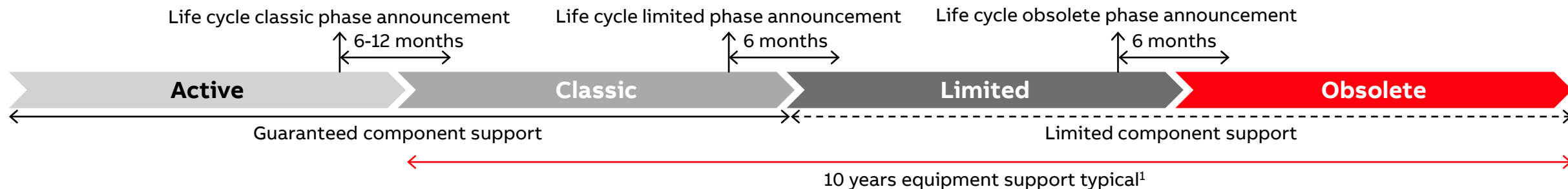


Including Fast horizontal
GOOSE communication



Life Cycle Phases

Lifecycle Phase Breakdown



Active phase

- Available for sales
- Full manufacturing
- Actively promoted in assigned countries
- Available to all (authorized) customers
- Full technical and customer support available
- Periodically enhanced through R&D and product improvements
- Fulfill availability of a spare parts
- Extended warranty available for application

Classic phase

- Product is still available, but not extensively promoted (a substitution product will be identified with cross-reference in most cases)
- No further enhancements and developments
- Spare parts fully available

Limited phase

- Product is no longer actively promoted by the sales force
- Service support is ensured, including retrofit kits, spare parts and accessories
- Product is no longer manufactured or limited production might be available
- Life extensions may be available under a **Customer Support Agreement**, which provide “Active Phase”- like support from ABB Service team

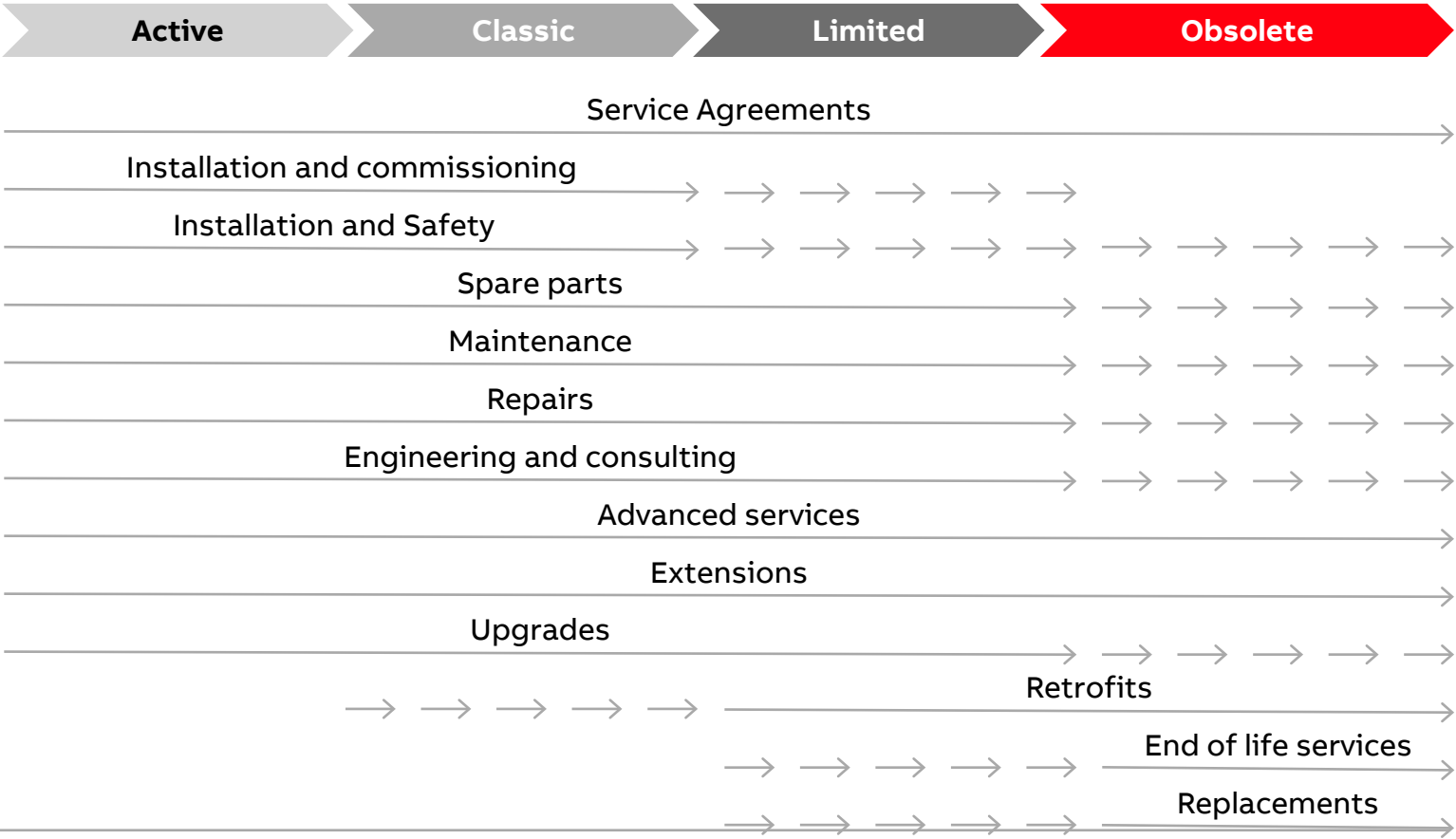
Obsolete phase

- Product is withdrawn from sales
- No longer manufactured as a complete product
- Retrofits kits, where applicable, are available for most applications
- Spare parts availability may diminish over time with decrease in production volumes

Service Agreements

Maintaining Equipment

- Equipment reliability will decrease as the equipment ages. If not properly maintained, the risk for an unexpected failure dramatically increases.
- After a long useful life, all electrical equipment will start to show its age. In that case an upgrade or retrofit can be utilized to further extend the equipment’s useful life, as well as increase performance with the latest technology available.
- Regularly maintaining and upgrading equipment will increase overall safety with reduced risk for arc faults, as well as meeting new safety requirements



Supported Products

	Active	Classic	Limited	Obsolete	Switchgear		Switchboards	Circuit Breakers		
Status	Product is actively marketed and sold	Product will be replaced but is still available for sales, mainly for spares and expansion projects	Limited manufacturing/stock availability	Product is no longer available nor sellable	Low Voltage	Med Voltage	Low Voltage	Low Voltage		Med Voltage Vacuum/Air
					ReliaGear LV SG	SafeGear Advance	ReliaGear SB PowerBreak II	Molded Case Tmax XT Spectra Insulated Case PowerBreak II PowerBreak	Power EMAX2 Entelliguard New EMAX K-Line KDON K-Line Plus EMAX WavePro AKR AK MB LK	AMVAC ADVAC VMAX SecoVac PowerVac VHK VHK-X HK MagneBlast SecoVac R
					MNS SG AR	ReliaGear ND	AV3			
					Entellisys 5.6	SecoGear	PowerBreak I			
					Entellisys Max SG	PowerVac				
					K-Line	HKII				
	●	●	Not guaranteed	●	AKD-20	HK				
					AKD 10, 8, 6, 5	MagneBlast				
					K-Line Plus					
					MB					
					LK					
Product on stock	●	●	Not guaranteed	●	Motor Control Centers (MCCs)		Outdoor Circuit Breakers	Load Interrupter Switches (LIS)		
Available in online tools	●	●	●	●	Low Voltage	Med Voltage	Med Voltage	Med Voltage		
Maintenance and repair	●	●	●	Not guaranteed	ReliaGear MCC	LimitAmp	R-MAG	BreakMaster LIS BreakMaster V		
					MNS MCC AR	SafeGear	V Breaker			
					E9000	MCC	R Breaker			
					8000 Series	Advance				
					7700 Series	MCC				



Equipment Lifecycle Extension Considerations



Evaluate

- **Baseline** equipment – data collection, **asset health** evaluation, **lifecycle** review
- Review **shared database** of condition findings
- Sharing of **continuous improvement** opportunities
- Consider solutions approach based **on site constraints and safety**



Maintain

- Initiate/optimize **proactive maintenance** programs
- Routine
- Condition-based
- Predictive
- **Remote Assistance**



Monitor

- Look at **condition monitoring** solutions
- Support transition from basic monitoring to **predictive**

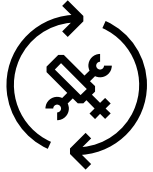


Extend

- Intentional **spare strategy**
- Structured lifecycle extension plan that integrates improved safety and standards compliance

ABB Services & Call Center

+1 888 434 7378 or +1 540 387 8617



General Services

- Local Service and Sales Team Initiated
- Installation, startup and commissioning
- Feasibility/engineering studies
- Assessment/inspection/testing
- Preventative Maintenance
- Outage support
- Repair and product replacement
- Training



Call Center

- Toll Free & Direct Dial Numbers
- 24 x 7 x 365 emergency services and parts
- Calls for equipment under warranty
- Field Engineer or Tech Dispatch
- Time and Material Quotes @ Published rates



Contract Customers

- Toll Free and Direct Dial Numbers
- Assigned a customer profile
- List of equipment covered
- Notes on customer drawings & configuration
- Customer notification email list
- Primary and Secondary Field Engineers contacted to support
- Escalation procedure to local Service and Account Managers as needed
- Contract rates for dispatch

Electrification websites

External, services, & sales support portal


- US EL Service webpage
- Services Product Line Card
- Installation, Commissioning, and Maintenance
- Aftermarket Services
- Preventive Maintenance & Outage Support
- Roadshow
- Training

ABB

Search Company tools Alerts Orders

ELSA | Electrification Sales Authority

Services | ABB



Don't just replace old MV switchgear. Modernize it with the OneFit retrofit design.

Welcome

Welcome to our new portal. Here, we provide convenient access to content specifically curated for our sales teams. We hope you find it valuable and easy to use. Check out these bite-size [video courses](#) to get a jump start on making the most out of ELSA.

Click here to learn more

Quick links

Explore your products & services

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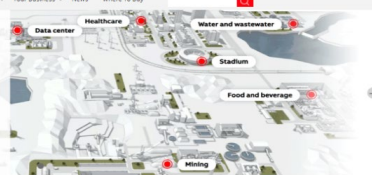
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Products Services Industries Resources Your Business News Where To Buy

Electrification Industries

A virtual tour through our industries and products



EXCLUSIVE WEBINAR

The Estimating Process in Four Steps

Presented by: Don Kiper, President of Estimating 101

March 30th 2:00 PM ET

REGISTER NOW

Highlights



ON DEMAND

Buildings for a Better



Solar Ready Meter Socket



ReliaGear LV MCC

ABB

Electrification Services

For safer, smarter and more sustainable solutions

Aftermarket solutions

Extend the life of existing equipment with ABB technology. Low and medium voltage circuit breaker retrofits and retrofills, motor control center bucket replacements, modernization and upgrades, spare parts and more.

Engineering services

Help improve safety and reliability, reduce operating costs and increase productivity with Power Systems and Arc Flash Studies, Startup and Commissioning Services, and Electrical Safety Training.

Emergency services

Recover faster with ABB's comprehensive solutions and experienced technical resources, available 24/7.



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Lifecycle Solutions


Over 130 years of expertise and a global network of repair centers and field engineers to optimize assets, extend lifecycle and increase uptime.

Home Services


Highlights




Power Delivery Services



Arc Flash Services



Roll-in Replacement Breakers



Did You Know? ABB Services provides support for the nuclear industry

The ELDS US Service Team offers supports these products and services



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