

Low Voltage Breakers Retrofitting kit ABB Solutions, skills, advantages



ABB Retrofitting

Many Low Voltage ABB apparatus provide useful service for many years. Production or Process requirements often call for replacing an existing product with updated one with new features and characteristics. Other reasons for product replacement include lack of spare parts and limited service offering.

With a few and cost-effective modifications, the retrofit kits are in most cases the ideal solution to upgrade low-voltage switchgear and extend its life cycle, from the original equipment to modern apparatus with superior performance

The retrofitting kits designed by ABB allow the customer to substitute the old ABB and not ABB device with one of the new generation increasing safety and ensuring the maximum level of service continuity.

In addition, ABB SACE Emax2, new Emax and Tmax series ensure high mechanical and electrical reliability with great flexibility, thanks to new high-technology microprocessor-based electronic protections that also introduce new capabilities, such as advances protection and selectivity strategies, power metering, monitoring and communication.

With the combination of new concept smart apparatus and retrofitting kit ABB covers all customer needs in the new Industry 4.0 era.

Choosing ABB Solutions

ABB Service is available to evolve or upgrade to the next generation of hardware and software from ABB and other manufacturers, to exchange wear parts or outdated equipment components while maintaining original plant and equipment configuration

Not all the circuit-breakers put in service several years ago meet the requirements of reliability and safety demanded today, and, although they continue to operate properly, upgrades and replacements should be planned.

Routine maintenance may be insufficient to satisfy customer needs, such as improving the electrical and mechanical performances, extending the life of the system or complying with prescriptions and regulations.

Functionality, safety and coordination may be key factors in the decision of replacing obsolete products.

ABB Low Voltage Products Service offers its competence through consulting (identification of inadequate and / or obsolete equipment, planning interventions) and efficient service.

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ABB Technological skills and requisite

ABB guarantees the experience and expertise in the development of a new retrofitting kit, that requires a similar effort of the development of a new circuit breaker.

All kits are designed on 3D models, engineered and produced according ABB procedures; quality system is certified by international certification bodies (complying with ISO Standards)



ABB retrofit kits are routine and type tested following Test and Verification plans defined by the relevant international standard and by internal procedures specifically fit for retrofit, as for the whole range of ABB circuit-breakers in the ABB Laboratories.

ABB laboratories are recognized by the main international certification bodies such as ACAE / LOVAG, ANCE, ASTA, ETL SEMKO, UL, CSA and Naval Registers. This laboratory offers the qualified services to perform certification tests for devices and electrical equipment for low and medium voltage, in accordance with the product standards. The Laboratories are also accredited by ACCREDIA, the agency that verifies that the tests and the documentation are performed and prepared in compliance with the accreditation's bodies.



Below the list of tests performed by ABB SACE on each retrofitting kits are detailed:

- Operational performance capability test with and without current: The electrical parameters of the new breakers should be checked: $I_n/I_{cu}/I_{cs}/I_{cw}$ should always meet the requirements of the old breaker
- Mechanical operation test of racking in and out of the moving part
- Checking of protection locks and signaling devices
- Protection degree
- Impulse withstand voltage test and checking of creepages
- Checking of dielectric withstand
- Checking of temperature-rise on main circuits.



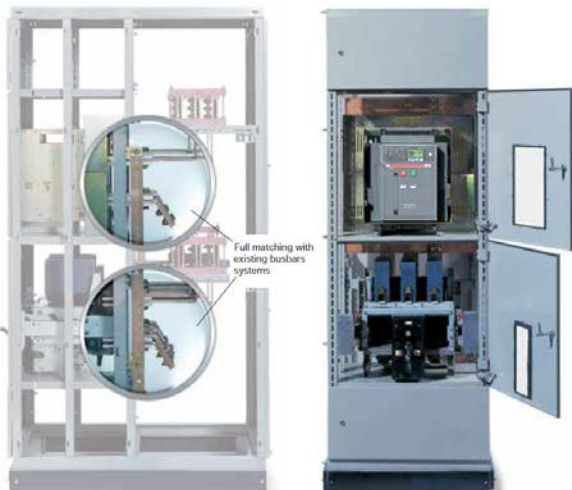
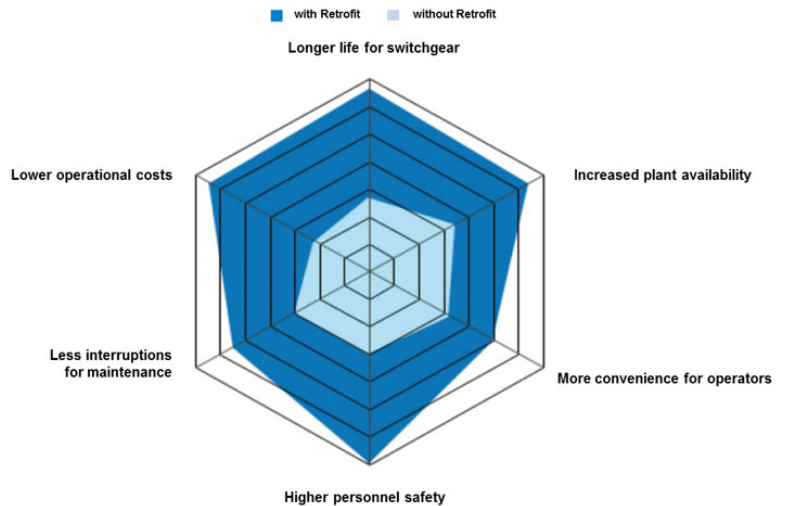
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ABB advantages

Any replacement of obsolete equipment can be made using retrofit kits, specifically designed by ABB Low Voltage Products Service to preserve the existing frameworks and to minimize downtime.

The use of the retrofitting kits provides several advantages:

- Increase total life cycle of the switchgear;
- maintaining the original configuration of the switchgear equipment and installation;
- improvement of safety and reliability
- ease of maintenance and functionality of the system;
- low investment costs compared to those required for the installation of a new switchgear;
- planned scheduling and implementation with minimum downtime;
- cost reduction of maintenance and repairing;
- service continuity guaranteed with protection of investments;
- full interconnectivity with the existing distribution systems;
- easy and safe replacement;
- no structural changes;
- adaptations to auxiliary circuits;
- greater control of plants with new electronic protections;
- upgrading of the switchboard with new technology (as power management and energy saving) implies economic benefits;
- Guaranteed solution as certified
- Customized solutions are possible to cover all customer needs

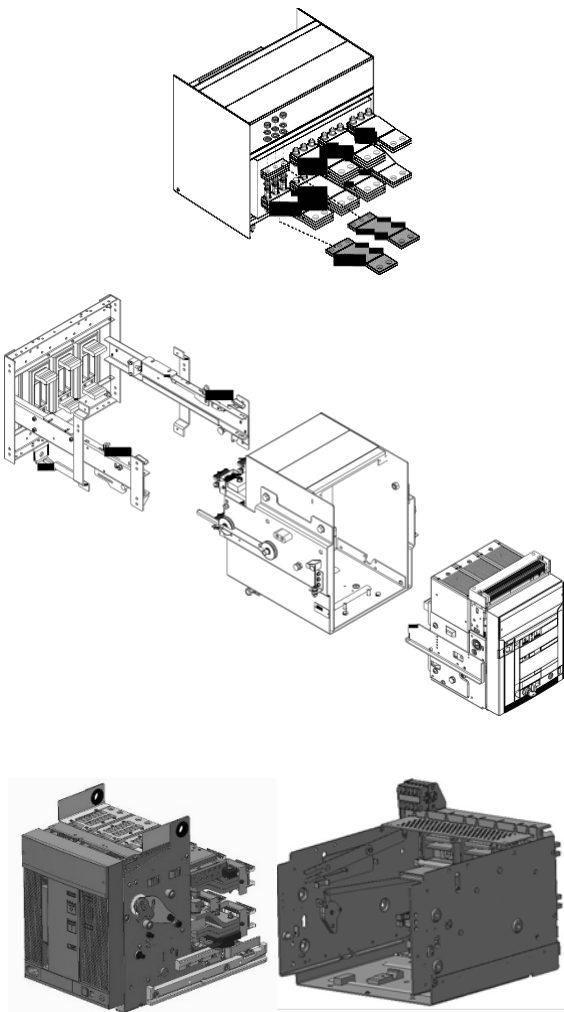


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Retrofitting kit solutions

To cover all the customer demands ABB Low Voltage Products Service has developed different retrofitting kits:

ABB is a full system provider, from the proposal and design, through the manufacturing and testing, up to the installation and commissioning. Both ABB and non-ABB installed base can be addressed.



Hard Bus Refill (RF): the obsolete circuit-breaker is totally removed and replaced with the new circuit-breaker. The kit contains special designed and preconfigured busbars and covers to adapt the new circuit-breaker to the existing busbars. With the kit, it is also necessary to order both the Fixed part and the Moving part of the New circuit-breaker

Benefits:The time and effort of emptying the compartment and arranging it to fit the new cassette is offset by providing a modern, reliable and interchangeable solution. The relevant longer downtimes must be considered when choosing this option

Cradle in Cradle (CiC): the fixed part of the new circuit-breaker is suitably adapted and tested in ABB. This solution allows the new fixed part be fast fitted inside the existing fixed part of old circuit breaker. It's a typical application for very old products where the fixed parts have huge dimensions compared to the latest ones.

Benefit:This solution balances the need for a refill solution with reasonably limited site works and linked outage.

Direct Replacement (DR): this is the fastest solution for the customer: the moving part of the old circuit-breaker is removed and the moving part of the new circuit-breaker is suitably modified and tested in ABB to be fitted into the existing fixed part. This implies very short plant shutdown of the single user. The kit, pre-mounted by ABB SACE, changes from the shelf circuit-breaker into a dedicated moving part to be connected to the existing fixed part of the old circuit breaker.

Benefit:Latest standards compliance is one of the key elements when designing and testing replacement breakers. This methodology allows to exchange the original device without the extended downtime required for the switchgear replacement. Higher performances and additional features can also be targeted.