

Retrofitting OneFit eSafety Plus: new life to the switchgear

Circuit-breaker retrofitting is a cost-effective alternative to complete switchgear replacement. ABB Service experts conduct site audits on existing installations to assess the condition of the equipment, recommend the most suitable solution and technically support the most appropriate investment. Retrofill is one of the retrofit technical solution used by ABB. OneFit is the latest ABB hard-bus retrofill design concept, containing an integrally safe plug-in technology in order to easily connect the new breaker to a wide range of existing panels.

Concept

OneFit is comprised of a frame that hosts a standard circuit breaker connected to the existing switchgear bushings by an additional power circuit that also acts as an internal interface with the new breaker.

The adaptation system (OneFit kit) allows a completely standard ABB withdrawable apparatus to be fitted to the old panel.

The result is a great improvement in reliability, safety, maintenance and performance.

ABB Service is a complete system provider of retrofitting solutions, from proposal to design, manufacturing and testing, down to installation and commissioning.

OneFit eSafety Plus

The OneFit range is made up of four packages with progressively increased technological content targeting personnel safety and switchgear renewal.

OneFit eSafety Plus is the most advanced OneFit customization package. The integration of protection relay and measuring sensors gives a new life to switchgear with complete equipment revamping.

Current sensors are fully integrated in the OneFit frame and ready to be connected to any Relion protection and control device. Voltage sensors are also available for the switchgear integration. The full switchgear modernization is as easy as the breakers retrofitting with OneFit, and both targets can be achieved in a single step with the eSafety Plus package.



OneFit packages

Benefits

Project execution

- sensors' selection: a single type for all applications; instrument transformers data like primary and secondary currents, accuracy, burden, etc. are not needed for sensors
- protection and control equipment definition: the whole Relion range can be used; high accuracy and linearity enable the combination of metering and protection classes in one device
- wiring: measuring sensors are supplied with their own cables and already terminated with snap-in connectors; this technology does not require terminals nor testing sockets
- mechanical design: current sensors are integrated in the OneFit frame; no need for looking at the switchgear arrangement
- any other existing equipment can remain in place if still requiring the conventional measuring transformers connections.

Running stage

- measuring sensors can be disconnected from the protection and control relays at any time (no need for short-circuiting the current sensors or keep open the voltage sensors secondary circuits while the switchgear is live)
- sensors are not affected by the most common instrument transformers life shortening risks: heat dissipation for the current and ferroresonance for the voltage instruments
- accuracy is much higher up to the short circuit level and therefore selectivity is more accurate and tripping times faster; network and equipment are therefore better protected in case of failures.

Current sensor

Current measurement in KECA C sensors is based on the Rogowski coil principle. Construction is done without the use of a ferromagnetic core. The main benefit is that the behavior of the sensor is not influenced by a magnetizing curve, which results in a highly accurate and linear response over a wide dynamic range of measures. 0.5 measuring and 5P protection classes are reached from 5% of nominal current up to short circuit level. They comply with IEC 60044-8 Standard, Instrument transformers – Part 8: Electronic current transformers.

Voltage sensor

Voltage measurement in the KEVA B sensor is based on the resistive divider principle. The same sensor can be used in all applications up to the OneFit specified maximum voltage level. The KEVA B sensor fulfills requirements of accuracy class 0.5 for measurement purposes and accuracy class 3P for protection purposes. They comply with IEC 60044-7, Instrument transformers – Part 7: Electronic voltage transformers.

Protection and control devices

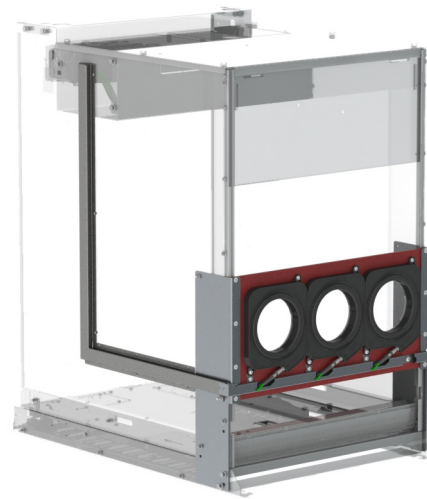
Relion protection and control equipment incorporate the functions of a traditional relay, as well as allow new additional functions. The information transmitted to them from the sensors is very accurate, providing the possibility of versatile relay functionality.

The OneFit eSafety plus makes it easy to focus on applications to create a reliable and efficient electrical network. It combines well-proven retrofit design with an innovative solution for protection, control, measurement and digital communication.

Relion product family offers the widest range of products for the protection, control, measurement and supervision of power systems. To ensure interoperable and future-proof solutions, the Relion products have been designed to implement the core values of the IEC 61850 Standard. Redundant communication increases reliability of the network supervision. HSR (high-availability seamless redundancy) and PRP (parallel redundant protocol) are fully available as options for critical assets management.

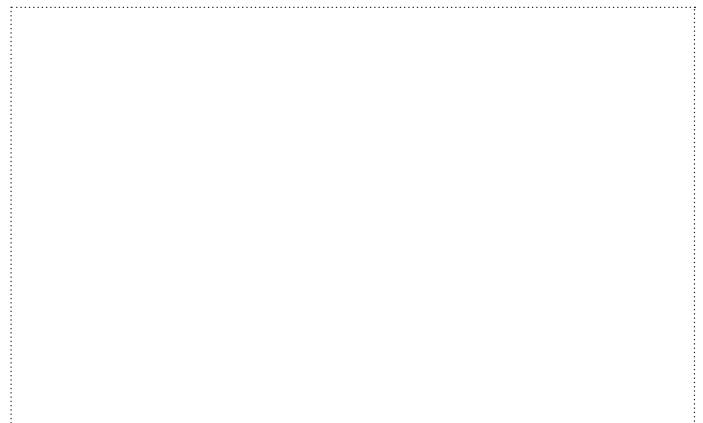
Thanks to Relion protection and control relays, specifically the 615 series, the busbar voltage measured by voltage sensors can be converted into a digital signal by one protection relay and then distributed via IEC 61850-9-2LE (Process bus) Ethernet network to all other protection relays of the switchgear. The switchgear modernization is therefore set at the highest possible level.

RIO600 is also available to extend the number of protection and control relays binary I/O and to extend the number of available RTD/mA inputs or mA outputs. RIO600 communicates with the relay over the Ethernet communication.



eSafety Plus OneFit with integrated current sensors rear view

Contact us



Your Service sales contact: www.abb.com/contacts

More Service information: www.abb.com/productguide

OneFit webpage:



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