



Case studies

New air circuit-breaker SACE Emax 2 with Ekip G trip unit for generator protection

The customer

Founded in 1946 and located in Naples (Italy), **COELMO**[®] combines the innovation with the experience and skills acquired throughout the years and is now a center of excellence for the manufacture of Generating Sets for residential, commercial, industrial, and marine applications and special projects.



The challenge

Based on the growing interest in energy efficiency, this project concerns the construction of a cogeneration station located in Lombardy intended to meet the needs for generation and distribution of electrical and thermal power to public and private buildings.

The emergency generator of Coelmo (Perkins engine and Mecc Alte three-phase alternator) has to face up to any outage caused by the lack of electrical energy from the public Utility for two power centers and their related loads.

According to the design technical specification, the control switchboard of the generator set requires a main circuit-breaker that, in addition to the traditional overcurrent protections, is able to provide the following protection functions implemented on the integrated trip unit:

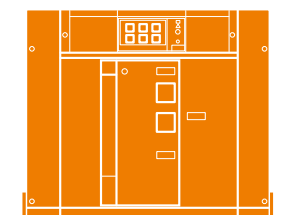
- 81 under-/overfrequency: 2 independent thresholds
- 59 overvoltage: 2 independent thresholds
- 27 undervoltage: 2 independent thresholds
- 51V voltage controlled overcurrent
- 32 reverse power
- 46 current unbalance
- 40 loss of field
- 51N earth fault

The ABB solution

Ekip G is the new trip unit with touch screen display for generator protection. It integrates into the cutting-edge air circuit-breaker SACE Emax 2 all the protection functions, measurements and display of the plant parameters. The wide range of protection functions integrated into the circuit-breaker represents an economically and dimensionally rewarding solution for the generator control and fully meets the requirements of the technical specifications.

New trip unit for generator protection

26% saving on the components to be used for generator protection



Thanks to the unique characteristics of SACE Emax 2 equipped with Ekip G trip units it has been possible to simplify the structure and the management of the electrical switchboard.

This innovative solution, which integrates protections and measurements, simplifies the structure and the management of the electrical switchboard inside the container, since it makes unnecessary:

- the current and voltage transformers and their wiring;
- the external trip unit to be positioned on the switchboard front;
- the measuring instruments for the display of the electrical parameters.

These characteristics result in evident benefits: cost reduction in terms of labor and materials, increased reliability of the measuring and protection system, rewarding simplification and less components installed.

The optimum solution to fully meet the application requirements of the diesel/generator set (1500kVA-400V rated power) manufactured by Coelmo is Emax E4.2 3200A equipped with the trip unit Ekip G Hi-Touch. Thanks to this solution, protection functions and measurements (voltage, frequency, and power) can be directly set and shown on the display of the trip unit integrated into the generator set circuit-breaker and can be remotely sent to a control system by using the communication modules directly installable on the circuit-breaker.



This solution requires the following components/accessories

ABB SACE Emax 2 (E4.2N3200) circuit-breaker



Ekip G Hi-Touch trip unit equipped with integrated Ekip Measuring Pro



Ekip Supply module



The Ekip Supply module enables all Ekip trip units and modules present on the terminal box and on the circuit-breaker to be supplied with several auxiliary power in AC or DC available in the switchgear. Two versions (110-240V AC/DC and 24-48V DC) are available according to the primary voltage used.

Ekip Com module



The Ekip Com modules enable all SACE Emax 2 circuit-breakers to be integrated in an industrial communication network (7 protocols are available) for remote supervision and control of the circuit-breaker.

Ekip 2K Signalling module



The Ekip 2K Signalling modules supply two input and two output contacts for control and remote signalling of alarms and circuit-breaker trips. They can be programmed from the trip unit's display.

Contact us

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