ABB Ability™ Generator circuit-breaker (GCB)
Digital. Intelligent. Reliable.
Enabling the digital future

Continuing more than a 125 year history of innovation, ABB today is writing the future of industrial digitalization and driving the Energy and Fourth Industrial Revolutions. ABB operates in more than 100 countries with about 136,000 employees.

ABB is a leader in the design and manufacturing of generator circuit-breakers (GCBs) since 1954 with more than 8,000 deliveries in over 100 countries. We offer the widest and most modern portfolio of GCBs in vacuum and SF₆ technology with a range of short-circuit current ratings from 50 kA to 300 kA and nominal currents from 3,000 A to over 50,000 A to meet the demand of all types of power plants around the globe.

GCB plays an important role in switching the circuit between generator and transformer in a power plant. It protects important assets in power plants by clearing potential harmful short-circuit faults in tens of milliseconds, preventing severe damages.

ABB’s GCBs serve all types of power plants around the globe to increase both safety and flexibility. With world-leading technology, they meet customers’ needs, to achieve the highest possible plant availability at the lowest possible cost.
ABB Ability™ GCB
Boosting asset performance

Real-time remote monitoring of GCB health status to increase availability of power plants

Optimized asset performance and utilization through actionable data intelligence

Condition monitoring allows predictive maintenance strategies

Digitally integrated enabling on-premise, as well as, cloud connection, including ABB Ability™ Asset Health for GCB

At the heart of the ABB Ability GCB is the intelligent monitoring capability: aggregating, analyzing and managing health data collected through GMS600 monitoring system. It enables real-time monitoring of key GCB health parameters.

Through plant specific data visualization, ABB Ability GCB enables adoption of predictive maintenance strategies while enhancing availability. Direct measurement of GCB health status helps to avoid unnecessary shutdowns and maximize asset lifetime.
Enhance reliability and availability
A proactive and cost-effective maintenance plan is key in maximizing both power plant availability and reliability. Thanks to actionable data intelligence, trends in operational parameters can be detected and generator output can be optimized. Unnecessary shutdowns can be avoided by online measuring the residual lifetime of GCB based on plant specific application conditions.

Improve operational performance
The safety of power plants can be increased thanks to remote monitoring. Informed decisions based on real-time and accurate information on actual GCB condition and lifetime, allows to maximize GCB usage. It optimizes alignment of GCB maintenance activities within the scheduled plant shutdowns.

Optimize total cost of ownership
Reduction of maintenance costs with ABB expert data driven recommendations and service due dates considering the actual GCB conditions can be achieved. Thanks to condition monitoring and detailed knowledge of GCB performance trends, predictive maintenance strategies can be implemented. This optimizes maintenance planning providing faster response, higher flexibility, high measurement accuracy and simplified inspections and overhauls.

ABB Ability™ Asset Health for GCB

GMS600 monitoring system
Ablation monitoring
Temperature monitoring

SF₆ Gas monitoring
GMS600 monitoring system
The heart of digitalization

Intelligent electronic device based on ABB common platform
Based on ABB’s well-proven Relion® Series 650, it provides precise indications of the GCB’s remaining time to service with an efficient data logging system. An intuitive network interface via webserver and web client application and connection with the most modern communication protocols such as IEC 61850 and DNP3. GMS600 supports power plant operators and maintenance engineers for a proactive and cost efficient maintenance program, while improving diagnostic capability through the recorded data and threshold levels. This contributes to the overall increase of reliability and availability of power plants.

SF₆ gas monitoring and trending
In line with the highest standards in terms of environment protection, ABB GCBs have the lowest SF₆ leakage rate and the monitoring system GMS600-G keeps it under control.

GMS600-G is equipped with a transducer for online measurement of the SF₆ gas density and an algorithm calculates the actual leakage rate and relevant trending over time. Unexpected gas leakages can be detected early.

Temperature monitoring
GMS600-T provides monitoring of the actual temperature of the primary conductors, with relevant logging over time to enable a real time analysis of the thermal status of the GCB. This monitoring function assures that the GCB cannot accidentally be loaded above the limits in accordance with the applicable standards, achieving 100 percent control of the current flow through the GCB even during unplanned increase of ambient temperature.
Value Based Customer Care (VBCC)

Thanks to a real-time update and export of the log file from the GMS600 (in accordance with the agreements and user’s profile), ABB is able to extrapolate measured data. The Value Based Customer Care includes benefits such as:

- customized report with an overall summary of the GCB fleet condition and a detailed technical analysis for every single GCB
- reduced maintenance costs with ABB recommendations and service due dates based on the breaker condition and the usage of the GCB
- harmonized maintenance planning allowing power plant operators to better coordinate GCB maintenance activities within the scheduled plant shutdowns
- prolongs lifetime of GCB avoiding unplanned outages of the breaker for the best cost-effective lifetime management
Ablation monitoring
The first in the market

The GMS600 monitoring system family is expanded to include new functionalities with even higher reliability. Based on the well-proven Relion technology, a unique solution to boost asset performance management.

Ablation measurement
As a global leader in technology and innovation, ABB has developed a new solution to provide even more accurate information without the need to interrupt the generator circuit-breaker activity. The GMS600-A is the first product in the market that is able to measure online contacts overlapping time and give indication of the ablation without the need to go out of operation.

GMS600-A unlocks a new era of monitoring: a more powerful monitoring system that helps optimize power plant performance while decreasing lifecycle costs. It supports fleet management in optimizing maintenance planning and maximizing GCB lifetime.

Key benefits
GMS600-A:
• Maximize lifetime of GCB
• Online measurement and visualization of residual lifetime of GCB based on project specific switching conditions
• High accuracy contacts erosion measurement
• Maintenance planning optimized:
  - Faster response
  - Higher flexibility
  - Simplified inspections and overhauls

As easy as press a button, GMS600-A ensures flexibility, taking the maintenance planning to the next level.

GMS600 monitoring system solutions

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Ablation measurement

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