Maintenance
The best strategy for increasing system availability is an optimized combination of planned, selective, and prepared maintenance.

ABB is in a good position to assist you in developing a maintenance strategy for your facility.

Preventive and condition-based maintenance increases reliability and minimizes the impact of faults, whereas, on the contrary, the impact of such faults is difficult to predict with corrective maintenance.

Reference Project
In 2012, grid fluctuations led to thermal overloading of a voltage transformer in a 110 kV switchgear panel of the switchgear bay of a power supplier in the Philippines.

As a result, both the voltage transformer and the adjacent disconnecting and earthing switches were severely damaged and had to be replaced.

ABB then carried out a comprehensive fault analysis and proposed appropriate service solutions to the customer, which offered better protection for the systems and their components, using state-of-the-art technology.

Only after the fault almost repeated itself in 2017, which would have led to an identical pattern of damage, did the customer recognize the need for action.

The maintenance and upgrading measures that were carried out have improved the condition of the systems and components, offering reliable continued operation of the plant for the next 20-30 years.

Effects of Defects
Corrective maintenance
Preventive maintenance
Maintenance based on risk analysis
Condition monitored maintenance
Services and reliability
ABB Retrofit solutions

Retrofitting is an optimal measure for upgrading older equipment in power transmission and distribution systems by integrating state-of-the-art components.

Our aim is to increase the availability and reliability of our customers’ plants by installing the latest components. In order to extend the operating time considerably, reduce operating costs, and reduce environmental pollution at the same time.

Therefore, when conventional maintenance is no longer possible at a reasonable cost, many companies are beginning to rely increasingly on the retrofit solutions recommended by ABB. These technical improvements make a significant contribution to ensuring that their plants can continue to operate economically. This ensures a positive contribution in terms of environmental protection.

ABB retrofitting has a clear goal: Maintaining a high level of availability and an elevated safety standard at minimum cost.

Reference project

The reason for the modernization measures of the approximately 50-year-old 110 kV switchgear (Type EBK-D), in a chemical park, was a chemical leak, caused by a mechanical break of one of the metal breaker discs with integrated moisture filter. In addition to the maintenance and repair of individual components, the EBK-WEB retrofit solution, which has proved itself in over 100 installations, was also used in the course of this modernization project. The EBK-WWEB retrofit circuit breaker discs were also retrofitted.

These measures will ensure a high degree of availability and reliability of the supply in the long-term. Retrofitting allows modernization of the outdated switchgear at an affordable price, and it also significantly extends its service life.

With retrofitting

- Reduced risk of gas leakage
- Improved insulation
- Reduced downtime
- Enhanced personnel protection
- Increased plant availability
- Increased personal, operating and operational safety

Without retrofitting

- Increased operating costs due to reduced maintenance activities
- Restricted downtime by cutting maintenance activities
- More operator convenience by utilizing state-of-the-art devices
- Lower operating costs due to reduced maintenance activities
- Minimum downtime by cutting maintenance activities

Retrofit solution for rupture discs

- Long-term assurance of gas quality
- Increased personal protection
- Improvement of IEC, humidity (dry point)
- Reduced UG emissions
- Positive contribution in terms of environmental protection
- Retrofitting of all graphite rupture discs with new metal breaker discs with integrated moisture filter

Retrofit solution for current transformers

- Replacement by a new current transformer
- Improved insulation
- Reduced risk of failure
- Existing contacts can be replaced by shunt-circuit-proof contacts

Retrofit solution for voltage transformers

- Replacement of a new voltage transformer
- Improved insulation
- Improved switching operation according to the latest IEC standard (IEC 60044-7)
- Reduced downtime
- Reduced risk of failure
- Reduced UG emissions

Retrofit solution for disconnectors and earthing switches

- Replacement of the DC-Opeating mechanisms
- Upgrading of the mechanical transmission
- Improved switching operation according to the latest IEC standard (IEC 60044-7)
- Reduced downtime
- Reduced risk of failure

Retrofit solutions for disconnectors

- Replacement of the DC-Opeating mechanisms
- Improved switching operation according to the latest IEC standard (IEC 60044-7)
- Reduced downtime

Retrofit solution for circuit interruption

- Retrofitting with new cable termination cap quality end caps
- Replacement in accordance with the current IEC standard

• Circuit breaker retrofit
- The gas density monitor per gas compartment
- Aluminium-welded cabinet
- Improved insulation
- Increased personal protection
- Integrated current transformer
- Metal rupture discs with moisture filters

• Operating mechanism retrofit
- Increased maintenance intervals
- Considerable reduction of maintenance costs
- In case of oil leaks in the old actuator, reduction of downtime
- Reduced risk of unexpected downtime
- Long-term availability of spare parts is ensured

• Partial discharge online monitoring (PDM)
- Detection of PD faults at an extremely early stage
- Data transmission in accordance with the IEC-61850 standard
- Integrated installation without rework needed to operation
- Determination of the actual state of the primary insulation
- Reduction of downtime due to faults and increased personal protection
- Determination of the need for maintenance

• Modular Switchgear Monitoring (MSM)
- Stabilization of system operation
- Reliable real-time data transmission
- Modular UG, gas monitoring
- Central data display

• Retrofit solution for voltage transformers
- Replacement with a new voltage transformer
- Improved insulation
- Increased personal protection
- Reduced SF emissions
- Reduced UG emissions
- Positive contribution in terms of environmental protection
- Retrofitting of all graphite rupture discs with new metal breaker discs with integrated moisture filter

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