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 plant to a level where it is now possible to ensure reliable continued operation of the plant for the next 20-30 years.

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Retrofitting and maintenance

Keep fit - longer economical

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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 remain in operation for extended periods.

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

- Increased plant availability
- Reduced risk of gas leakage
- Increased personal protection
- Preventive maintenance
- Modular Switchgear Monitoring (MSM) - Stabilization of system operation - Reliable real-time data transmission - Modular gas leak monitoring - Central data display
- Partial discharge online monitoring (PDM) - Detection of PD faults at an extremely early stage - Data transmission in accordance with the IEC-61869-3 standard - Retroactive installation while the switchgear remains in 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
- Circuit breaker retrofit - One-gas density monitor per gas compartment - Aluminium-welded cabinet - Improved insulation - Integrated current transformer - Metal rupture discs with moisture filters
- Operating mechanism retrofit - Increased maintenance intervals - Considerable reduction of maintenance costs in case of all link in the arc actuation - Redundant system - Reduced risk of unexpected downtime - Long-term availability of spare parts in increased
- Retrofit solution for voltage transformers - Replacement by a new voltage transformer - Retrofit solution according to the latest IEC standard (IEC 60044-3) - Increased reliability - Reduced downtime - Electrical proof contacts
- Retrofit solution for current transformers - Replacement by a new current transformer - Improved insulation - Reduced idle of failure - Existing contacts can be replaced by short-circuit proof contacts
- Retrofit solution for cable terminations - Retrofitting with new cable termination cap and dry-end caps - Replacement in accordance with the latest IEC standard
- Retrofit solution for disconnectors and earthing switches - Disconnector - Prevention maintenance - Replacement of the DC-operating mechanisms - Upgrading of the mechanical transmission - Replacement of the rotary transmission - Upgrading of the control coils - Replacement of the auxiliary switches and earthing switches
- Earthing switches - Prevention maintenance - Replacement of the mechanical transmission - Replacement of the rotary transmission - Replacement of the auxiliary switches and earthing switches - Replacement of the DC-operating mechanisms
- Retrofit solution for cable terminations - Retrofitting with new cable termination cap and dry-end caps - Replacement in accordance with the latest IEC standard
- Retrofit solution for capacitors - Replacement of capacitors by a new capacitor - Improved insulation - Reduced idle of failure - Existing capacitors can be replaced by short-circuit proof contacts
- Reference project: The reason for the modernization measures of the approximately 30-year-old GIS switchgear Type EBK-030 in a chemical park, was an economic nature. The ever-increasing maintenance expenses and the increasingly difficult availability of spare parts as a consequence led to this decision.
- In addition to the maintenance and repair of individual components, the EBK-030 retrofit solution, which has proven itself in over 100 installations, was also used in this case. As a result of this modernization project, in addition to the EBK-60EB00 retrofit circuit breaker drives were also retrofitted.
- These measures will ensure a high degree of availability and reliability of the supply in the long run.
- Retrofitting allows modernization of the outdated switchgear at an affordable price, and it also significantly extends its service life.
- Retrofit solution for rupture discs - Long-term assurance of gas quality - Increased personal protection - Improvement of UHV, humidity (dielectric point) - Reduced risk of gas leakage - Reduced risk of outages - Positive contribution in terms of environmental protection - Retrofitting of the old graphite rupture discs with new metal rupture discs with integrated moisture filter
- Lower operating costs due to reduced maintenance activities
- Increased personal, operating and operational safety
- More operator convenience by utilizing state-of-the-art devices
- Reference project: with retrofitting - Without retrofitting Extension of the life cycle - Maintained downtime by cutting maintenance activities - Increased plant availability

Image 1: Retrofitting and maintenance - Keep fit - Longer economical

Image 2: Improvement of SF6 data transmission in accordance with the latest IEC standard

Image 3: Retrofit solution for voltage transformers - Replacement by a new voltage transformer - Retrofit solution according to the latest IEC standard (IEC 60044-3) - Increased reliability - Reduced downtime - Electrical proof contacts

Image 4: Retrofit solution for current transformers - Replacement by a new current transformer - Improved insulation - Reduced idle of failure - Existing contacts can be replaced by short-circuit proof contacts

Image 5: Retrofit solution for cable terminations - Retrofitting with new cable termination cap and dry-end caps - Replacement in accordance with the latest IEC standard

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