

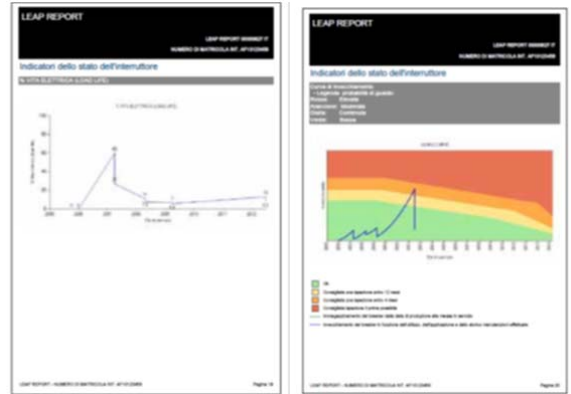
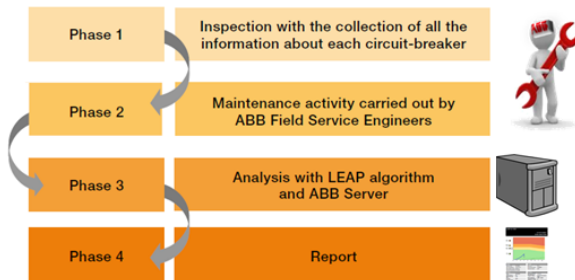
# New Emax Predictive Maintenance Program - LEAP

LEAP, Life Expectancy Analysis Program, integrated in the PMP, is the new program of predictive diagnostic analysis that optimizes the efficiency of the new generation Air Circuit Breakers New Emax

Investing in prevention of failure, rather than living with its consequences, such as loss of production and possible violation of health and safety legislation, is a primary concern for many businesses. Successful prevention of failure can make the difference as to whether or not a company manages to retain its long-term competitiveness. The aim of LEAP is to give the customer a complete report, which shows the device's health before and after the Field Service Engineer's intervention, with very important suggestions about future maintenance activities. The complete analysis is generated by ABB's sophisticated and patented software.

This analysis aims to define a maintenance program according to the real circuit breaker needs based on the real operating conditions in order to maximize efficiency and security and reduce the management costs related to the product's life cycle. The analysis consists in 4 phases:

- Inspection
- Maintenance
- Analysis
- Report



### Inspection

The passing of time is not the only one factor able to increase the early circuit breaker components decay. Even circuit breaker application and use can be important in defining the initial parameters for a correct and detailed analysis.

An on site inspection is necessary to find the required data:

#### Manual data

- Environmental data (temperature, moisture, salinity, etc...),
- Application data (application, Load, etc...).

#### Automatic data downloaded with Ekip T&P o BT030-USB devices:

- Stored inside the electronic trip unit (trip history, contact wear, alarms, etc...).

### Maintenance

The manual data are completed with the list of the maintenance activities performed by the ABB Field Service Engineer.

- List of components substituted
- Maintenance actions
- Tests
- Cleaning and greasing
- Etc...

### Analysis

All the data are transmitted to the ABB Server via the Web and analyzed to understand the circuit-breaker use and its status of health.

Power and productivity  
for a better world™



# New Emax

## Predictive Maintenance Program - LEAP

### Report

The analysis result is a detailed report which shows the circuit breaker status of health accordingly to its specific application, use and environment.

The report is generated with all the information acquired in the field:

- Characteristics of the circuit-breaker and of the switchboard in which the circuit breaker is contained, application, environmental conditions and working conditions
- Description of the main circuit-breaker components subjected to maintenance
- List of maintenance actions performed on each sensitive component, including replaced parts
- Suggested maintenance actions for the future
- Recommendations about the frequency of maintenance interventions:

Heavy → 6 months

Standard → 12 months

Light → 18 months

- 2 curves representing respectively the load and mechanical life at the moment of the maintenance activity
- The last graphic shows the risk of fault of the circuit breaker as it relates to real working conditions.

There are four colored areas with different sizes according to the applications, the environment and the conditions of use. Each color represents the risk probability for circuit-breaker failure:

Red: High

Orange: Moderate

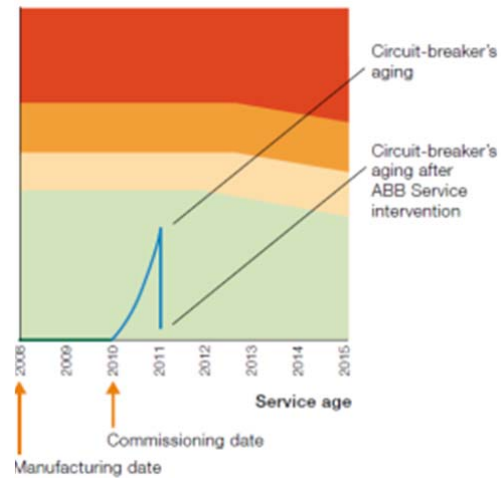
Yellow: Medium

Green: Low

There are 2 curves:

- Green → circuit-breaker aging curve from the production date to the commissioning date
- Blue → circuit-breaker aging curve from the commissioning date

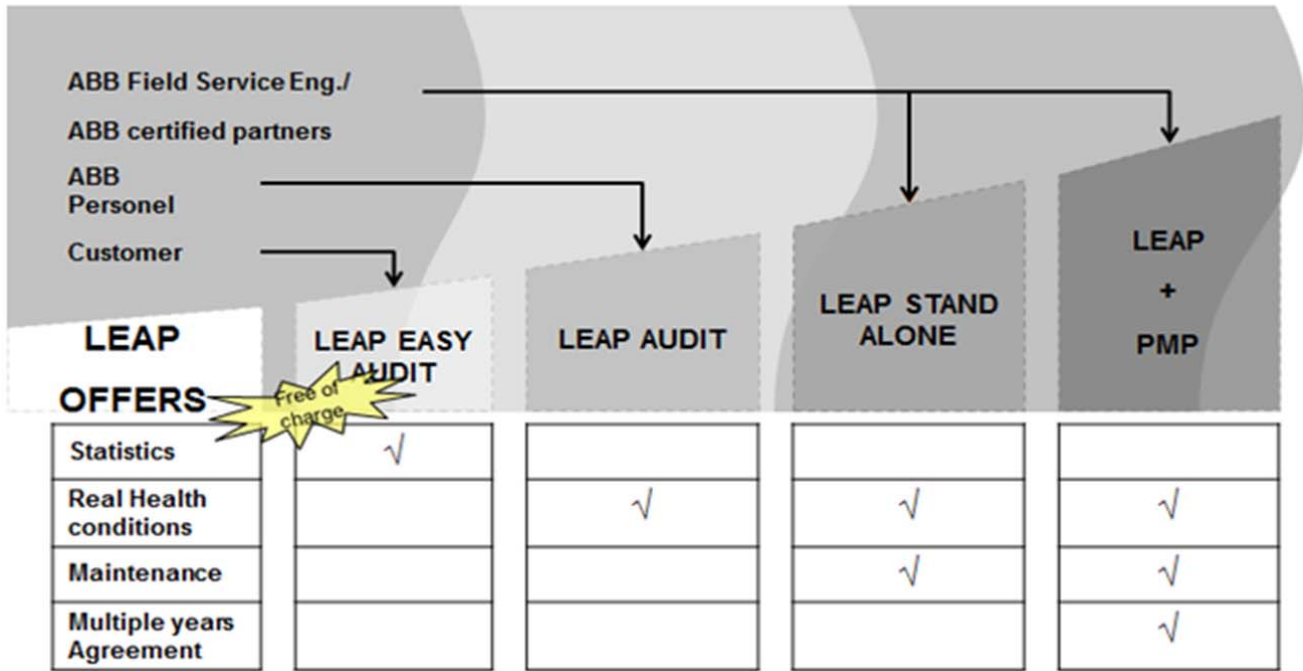
The aim of the predictive maintenance is to preserve as long as possible the good condition of the circuit breaker but with a good compromise of maintenance costs and time.



### Benefit

- Customer benefits with PMP + LEAP
- Ensure a high level of safety
- Guarantee the original performance level
- Increase production reliability
- Reduce overall costs:
  - direct costs of emergency maintenance
  - indirect costs due to loss of production (increasing the MTBF value)
- Support during all the phases of the product lifecycle
- ABB professional competence guaranteed.
- A detailed and objective diagnostic in terms of:
  - status of the circuit-breaker health
  - recommended time between maintenance activities according to the device's real needs
    - The Report is detailed, transparent and exhaustive
    - Extend the product's life in demanding applications

# New Emax Predictive Maintenance Program – LEAP OFFERS

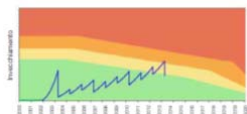
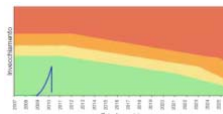
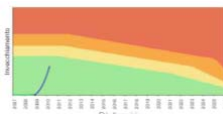
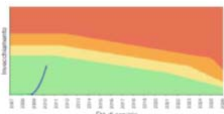


**LEAP EASY AUDIT**  
The customer, after an easy online registration (LEAP Easy AUDIT form the WEBSITE: LEAP EASY AUDIT) receives a user ID and a password to access a special online section of LEAP tool. The customer inserts a few pieces of information about the circuit-breaker (i.e. number of operations, its application and the environmental conditions, etc...). The result is an emailed health analysis of the circuit-breaker. The Report is developed on a purely theoretical and statistical basis in order to have an estimation of the circuit-breaker's health and to highlight the LEAP tool's potential.

**LEAP AUDIT**  
After an easy online registration (LEAP), an ABB Service Sales representative will visit the customer's site to perform surveys and obtain a more accurate LEAP analysis. By using the data from the trip unit (with Ekip Connect SW) and a few pieces of manually acquired data about the application and the circuit-breaker operating and environmental conditions, it is possible provide a detailed Report with the LEAP Analysis. The customer receives the Report via email with the real time circuit-breaker's health and the list of the recommended next maintenance activities to be performed.

**LEAP STAND ALONE**  
Customer subscribes a single analysis on the circuit breaker. ABB Field Service Engineer performs a maintenance activity at the customer's site. The customer receives a complete Report with all the information about the installation conditions and the list of maintenance activities performed. The aging curve, which is included in all LEAP reports, shows the status of the circuit breaker pre and post intervention. The report also contains a list of recommended future maintenance actions.

**LEAP + PMP**  
Customer subscribes a multiyear maintenance contract with ABB. ABB Field Service Engineer performs maintenance according to the preventive maintenance program (2 time ordinary maintenance and 1 time extraordinary maintenance) but with the frequency suggested by LEAP analysis. If environmental conditions change (ie: Switchgear temperature is reduced due to an added air conditioning device), it is possible that even the maintenance frequency can change accordingly. The graphic representation shows how each maintenance activity has improved the life of the circuit-breaker throughout the course of time.



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9AKK105713A6013 - 05/2013