

Maintenance Concept for ABB UPSs

Maintenance Plan and Preventive Replacement Material



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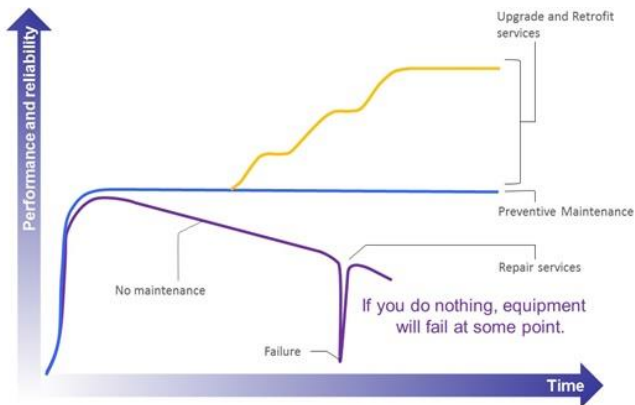
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Introduction

This document describes the benefits of a correct preventive maintenance, as well as the typical UPS life cycle and the consumable parts replacement for ABB's main UPS families.

Preventive Maintenance and reliability

Relation between electronic devices performance/reliability and maintenance



Performing the preventive maintenance not only keeps the performance stable and extends the life of the equipment, but also decreases the risk of failure. Moreover, planning a correct preventive maintenance leads to a reduction of system downtime and cost of replacement, and allows a better management of the spares inventory.

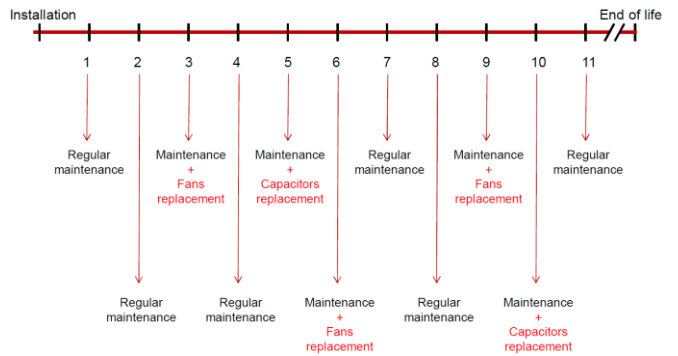
- Upgrade and retrofit services boost performance and maximize reliability
- ➡ Preventive maintenance ensures continuity of the system correct functionality
- Avoiding regular maintenance increases the probability of system malfunction

In case the preventive maintenance is not performed, the correct functioning of the equipment could be jeopardized.

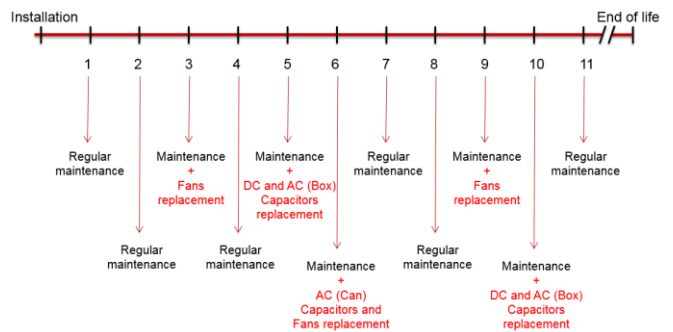
Typical UPS Life cycle

Whenever you want to keep system reliability and increase customer satisfaction, you need to perform the correct maintenance of your UPS.

The recommended maintenance model has been defined by the ABB factory in Quartino – Switzerland – based on the experience gathered over the last decade, and it is shown in the following chart: in addition to the regular maintenance (at least every year), we recommend to replace all fans once every three years and the power capacitors every five years.



Based on the experience, for AC "Can" capacitors (used for example as output filter in the PW33), the replacement interval can be extended to six years (instead of five). In this case, the maintenance model changes accordingly:



Example of AC Can capacitor:



The following tables show the consumable parts needed for each maintenance plan.

Recommended consumable parts for DPA D1M

Consumables for DPA D1M 10kVA

| Article nr. | Description | Quantity |
|-------------|---------------------------------------|----------|
| 00-4563 | Fan | 2 |
| 00-8635 | NW8060x1 Input filter capacitor board | 1 |
| 00-9320 | NW8063x1 AC capacitor board | 1 |
| 00-8646 | NW8030x3 DC capacitor board | 1 |

As an alternative to the entire DC capacitors board 00-8646, the 4 capacitors 00-0261 can be replaced:

| Article nr. | Article | Quantity |
|-------------|-------------------------|----------|
| 00-0261 | DC capacitor for 8030x3 | 4 |

Consumables for DPA D1M 15kVA

| Article nr. | Article | Quantity |
|-------------|---------------------------------------|----------|
| 00-4563 | Fan | 2 |
| 00-8635 | NW8060x1 Input filter capacitor board | 1 |
| 00-9322 | NW8063x2 AC capacitor board | 1 |
| 00-8634 | NW8030x1 DC capacitor board | 1 |

As an alternative to the entire DC capacitors board 00-8634, the 4 capacitors 00-4253 can be replaced:

| Article nr. | Article | Quantity |
|-------------|-------------------------|----------|
| 00-4253 | DC capacitor for 8030x1 | 4 |

Consumables for DPA D1M 20kVA

| Article nr. | Article | Quantity |
|-------------|--------------------------------------|----------|
| 00-7227 | Fan | 2 |
| 00-8615 | NW8060x Input filter capacitor board | 1 |
| 00-9322 | NW8063x2 AC capacitor board | 1 |
| 00-8643 | NW8030x2 DC capacitor board | 1 |

As an alternative to the entire DC capacitors board 00-8643, the 6 capacitors 00-4253 can be replaced:

| Article nr. | Article | Quantity |
|-------------|-------------------------|----------|
| 00-4253 | DC capacitor for 8030x2 | 6 |

Consumables for DPA D1M 25kVA

| Article nr. | Article | Quantity |
|-------------|--------------------------------------|----------|
| 00-7227 | Fan | 2 |
| 00-8615 | NW8060x Input filter capacitor board | 1 |
| 00-9319 | NW8063x AC capacitor board | 1 |
| 00-8617 | NW8030x DC capacitor board | 1 |

As an alternative to the entire DC capacitors board 00-8617, the 6 capacitors 00-4253 can be replaced:

| Article nr. | Article | Quantity |
|-------------|------------------------|----------|
| 00-4253 | DC capacitor for 8030x | 6 |

Recommended consumable parts for DPA D2M

Consumables for DPA D2M 30kVA

| Article nr. | Description | Quantity |
|-------------|---------------------------------------|----------|
| 00-4563 | Fan | 1 |
| 00-7475 | Fan | 1 |
| 00-8638 | NW8061x1 Input filter capacitor board | 1 |
| 00-9323 | NW8062x2 AC capacitor board | 1 |
| 00-8642 | NW8033x DC capacitor Board | 1 |

Consumables for DPA D2M 40kVA

| Article nr. | Description | Quantity |
|-------------|--------------------------------------|----------|
| 00-7227 | Fan | 1 |
| 00-7475 | Fan | 1 |
| 00-8625 | NW8061x Input filter capacitor board | 1 |
| 00-9321 | NW8062x1 AC capacitor board | 1 |
| 00-8640 | NW8031x1 DC capacitor Board | 1 |

Consumables for DPA D2M 50kVA

| Article nr. | Description | Quantity |
|-------------|--------------------------------------|----------|
| 00-7227 | Fan | 1 |
| 00-7475 | Fan | 1 |
| 00-8625 | NW8061x Input filter capacitor board | 1 |
| 00-9317 | NW8062x AC capacitor board | 1 |
| 00-8623 | NW8031x DC capacitor Board | 1 |

Recommended consumable parts for DPA D3M

Consumables for DPA D3M 30kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------------|----------|
| 00-7475 | Fan | 1 |
| 00-9161 | Fan | 1 |
| 04-2592 | NW26061x2 Input AC capacitor board | 1 |
| 04-2043 | NW24040x DC Capacitor board | 2 |

Consumables for DPA D3M 40kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------------|----------|
| 04-1463 | Fan | 1 |
| 00-9161 | Fan | 1 |
| 04-2591 | NW26061x1 Input AC capacitor board | 1 |
| 04-2658 | NW24041x DC Capacitor board | 2 |

Consumables for DPA D3M 50kVA

| Article nr. | Description | Quantity |
|-------------|-----------------------------------|----------|
| 04-1463 | Fan | 1 |
| 00-9161 | Fan | 1 |
| 04-2590 | NW26061x Input AC capacitor board | 1 |
| 04-2658 | NW24041x DC Capacitor board | 2 |

Recommended consumable parts for DPA Upscale

Consumables for DPA Upscale 10 kW

| Article nr. | Description | Quantity |
|-------------|-------------------------------|----------|
| 00-8938 | Fan | 1 |
| 00-3270 | Filter capacitor for NW20060x | 3 |
| 00-6828 | Filter capacitor for NW20060x | 3 |
| 00-9281 | DC capacitor for NW20023x1 | 2 |

Consumables for DPA Upscale 20 kW

| Article nr. | Description | Quantity |
|-------------|--------------------------------|----------|
| 00-9389 | Fan | 1 |
| 00-9334 | Filter capacitor for NW20060x1 | 3 |
| 00-6828 | Filter capacitor for NW20060x1 | 3 |
| 00-9281 | DC capacitor for NW20023x | 4 |

Recommended consumable parts for PowerScale

Consumables for PowerScale 10 kVA - Cabinet A and B

| Article nr. | Description | Quantity |
|-------------|---------------------------|----------|
| 00-8938 | Fan | 1 |
| 00-3270 | AC capacitor for NW20060x | 3 |
| 00-6828 | AC capacitor for NW20060x | 3 |
| 04-0475 | DC capacitor | 2 |

Consumables for PowerScale 15 kVA - Cabinet A and B

| Article nr. | Description | Quantity |
|-------------|----------------------------|----------|
| 00-8938 | Fan | 1 |
| 00-3270 | AC capacitor for NW20060x2 | 3 |
| 00-6828 | AC capacitor for NW20060x2 | 3 |
| 04-0475 | DC capacitor | 4 |

Consumables for PowerScale 20 kVA - Cabinet A and B

| Article nr. | Description | Quantity |
|-------------|----------------------------|----------|
| 00-9389 | Fan | 1 |
| 00-6828 | AC capacitor for NW20060x1 | 3 |
| 00-9334 | AC capacitor for NW20060x1 | 3 |
| 04-0475 | DC capacitor | 4 |

Consumables for PowerScale 25 kVA - Cabinet B

| Article nr. | Description | Quantity |
|-------------|----------------------------|----------|
| 00-9389 | Fan | 1 |
| 00-6828 | AC capacitor for NW20060x3 | 3 |
| 00-9334 | AC capacitor for NW20060x3 | 3 |
| 04-0475 | DC capacitor | 4 |

Consumables for PowerScale 25 kVA - Cabinet C

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-1463 | Fan | 1 |
| 00-6828 | AC capacitor for NW24060x | 3 |
| 00-9334 | AC capacitor for NW24060x | 3 |
| 04-3345 | NW24040x2 DC Capacitor Board | 2 |

Consumables for PowerScale 30 kVA - Cabinet C

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-1463 | Fan | 1 |
| 00-6828 | AC capacitor for NW24060x1 | 9 |
| 00-9334 | AC capacitor for NW24060x1 | 3 |
| 04-2042 | NW24040x1 DC Capacitor Board | 2 |

Consumables for PowerScale 40 kVA - Cabinet C

| Article nr. | Description | Quantity |
|-------------|-----------------------------|----------|
| 04-1463 | Fan | 1 |
| 00-6828 | AC capacitor for NW24060x1 | 9 |
| 00-9334 | AC capacitor for NW24060x1 | 3 |
| 04-2043 | NW24040x DC Capacitor Board | 2 |

Consumables for PowerScale 50 kVA - Cabinet C

| Article nr. | Description | Quantity |
|-------------|-----------------------------|----------|
| 04-1463 | Fan | 1 |
| 00-6828 | AC capacitor for NW24060x2 | 6 |
| 00-9334 | AC capacitor for NW24060x2 | 6 |
| 04-2043 | NW24040x DC Capacitor Board | 2 |

Recommended consumable parts for PW33

Note: the AC output capacitors are "Can" capacitors and the recommended replacement interval is 6 years

Consumables for PW33 60kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-0937 | Inverter Fan Kit | 1 |
| 00-0230 | Bypass Fan | 1 |
| 00-9543 | NW22061x2 Input filter board | 1 |
| 00-4005 | AC Output capacitor | 3 |
| 00-5384 | DC Capacitor | 4 |

Consumables for PW33 80kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-0941 | Inverter Fan Kit | 1 |
| 00-0230 | Bypass Fan | 1 |
| 00-9543 | NW22061x2 Input filter board | 1 |
| 00-0366 | AC Output capacitor | 3 |
| 00-5384 | DC Capacitor | 4 |

Consumables for PW33 100kVA

| Article nr. | Description | Quantity |
|-------------|-----------------------------|----------|
| 04-0941 | Inverter Fan Kit | 1 |
| 00-9163 | Bypass Fan | 1 |
| 00-9034 | NW22061x Input filter board | 1 |
| 00-0366 | AC Output capacitor | 3 |
| 00-5384 | DC Capacitor | 6 |

Consumables for PW33 120kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-0948 | Inverter Fan Kit | 1 |
| 00-9163 | Bypass Fan | 1 |
| 04-0149 | NW22063x2 Input filter board | 1 |
| 00-4005 | AC Output capacitor | 6 |
| 00-5384 | DC Capacitor | 6 |

Consumables for PW33 160kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-0948 | Inverter Fan Kit | 1 |
| 00-9163 | Bypass Fan | 1 |
| 04-0148 | NW22063x1 Input filter board | 1 |
| 00-0366 | AC Output capacitor | 6 |
| 00-5384 | DC Capacitor | 8 |

Consumables for PW33 200kVA

| Article nr. | Description | Quantity |
|-------------|-----------------------------|----------|
| 04-0948 | Inverter Fan Kit | 1 |
| 00-9163 | Bypass Fan | 1 |
| 00-9466 | NW22063x Input filter board | 1 |
| 00-0366 | AC Output capacitor | 6 |
| 00-5384 | DC Capacitor | 10 |

Consumables for PW33 250kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-1159 | Inverter Fan Kit | 1 |
| 00-9163 | Bypass Fan | 1 |
| 04-0975 | NW22065x1 Input filter board | 3 |
| 00-0366 | AC Output capacitor | 9 |
| 00-5384 | DC Capacitor | 14 |

Consumables for PW33 300kVA

| Article nr. | Description | Quantity |
|-------------|-----------------------------|----------|
| 04-1159 | Inverter Fan Kit | 1 |
| 04-1334 | Bypass Fan | 1 |
| 04-0970 | NW22065x Input filter board | 3 |
| 00-0366 | AC Output capacitor | 9 |
| 00-5384 | DC Capacitor | 18 |

Consumables for PW33 400kVA

| Article nr. | Description | Quantity |
|-------------|------------------------------|----------|
| 04-2187 | Bypass Fan Kit | 1 |
| 04-2188 | Inverter Fan Kit | 3 |
| 04-2186 | Coil Fan Kit | 1 |
| 04-2329 | NW22067x1 Input filter board | 3 |
| 00-0366 | AC Output capacitor | 12 |
| 00-5384 | DC Capacitor | 24 |

Consumables for PW33 500kVA

| Article nr. | Description | Quantity |
|-------------|-----------------------------|----------|
| 04-2187 | Bypass Fan Kit | 1 |
| 04-2188 | Inverter Fan Kit | 3 |
| 04-2186 | Coil Fan Kit | 1 |
| 04-1979 | NW22067x Input filter board | 3 |
| 00-0366 | AC Output capacitor | 15 |
| 00-5384 | DC Capacitor | 30 |

Recommended consumable parts for DPA500 / DPA500 UL

Consumables for DPA500

| Article nr. | Description | Quantity |
|-----------------|---------------------------------|----------|
| 00-9162 | Fan - Active M | 3 |
| 04-3427 | Fan - Passive M | 3 |
| 4NWP100455R0001 | NW28061x Input Filter Passive M | 1 |
| 4NWP100456R0001 | NW28060x AC caps Passive M | 1 |
| 4NWP100463R0001 | NW28032x DC caps Active M | 1 |

Consumables for DPA500 UL

| Article nr. | Description | Quantity |
|-----------------|----------------------------------|----------|
| 00-9162 | Fan - Active M | 3 |
| 04-3427 | Fan - Passive M | 3 |
| 4NWP101838R0001 | NW28061x1 Input Filter Passive M | 1 |
| 4NWP101837R0001 | NW28060x1 AC caps Passive M | 1 |
| 4NWP100463R0001 | NW28032x DC caps Active M | 1 |

Recommended consumable parts for PW33 S3

Consumables for PW33 S3 60 kW

| Article nr. | Description | Quantity |
|-----------------|-------------------------|----------|
| 00-9161 | Fan | 2 |
| 00-9162 | Fan | 3 |
| 4NWP100984R0001 | NW28032x1 DC capacitors | 1 |
| 4NWP100990R0001 | NW30060x I/O Filter | 1 |

Consumables for PW33 S3 80 kW

| Article nr. | Description | Quantity |
|-----------------|-------------------------|----------|
| 00-9161 | Fan | 2 |
| 00-9162 | Fan | 2 |
| 4NWP100985R0001 | NW28032x2 DC capacitors | 1 |
| 4NWP100991R0001 | NW30060x1 I/O Filter | 1 |

Consumables for PW33 S3 100 kW

| Article nr. | Description | Quantity |
|-----------------|-------------------------|----------|
| 00-9161 | Fan | 5 |
| 4NWP100986R0001 | NW28032x3 DC capacitors | 1 |
| 4NWP100992R0001 | NW30060x2 I/O Filter | 1 |

Consumables for PW33 S3 120 kW

| Article nr. | Description | Quantity |
|-----------------|-------------------------|----------|
| 00-9161 | Fan | 2 |
| 00-9162 | Fan | 3 |
| 4NWP100987R0001 | NW28032x4 DC capacitors | 1 |
| 4NWP100993R0001 | NW30060x3 I/O Filter | 1 |

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