



# GENERAL MAINTENANCE OF MV7

Helps reducing your maintenance cost and preventing unplanned outages

MV drives are one of the critical power components of your plant. They can have high influence on your plant operation control. No / inadequate maintenance over a period could allow the deforming factors to magnify its effects on your drive and end up with substandard performance, unexpected breakdowns, insupportable OPEX, insufficient critical spares etc. – that’s why a periodical maintenance of your MV7 drives will help you expand the performance of your operations.

## HOW DO WE DO IT?

- Performing and recording preventive actions
- Identifying safety critical and operational critical issues
- Submitting reports with appropriate recommendations

We offer structured inspections and planned maintenance programs geared to the operating environment of the drives, to help reduce the cost of maintenance and risk of failures.

We offer four types of preventive maintenance programs:

### 1. Preventive “performance” maintenance

Annual, including visual inspection, performance checks, and basic maintenance tasks.

### 2. Preventive “extended performance” maintenance

Every three years, including visual inspection, performance checks, and extended maintenance activities.

### 3. Preventive “major” maintenance

Once every 5 years, including advanced visual inspections and performance checks and first systematic replacement of parts based on ageing.

### 4. Preventive “lifecycle” maintenance

Every 10 years, major maintenance extended by systematic lifecycle replacement of parts and components from cooling and power cubicles.





# OUR MAINTENANCE PROCESS

Tailored to the needs of your plant – step by step

**Step 1 – Performing and recording preventive actions.** Preventive actions include a prescribed schedule of checks/tests for

(1) Drive inspection and health checks to assess the present condition of your drives

- **Visual inspection:** leakages, heating, wiring
- **Cleaning:** cabinets cleaning, filter cleaning or replacement
- **Measurements:** power supply, temperature, pressure, flow and resistivity
- **Functional checks:** fans, pumps, heat exchanger, insulation, and restart record
- **Safety devices check:** breaks, transformer, cable lugs & terminal connection tightness

(2) Air-/water cooling system maintenance

(3) Process cabinets & controller equipment maintenance (e.g., drive controller, DFE rectifier, AFE inverter, DC Bus, output filters, etc.)

**Step 2 – Identifying safety critical & operational critical issues.** Operational & safety critical issues identified will be brought to your attention and resolution proposed. On safety critical scenarios, we also offer prioritized dispatch of the required parts to attend the issue and if necessary, the field service engineer will remain on site or return to site to supervise the solution.

**Step 3 – Submitting reports with appropriate recommendations** – for improved safety and better performance of your critical power equipment





# MAINTENANCE CONFIGURATIONS <sup>1/2</sup>

Operation description	Every				
	1Y	3Y	5Y	10Y	15Y
Record drive document data with revision status and serial number	x				
Event logs & History retrieval					
Software version, date, status, storage with HTTP_infos	x				
<b>General maintenance activities on all cubicles</b>					
Visual check(leak, heating, wiring, corrosion)	x				
Visual inspection optical fiber	x				
Check operation of interlock system	x				
Cleaning door filter (change if required)	x				
Check fan operation (current measurement, insulation, noise, rotation)	x				
Change fan			x		
Check flap (operation, hinges)	x				
Check electrical connection	x				
Check heater operation	x				
Change water cooling hoses (Parker type)					x
<b>Control local converter (CLC)</b>					
Check auxiliary power supply (current measurement)	x				
CPU battery replacement		x	x	x	x
Clean electronic board	x				
Replace watch dog relay			x		
<b>Cooling unit (CCU)</b>					
Check water connections are tightened	x				
Handle of valve to prevent seizure			x	x	x
Check sensor valuers (temperature, pressure, flow, conductivity)	x				
Clean water filter		x			
Check leakage detector	x				
Pumps functional check: current measurement, isolation, no noise		x			
Water cooling pump (1st and 2nd): Test of pump swap when low flow is detected. If redundant pump option		x	x	x	x
Water analysis (external lab)	x				
Record pumps operating time	x				
Check the operation of the 3-way valve	x				
Check the setting of the three-way valve			x		
Expansion tank pressure control (inflate if required)	x				
Change expansion tank membrane			x		



# MAINTENANCE CONFIGURATIONS 2/2

Operation description	Every				
	1Y	3Y	5Y	10Y	15Y
Check solenoid valve control (if present in the cooling unit)			X		
Change the solenoid valve (if present in the cooling unit)			X		
Pressure test at 6 bars and check leakage			X	X	
Replace deionized cartridge when it used	X	X	X	X	
Change deionized cartridge	X				
Replace deionized water pump			X	X	X
Change deionized water when glycol (or equivalent) is used			X	X	X
Change deionized water				X	
Change sensors					X
Change deionized water pump			X		
<b>High Voltage cabinet</b>					
Clean electronic board	X				
Power stack : check tightening with washer	X				
IGBT/diode impedance measurement		X	X		
Inverter snubber capacitors measurement		X	X	X	X
DC capacitors measurement			X	X	X
DFE capacitors measurement			X	X	X
Check measurement loop by injection (current, voltage, DFE network, pre-charge)			X	X	X
Check DC Capacitor leakage (when oil type)			X		
DC bus charge/discharge and time recording		X			
Check and regrease earthing / isolating switch contact	X				
Check grounding resistor value			X		
Pulses test on IGBT			X		
Insulation measurement			X		
Check IGBT power supply (fault feedback)			X		
Check power supply			X		
Change IGBT snubber capacitor			X	X	X
Special NPC MV7612/MV7616 : change IGBT snubber capacitor		X			
Replace Energy storage capacitor			X		
Replace Power Supply					X
Replace DC Bus capacitors					X
Replace DFE snubber capacitor				X	
Replace dv/dt capacitor			X	X	X



# SUPPLEMENTARY OFFERING

We also recommend the following services along with the report

## Critical spare parts

List of critical spares will be suggested to manage your unexpected breakdowns efficiently and optimize your inventory for spare parts.

## Replacement parts\*

Based on the performance of existing components of MV drives and lifecycle status replacement parts will be suggested as a form-fit-function replacement.

## Proactive performance enhancement packages\*\*

To stick with state-of-the-art protection and safety technologies to enhance the efficiency, performance and life-span of your MV drives.

## How does it provide lasting advantages for customers?

Unlike a basic level of maintenance, this is a comprehensive program with appropriate measuring tools to monitor various component's operating ranges. This empowers customers to understand the status of their MV drives and to proactively maintain them, it helps in reducing unexpected breakdowns and helps save operational expenses (OPEX). Additionally, it establishes a baseline reference for future plant expansions or upgrades.

## Contact us:

[services.powerconversion@ge.com](mailto:services.powerconversion@ge.com)



\* Power Conversion offers a lifecycle management including 'last time buy' notifications to mitigate critical impacts and obsolescence risk; \*\* Power Conversion offers various smaller upgrades to its MV7 drives as a part of our proactive maintenance. This enables a cost effective and phased approach to upgrade your MV7 drives to the latest stage without replacing them completely. Power Conversion recommends a detailed maintenance schedule for each part of MV7 drives.

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