

# Electrical Preventive Maintenance Checklist

## Frequency-Based Industrial Maintenance Template

### General Information

Facility / Site: \_\_\_\_\_

Department / Area: \_\_\_\_\_

Equipment / System: \_\_\_\_\_

Asset ID: \_\_\_\_\_

Location: \_\_\_\_\_

Work Order Number: \_\_\_\_\_

### Maintenance Type

- Preventive Maintenance
- Compliance Inspection
- Condition Based Maintenance
- Corrective Follow-Up

Date: \_\_\_\_\_

Start Time: \_\_\_\_\_

End Time: \_\_\_\_\_

Technician Name: \_\_\_\_\_

Supervisor: \_\_\_\_\_

## Environmental Conditions

- Normal
- High Temperature
- Humidity
- Dust
- Corrosive Atmosphere
- Outdoor

## Safety Verification Before Maintenance

- Lockout Tagout procedures applied
- Absence of voltage verified
- Proper PPE worn according to risk assessment
- Arc flash boundaries respected
- Work permits issued if required
- Equipment grounded where necessary
- Safe access confirmed

Reference Standards: NFPA 70E, OSHA 1910, IEC 50110, ISO 45001

## Daily Inspections

Daily inspections focus on early detection of hazards and abnormal conditions.

- Visual inspection for exposed wires or damage
- Check for burning smell or overheating signs
- Verify equipment operating normally
- Observe abnormal noise or vibration
- Check alarm indicators and warning lights
- Confirm electrical rooms are clean and accessible
- Verify no water intrusion or moisture present
- Ensure panels and disconnects are accessible
- Check emergency lighting operational status

## Weekly Tasks

Weekly checks confirm system stability and detect developing issues.

- Functional verification of critical equipment
- Check control panels for fault indicators
- Inspect power distribution boards
- Verify cooling fans and ventilation operation
- Inspect visible grounding connections
- Check UPS status indicators
- Test emergency generator start sequence (no load if required)
- Review abnormal power consumption trends if monitoring available

## Monthly Maintenance

Monthly inspections include deeper verification and preventive care.

- Inspect electrical panels for loose connections
- Check for corrosion, moisture, contamination
- Inspect cable insulation condition
- Clean dust and debris from enclosures
- Test residual current devices and ground fault protection
- Inspect surge protection devices
- Verify labeling and identification accuracy
- Inspect cable trays and conduit systems
- Inspect contactors and relays for wear
- Verify equipment grounding continuity
- Inspect battery systems visually
- Check lighting systems and replace failed lamps
- Inspect motor control centers
- Verify environmental conditions inside panels

Reference Standards: IEC 61439, NFPA 70, IEC 60204

## Quarterly Maintenance

Quarterly tasks include diagnostic testing and preventive adjustments.

- Infrared thermography of panels and connections
- Measure voltage and current imbalance
- Insulation resistance testing where applicable
- Functional exercise of circuit breakers
- Inspect grounding and bonding systems
- Load measurement and balancing verification
- Inspect transformers for abnormal temperature
- Verify protective device coordination alignment
- Inspect mechanical integrity of mounting systems
- Check ventilation and cooling systems

Reference Standards: IEEE 3007, IEC 61557, NFPA 70B

## Semi-Annual Tasks (Optional Depending on Equipment)

- Calibration of measurement instruments
- Detailed inspection of switchgear components
- Functional testing of interlocks and safety circuits
- UPS battery impedance testing
- Verification of automatic transfer switches
- Inspection of busbar connections
- Detailed inspection of motors and drives

## Annual Maintenance

Annual maintenance includes comprehensive system verification.

- Complete electrical safety inspection
- Testing of protective relays and trip functions
- Primary or secondary injection testing of breakers
- Ground resistance measurement
- Insulation resistance testing of feeders and motors
- Load testing under operating conditions
- Detailed cleaning of switchgear and panels
- Inspection of transformers internally if required
- Generator load bank testing
- Arc flash mitigation system testing
- Verification of emergency systems
- Review of maintenance strategy effectiveness
- Update single line diagrams and documentation
- Review spare parts inventory

Reference Standards: NFPA 70B, IEEE, IEC

## Multi-Year Requirements (3-5 Year Intervals)

- Short circuit analysis review
- Protective device coordination study
- Arc flash risk assessment update
- Comprehensive power system assessment
- Grounding system detailed testing
- Replacement planning for aging equipment
- Reliability assessment and lifecycle review

Reference Standards: NFPA 70B, IEEE 1584, IEC Standards

## Equipment Specific Checks

### Electrical Panels and Switchgear

- Inspect for overheating or discoloration
- Verify torque of connections
- Check mechanical operation of breakers
- Inspect insulation condition
- Remove dust and contamination

### Wiring and Cables

- Inspect insulation integrity
- Check routing and support
- Inspect for mechanical damage
- Verify proper separation from heat sources

### Motors and Drives

- Check electrical connections
- Measure voltage and current
- Monitor temperature
- Inspect grounding
- Verify overload protection

### UPS and Backup Power

- Battery condition verified
- Terminals clean and tight
- Transfer switch functional
- System alarms operational

## Documentation and Compliance

- Maintenance results recorded
- Test values documented
- Deviations identified
- Corrective actions initiated
- Photos captured if required
- Calibration certificates verified
- Regulatory compliance confirmed
- Maintenance history updated

Reference Standards: ISO 9001, ISO 55001, OSHA

## Defects and Observations

Severity

- Low
- Medium
- High
- Critical

## Corrective Actions

Responsible Person: \_\_\_\_\_

Target Date: \_\_\_\_\_

## Maintenance Summary

### Overall Condition

- Excellent
- Good
- Acceptable
- Needs Attention
- Critical

### Equipment Safe for Operation

- Yes
- No

Next Maintenance Due Date: \_\_\_\_\_

## Signatures

### Technician

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Supervisor

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### Client Representative (optional)

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Disclaimer

This checklist is intended for use by qualified personnel. Users are responsible for ensuring compliance with all applicable standards, regulations, and manufacturer recommendations. The checklist must be adapted to specific equipment and operating conditions.