



Bangladesh Power Development Board
INTEGRATED MANAGEMENT SYSTEM
(BASED ON ISO 9001:2015, ISO 14001:2015 & ISO
45001:2018 STANDARDS)

PROCEDURE FOR ELECTRICAL MAINTENANCE- GAS
TURBINE



INTEGRATED MANAGEMENT SYSTEM

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PROCEDURE FOR ELECTRICAL MAINTENANCE – GAS TURBINE

1.0 Purpose

- a. To establish effective electrical maintenance system for the plant and machinery to ensure continuing process capability
- b. To plan and implement electrical maintenance

2.0 Scope

Applies to whole of Integrated Management System of Bangladesh Power Development Board (BPDB).

3.0 Terms & Definition

Definition

None

Abbreviations

BPDB- Bangladesh Power Development Board
MR- Management Representative

4.0 Roles and Responsibility

Tasks in Reference Clause nos.	Responsibility
5.1.1, 5.1.2, 5.1.3, 5.2	Head of electrical maintenance, Concerned technical staff, SDE/AE/SAE
5.3	MR/ Head of the plant

5.0 Procedure

5.1 Plan of the maintenance procedures

- Following 3 types of maintenance is carried out
 - Breakdown maintenance
 - Schedule maintenance
 - Preventive maintenance

5.1.1 Breakdown Maintenance

On-Load

Off-Load

- Concerned operation unit report breakdown or abnormality
- Job allocated to concerned official
- Concerned technician/ official/ engineer check the facility and assess the maintenance task

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- Maintenance task is approved
- If the maintenance can be done on –load, then it is carried out
- If the maintenance of repair requires to be carried out off load, permission of the concerned authority is taken
- Maintenance work is carried out accordingly
- On completion of Maintenance work, required checking is carried out.
- Maintenance work is recorded

5.1.2 Schedule Maintenance

- Seek permit from operation department on schedule issue
- Operation gives permit after isolation
- Respective maintenance is done as per procedure following the operation and maintenance manual
- Maintenance of the items given by operation through defect list.

5.1.3 Preventive maintenance

- Prepare long-term preventive maintenance plan , at least for 3 years for major facilities
- Concerned authority approves preventive maintenance plan
- Resources and spares are mobilized to carryout preventive maintenance
- Where applicable, plant shutdown is solicited
- Plan/ Scheduled maintenance is modified to adjust with the approval of shut down
- Maintenance work is carried out following approved plan
- Necessary checks are performed after maintenance work

5.2 Maintenance Records

- All maintenance jobs are recorded in maintenance log book
- Machine history cards are maintained and maintenance records, specially breakdown reports, are recorded.
- Equipment check list are prepared and carrying out routine checks

5.3 Implementation and Internal Audit

- Procedure for Maintenance and its effectiveness after implementation will be checked and reviewed during internal audits.
- Actions are taken on the basis of review.

5.4 Environmental Aspect, Impact & Controls

Any activity at the plant, whether it is carried out for ensuring quality of service or meeting requirement of the interested parties, there will be some environmental

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aspects associated with it. It is a requirement of the IMS of BPDB to identify those environmental aspects, evaluate their impact and determine necessary controls. While carrying out the activities and operation, the employees of BPDB need to exercise appropriate and predetermined controls so as to prevent or mitigate any adverse impact that may be associated with the activity or the process. Some examples of environmental aspects associated with the Procedure for Electrical Maintenance-Gas Turbine are as below:

SI Nos.	Aspect	Impact	Controls
1.	Solid Waste(wires, plastics)	Pollution	1. Follow the waste management plan
2.	Discarding of Rare Earth Metals	Depletion of Resource	1. Follow the waste management plan
3.	Transformer Oil Disposal	Soil pollution	1. Work and dispose as per the chemical disposal plan
4.	Use of Chemical	Soil / Water Pollution	1. Work and dispose as per the chemical disposal plan 2. Provide Necessary Training
5.	Packaging Disposal	Waste Generation	1. Follow the waste management plan
6.	Paper Use	Natural resource depletion	1. Reuse of Paper with the blank side
7.	Chemical Filled Cloth (Jute)	Water / Soil Pollution	1. Follow the waste management plan

The table above provides examples only. The IMS team of each site needs to identify the aspect impact and controls related to specific activities and ensures that the environmental performance of the organization is effectively maintained. For this purpose, the procedure “Environmental Aspect Impact Assessment Procedure” is to be followed and forms “Environmental Aspect Impact Register” is to be filled up by the IMS team.

5.5 OHS Hazard, Risk & Controls

Any activity at the plant, whether it is carried out for ensuring quality of service or meeting requirement of the interested parties, there will be some occupational hazards with it related to the occupational health and safety (OHS) to the workers and employees. It is a requirement of the IMS of BPDB to identify those OHS hazards and determine necessary controls.

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While carrying out the activities and operation, the employees of BPDB need to exercise appropriate and predetermined controls so as to prevent or mitigate any adverse consequence that may be associated with the activity or the process.

Some examples of OHS hazards and with the Procedure for Electrical Maintenance- Gas Turbine are as below:

SI Nos.	OHS Hazard	Controls
1.	Soldering	1. Provide Necessary training 2. Maintain adequate PPE whilst at worksite 3. Ensure a Permit to Work is issued as per guidance before personnel is sent for work
2.	Energized Components	1. Completely de-energizing equipment, conductors or circuits before an employee begins work 2. Maintain adequate PPE whilst at worksite 3. Ensure a Permit to Work is issued as per guidance before personnel is sent for work
3.	Failure of PTW Process	1. Provide Necessary Training 2. Active Supervision of activity
4.	Wrong Use of tools	1. Provide Necessary Training 2. Active Supervision of activity
5.	Wrong use of Lifting equipment	1. Provide Necessary Training 2. Active Supervision of activity. 3. Maintain adequate PPE whilst at worksite
6.	Dropped object	1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
7.	Fall	1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
8.	Expose to Chemicals	1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
9.	Entrapment	1. Provide Necessary Training 2. Active Supervision of activity. 3. Maintain adequate PPE whilst at worksite
10.	Cold Burn	1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite
11.	Chemical Burn	1. Provide Necessary Training 2. Maintain adequate PPE whilst at worksite 3. Maintain adequate housekeeping
12.	Manual Handling	1. Provide Necessary Training
13.	Electric Shock	1. Ensure a Permit to Work is issued as per guidance before personnel is sent for work 2. Maintain LOTO Procedure 3. Maintain adequate PPE whilst at worksite

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14.	Wrong Startup	1. Alarm 2. Ensure a Permit to Work is issued as per guidance before personnel is sent for work
15.	Improper re-assembly of equipment	1. Provide Necessary Training 2. Active Supervision of activity

The table above provides examples only. The IMS team of each site needs to identify the OHS hazards and necessary controls related to specific activities and ensures that the environmental performance of the organization is effectively maintained. For this, the procedure Hazard Identification and Risk Assessment Procedure is to be followed and Hazard Identification and Risk Assessment Register is to be filled up by the IMS team.

6.0 References

- Operation and maintenance manuals, Gas turbine inspection and maintenance instructions
- Defect list from operation
- Report

7.0 Appendix

None

8.0 Revision History

SI No.	Revision Number	Section	Change Made	Date of Revision

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