3.17 Inspection of Factory Equipment and Facilities DISI

Before connection to infrastructure utilities, the Investor shall have Electricity and Boiler Systems inspected by DISI. The inspection is to be carried out by KMIC and DISI officials.

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| **Documents needed:** |
|  | 1 | Application Form for Design Approval of Power System |
| 2 | Electricity Installation Plan |
| **Procedures:** |
|  | 1 | The Investor shall submit the Application for Design Approval of Power System to DISI. |
| 2 | DISI will issue Approval Letter for Electrical Design (within 10 days) to the Investor. |
| 3 | Next, the Investor shall submit Electricity Installation Plan, with the Approval Letter. |
| 4 | When the electricity inspection is completed and no defect is found, DISI will provide Electricity Certificate. |
| 5 | The procedure above for Electricity Inspection shall be followed for Boiler Inspection and obtaining Boiler Certificate. |
| **Fee:** |
|  | Inspection fees have to be paid. |

**The same procedure is practiced for both Electricity Inspection and Boiler Inspection.**

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| **MORE** |

 3.17.1 Procedure regarding Electricity Inspection

 3.17.2 Procedure regarding Boiler Inspection

 3.17.3 List of forms (Electricity and Boiler)

**q**

 3.17.1 Procedure regarding Electricity Inspection

**Issuance of Electricity Certificate**

There are 7 steps in the procedures regarding electricity installation and energization up to the renewal of the Electricity Certificate.

1

2

3

Approval for power connection design

Submission of

Information Sheet on Electricity Installation Plan

Power system installation works and connection to Common Power System

Power

installation

and

energization

7

4

Electricity inspection

Renewal of

Electricity Certificate

6

5

Issuance of Electricity Certificate

Power Energizing

 **Approval for Power Connection Design**

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| **Documents needed:** (3 original sets in hard copy) |
|  | 1 | Cover Letter of design approval for power connection design  |
| 2 | Cover Sheet and Format (Application for Power Connection Design Approval)  |
| 3 | Single line diagram including:  |
|  | -- Transformer capacity  |
|  | -- CT and PT specification for metering and protection |
| 4 | Drawing of layout plan of incoming power cable from tapping point to Main Distribution Board (MDB)  |
| 5 | Drawings of site plan showing locations of substation, electrical room and generator room  |
| 6 | Detailed drawings of 33kV switchgear panel with its specification |
| 7 | Technical specification of over-current and earth fault relay  |
| 8 | Declaration of relay operating time during short circuit and earth fault  |
| 9 | Load list |
| 10 | Calculation and Analysis of Harmonics and Voltage Flicker  |
| 11 | Schedule of installation works including power energizing date  |
| **Documents needed:**  |
|  | If all the documents are complete and facts are confirmed, Approval letter for Power Connection Design is issued. |
| KMIC also checks whether the facts are in compliance with the KMIC Internal Management Regulations. |

 **Submission of Information Sheet on Electricity Installation Plan**

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| **Documents needed:** (2 original sets in hard copy) |
|  | 1 | Covering Letter for Information Sheet  |
| 2 | Information Sheet for Electricity Installation Plan |
| 3 | The Approval Letter for Power Connection Design with approved documents and drawings  |
| 4 | Other items required by DISI |
| **Procedure:** |
|  | When all the documents are accepted, it is sealed “Approved” on the application form, which is returned to the applicant. |
| **Remark:** |
|  | The Applicant shall submit the following documents for the certified electricians who are involved in the planned electricity installation work.  |
| In case of Myanmar electrician: |
| 1 | A copy of license |
| In case of non-Myanmar architect |
| 1 | CV (including the details of experience in professional works, academic career) |
| 2 | Statement on the Experiences in Similar Projects  |
| 3 | A copy of license |

**Power system installation works and connection to common KMIC power system**

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| **Documents needed:**  |
|  | 1 | Information Sheet stamped “RECEIVED” |
| **Procedure:** |
|  | 1 | Once DISI receives the Information Sheet, the applicant may commence the installation works. |
| 2 | The Applicant shall submit a request for power outage for connection to the KMIC common power system at least 30 days prior to the connection date.  |

 **Electricity Inspection**

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| **Documents needed:**  |
|  | 1 | Application Form for Electricity Inspection  |
| 2 | Documents related to Transformer Electricity Inspection and Transformer specification  |
|  | -- Relay specification -- Circuit breaker specification -- Gas Circuit Breaker specification |
| 3 | Documents related to Internal Wire Electricity Inspection  |
|  | -- List of equipment -- As-built drawing of one-line diagram signed by authorized electrician -- As-built drawing of machine layout -- As-built drawing of main switchboard or main control panel -- Earthing system |
| 4 | Documents related Generator Electricity Inspection -- Generator specification -- Relay specification -- Circuit breaker specification  |
| 5 | Other items such as testing reports prepared by the applicant  |
| **Procedure:** |
|  | 1 | The applicant submits an application form for Implementation of Electricity Inspection either in person or online at least 10 days prior to the scheduled inspection date.  |
| 2 | DISI and KMIC officials visit the project site of the applicant and confirm the progress of electricity works. |
| 3 | Based on the result of project site visit, DISI decides and informs the inspection date, and the name of Inspector with items to be inspected to the applicant within 3 days after the receiving the application.  |
| 4 | The Inspectors conduct the Electricity Inspection at the project site with attendance of the registered electrician, the contractor and the person in charge of the Applicant.  |
| 5 | The Inspectors prepare and finalize the Record of Electricity Inspection with comments and instructions.  |
| 6 | After receiving the invoice on electricity inspection, the applicant pays the electricity inspection fee. |
| **Time frame:** |
|  | Electricity Inspection: within fourteen (14) days after receiving the application |
| Record of Inspection: within three (3) days after the Electricity Inspection  |

 **Issuance of Electricity Certificate**

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| **Procedure:** |
|  | When the Electricity Inspection is passed, DISI issues “Electricity Certificate”.  |
| **Note:** |
|  | The Electricity Certificate is valid for one year from the date of issue. |

 **Power energizing by DISI**

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| **Procedure:** |
|  | The applicant has to submit an application letter to DISI for power energization within 3 days before the requested power energization date. |

 **Renewal of Electricity Certificate**

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| **Documents needed:** |
|  | 1 | Application letter for renewal of Electricity Certificate |
| 2 | Other items such as the periodical monitoring report for electricity prepared by the Applicant.  |
| **Procedure:** |
|  | 1 | The Applicant submits a request letter for renewal of Electricity Certificate either in person or online at least 20 days prior to the expiry date of the existing Electricity Certificate.  |
| 2 | DISI reviews the submitted documents together and discuss the necessity of Electricity Inspection.  |
| 3 | If the electricity inspection is necessary: |
|  | 1 | DISI informs the actual date of Electricity Inspection and the name of Inspector with items to be inspected to the Applicant within 3 days after the receiving the request.  |
| 2 | The Inspectors conduct the Electricity Inspection at the Project Site according to the items to be inspected with attendance of the Electrician, the Contractor and the person in charge of the Applicant in the following order.  |
| 3 | The Inspectors prepare the Record of Electricity Inspection with the comments and instructions.  |
| 4 | When the Electricity Inspection is passed, DISI issues “Electricity Certificate”.  |
| If the electricity inspection is necessary: |
| 1 | DISI issues “Electricity Certificate”. |
| **Remark:** |
|  | The Electricity Certificate is valid for one year. |

 Inspected items for Electricity Inspection

 Transformer electricity inspection

 1 **Insulation resistance test:** Between RMU to high-voltage incoming panel; High-voltage incoming panel to transformer

 2 **Potential transformer:** Voltage range, specification, capacity check

 3 **Earthing System:** High voltage panel earthing system

 4 **Relay:** Earth fault relay and over-current relay testing for high voltage panel

 5 **High potential test:** Transformer primary and secondary side

 6 **Transformer oil level and substance:** To check the level of oil and substance

 7 **Feeder connection test:** Torque test for bolt tightening at all cable connection point

 8 **Visual test:** Termination connection kit /CT/VT setting

 9 Other items required by DISI

 Internal wire electricity inspection

1 **Earth resistance test:** Electrical room

2 **Insulation resistance test:** Main Switch Board, low-voltage local panel

3 **Phase sequence test:** Testing in Main Switch Board

4 **Earth fault relay test:** Main Switch Board, low-voltage local panel

5 **Visual test:** Grounding system for electrical panel and machinery; Cable connection condition in every electrical panel; Cable connection condition for mechanical equipment; Metering device working condition check

6 Other inspection items including tests required by DISI

 General electricity inspection

 1 Generator —

 1 Wiring system —

 1 Earthing system —

 1 Relay —

 1 Other items required by Desk 2 (Construction)

 3.17.2 Procedure regarding Boiler Inspection

 **Submission of Boiler Installation Plan**

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| **Documents needed:** (2 original sets in hard copy) |
|  | 1 | Covering letter for Boiler Installation Plan  |
| 2 | Information Sheet for Boiler Installation Plan  |
| 3 | Certificate of Manufacturing Inspection by an inspection authority  |
| 4 | Certificate of Product by a manufacturer  |
| 5 | Certificate of manufacturing and testing by a steel maker  |
| 6 | Material Certificate of physical and chemical properties |
| 7 | Detailed drawing of boiler (scale 1:20 for large boilers and 1:10 for small boilers)  |
| 8 | Drawings for the Layout Plan of boiler installation in a factory (including boiler room, if any)  |
| 9 | List of equipment / parts for mounting and fittings |
|  | – | Safety valve capable of relieving the maximum evapo-ration of the boiler  |
| – | Two means of indicating the water level |
| – | A steam pressure gauge |
| – | A steam stop valve |
| – | A feed check valve |
| – | One feed apparatus (when heating surface exceeds 200 sq-ft, two independent feed apparatus are needed).  |
| – | A blowdown cock or valve |
| – | In the case of boilers fitted with internal super heaters, an additional safety valve shall be fitted at the end of the outlet header. |
| 10 | Copy of invoice for new boiler |
| 11 | In the case of manufacturing by welding, testing result of chemical analysis, tensile test, bend test, izod impact test, radiographic examination and heat treatment test  |
| **Procedure:**  |
|  | 1 | The Applicant submits the application form with required documents either in person or online to DISI. |
| 2 | DISI reviews and checks the submitted documents and drawings and give comments, if any.  |
| 3 | When all documents submitted are accepted, DISI stamps “RECEIVED” on the Information Sheet for Boiler Installation Plan.  |
| 4 | The Information Sheet with submitted documents and drawings is returned to the Applicant.  |
| **Remarks:** |
|  | DISI accepts the following National Codes or specifications for Boilers: |
| – | I.S.O. (International Standard Organization) R.831  |
| – | B.S. (British Standards) 2790 |
| – | A.S.M.E. (The American Society of Mechanical Engineers)  |
| – | J.I.S. (Japanese Industrial Standards) B8201  |
| – | DIN/TRD (DINTechnicalRulesforSteamBoilers)  |
| – | S.A.A. (Australian Standard)  |
| – | The Indian Boiler Regulations  |

 **Boiler Inspection**

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| **Documents needed:**  |
|  | 1 | Application Form for Boiler Inspection |
| 2 | Other items such as testing reports prepared by the Applicant  |
| 3 | Any items that Desk 2 DISI requires |
| **Procedure:** |
|  | 1 | The Applicant submits the application form with required documents and application fee either in person online at least 10 days prior to the scheduled inspection date.  |
| 2 | After reviewing the submitted documents, DISI decides the inspection date and the items to be inspected, appoints the Inspector and informs them to the Applicant within 3 days after receiving the application.  |
| 3 | The Inspector conducts the Boiler Inspection at the Project Site in attendance with the persons in charge of the Applicant.  |
| 4 | After the inspection, the Inspector prepares the Record of Boiler Inspection including the comments of inspection result. |
| 5 | DISI issues the Boiler Certificate and provides it to the Applicant. |
|  |
| **Remarks:** |
|  | 1 | The following particulars shall be shown in a conspicuous position of the boiler inspected: |
|  | -  The name of the manufacturer. -  The manufacturer’s serial number. -  The country of origin. -  The design gauge pressure. -  The year of manufacture -  The inspecting authority’s stamp.  |
| 2 | The applicant shall take suitable countermeasures to the comments and instructions pointed in the Record of Boiler Inspection and report to DISI after the completion.  |
| 3 | The validity period of each Boiler Certificate is 1 year from the date of Issuance.  |
| 4 | The investor shall apply for the renewal of Boiler Certificate every year.  |

 **Issuance of Boiler Certificate**

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| **Procedure:**  |
|  | When the Boiler Inspection is passed, DISI issues and provides “Boiler Certificate” with the Boiler Registration No. to the Applicant .  |

 **Renewal of Boiler Certificate**

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| **Documents needed:**  |
|  | 1 | Application Form for Renewal of Boiler Certificate  |
| 2 | Other items such as the periodical monitoring report for the Boiler prepared by the Applicant.  |
| **Procedure:** |
|  | 1 | The Applicant submits the application form with required documents and application fee whether in person or online to DISI at least 20 days prior to expire date of the existing Boiler Certificate.  |
| 2 | DISI reviews the submitted document and decides the neces-sity of Boiler Inspection.  |
| If the Boiler Inspection is necessary: |
| a | DISI decides the inspection date, appoints the Inspector and informs to the Applicant within three (3) days after receiving the application.  |
| b | The Inspector conducts the Boiler Inspection at the project site in attendance with the persons in charge of the investor.  |
| c | After the inspection, the Inspector prepares the Record of Boiler Inspection with the comments and instructions.  |
| d | DISI issues Boiler Certificate. |
| If the Boiler Inspection is not necessary: |
| a | DISI issues Boiler Certificate. |
| **Timeframe:** |
| Record of Boiler Inspection: within 3 days after the Inspection Boiler Certificate: within 2 days after passing the Inspection  |

 Inspected items for Boiler Inspection

 **Inspection by opening the boiler**

**Internal / external inspection for boiler pressured parts:** Leakage of equipped facilities by shutting down and opening the boiler

**Boiler pressure:** The thickness of the sheet by drilling hole and /or by using ultrasonic thickness meter

**Inspection by water pressure**

Boiler pressure parts safety inspection by water pressure method

Boiler inspection by water pressure was done by boiler manufacturing standard

**Inspection by steaming pressure**

In order to check boiler safety valves condition of boiler

Closed all stream holes and then heated the boiler

Check the safety valve condition whether fully open or not when stream load is over-pressured than the maximum design pressure

Check the safety valve condition whether fully closed or not when stream load is under the minimum design pressure

 3.17.3 List of forms

**Electricity**

Form EC-1: Sample covering letter for Electricity Installation Plan

Form EC-2: Information Sheet for Electricity Installation Plan

Form EC-3: Request letter to Desk 2 (Construction) and KMIC

Form EC-4: Record of Electricity Inspection

Form EC-5: Application form for renewal of Electricity Certificate

**Boiler**

Form BL-1: Sample covering letter for Boiler Registration

Form BL-2: Information Sheet for Boiler Installation Plan

Form BL-3: Application form for Boiler Inspection

Form BL-4: Record of Boiler Inspection

Form BL-5: Application form for renewal of Boiler Certificate

**Factory Operation**

Form FO-1: Application form for Letter of Approval of Factory Operation

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END OF PROCEDURE 3.17