

QUALITY MANUAL

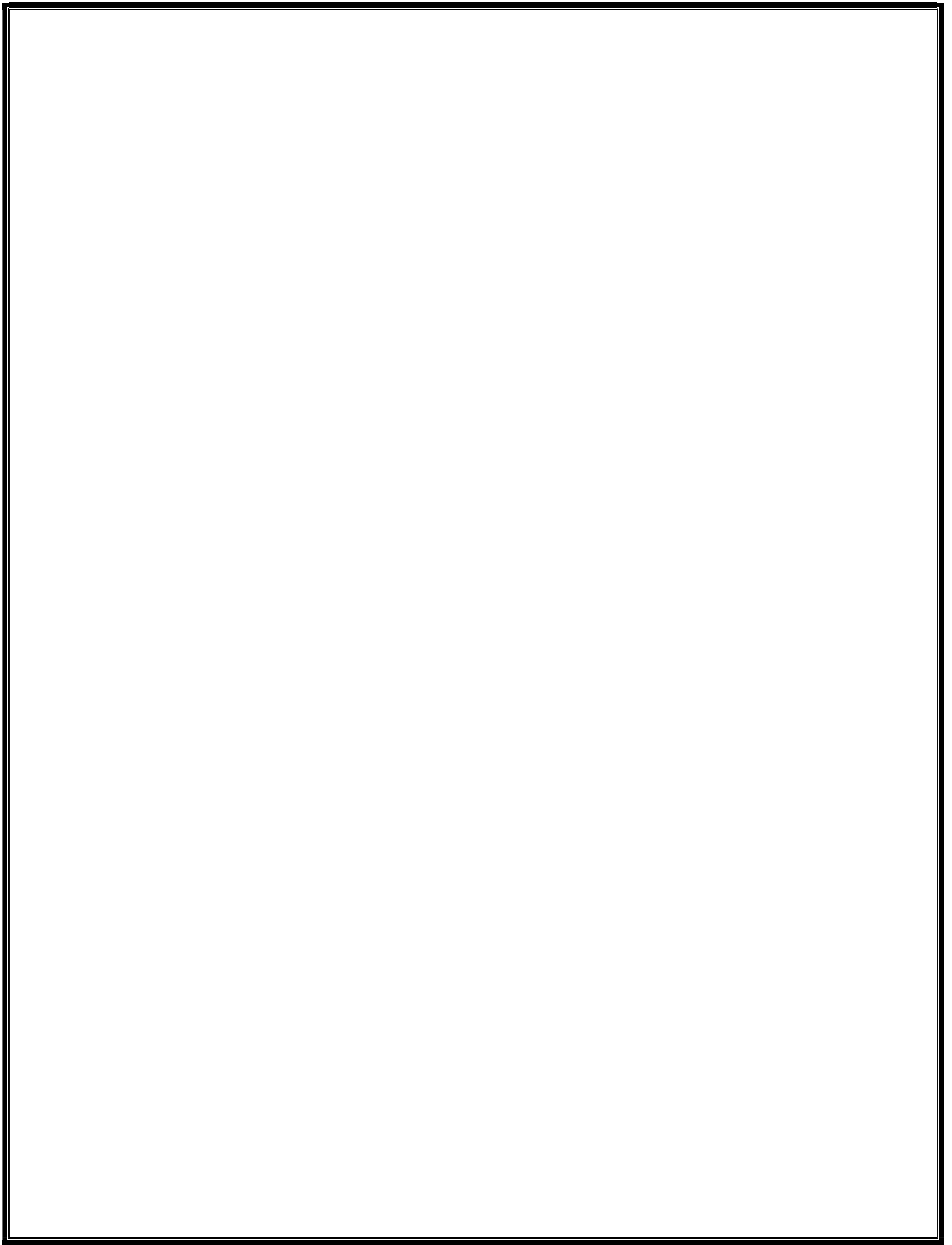
ISO 9001 : 2015



MATERIAL TESTING AND STANDARDS DEPARTMENT

Address:

**1st floor, Bijlee Bhavan, Kussara Bunder Road,
Mazgaon, Mumbai-400010.**





**Material Testing and
Standards Department**

QUALITY MANUAL

PREFACE

Doc. No. : MTS/QM/PR

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Issue/Rev. No:01/01

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01.11.2009/24.05.2018**

This document has been prepared to define and communicate the Material Testing & Standards Department, BEST, Mumbai's Quality Management System for the purpose of effective implementation of quality system designed to assist in the achievement of total customer satisfaction. The Quality Management System has been based on the requirements of ISO 17025:2005. The Quality Manual is the property of Material Testing and Standards Department, BEST Mumbai. So its circulation is limited to those mentioned in the distribution list. Preparation of additional copies is not permitted without authorized approval.

Prepared & Issued By:

Approved By :

M.R.

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**Material Testing and
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QUALITY MANUAL

INDEX

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Section	Contents	Page No.
QM/1	Amendment List	7
1	Scope	2
2.0	Normative References	
3.0	Terms & Conditions	4
3.1	Abbreviation	
4.0	Context of the Organisation –	7
4.1	Understanding the organization and its context	
4.2	Understanding the needs and expectations of interested parties	
4.3	Determining the scope of the quality management system	
4.4	Quality management system and its processes	
5.0	Leadership -	12
5.1	Leadership and commitment	
5.1.1	General	
5.1.2	Customer Focus	
5.2	Policy	
5.2.1	Establishing Quality Policy	
5.2.2	Communicating Quality Policy	
5.3	Organisational roles, responsibilities and authorities	
6.0	Planning	
6.1	Actions to address risks and opportunities	
6.2	Quality objectives and planning to achieve them	
6.3	Planning of changes	
7.0	Support	
7.1	Resources	
7.1.1	General	
7.1.2	People	
7.1.3	Infrastructure	
7.1.4	Environment for operation of processes	
7.1.5	Monitoring & measuring Resources	31
7.1.5.1	General	
7.1.5.2	Measurement traceability -	
7.1.6	Organizational knowledge	
7.2	Competence	
7.3	Awareness	
7.4	Communication	

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**Material Testing and
Standards Department**

QUALITY MANUAL

**AMENDMENT
LIST**

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To ensure that each copy of the quality manual maintains a complete record of amendments, this amendment page is updated and issued with each document when revised and with each issue of the entire manual. Amendments of a minor or editorial nature may be undertaken and incorporated by the Quality Manager.

Amend. No	Doc No`	Title	Page No	New Issue / Revision No & Date	Amended By	Approved By

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**Material Testing and
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QUALITY MANUAL

SCOPE

Doc. No: MTS/QM/SC

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ISO 9001: 2015 CLAUSE: 1.0

- 1 **SCOPE: To test the quality of materials, procured in the Electric supply branch and certain electrical items used in electrification of Undertaking's premises by Building Department (now, Electrical Works Department), as per the required specifications with respect to Indian Standards and Undertaking's Specifications.**

Material Testing and Standards Department, BEST, Mumbai

- Confirms its ability to consistently provide service of material and equipment testing (intended or required by customer) that meets customer needs.
- Aims to enhance customer satisfaction through effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable legal requirements.
- Plans & implement actions to address risks and opportunities, which establishes a basis for increasing the effectiveness of quality management system, achieving improved results and preventing negative effects.

Company Profile:-

Material Testing and Standards Department, BEST, Mumbai was established in 1969 with a view to check & ensure the quality of various materials utilized in the activities of Electric Supply Branch of BEST undertaking. BEST Undertaking was established under MMC (Mumbai Municipal Corporation) Act 1888. The reliability of electric supply directly relates to the quality of its inputs. The cables, transformers, switchgears, street lamps etc. could be considered as the raw materials of power distribution system, whereas the other materials like energy meters, capacitors, and instrument transformers have direct bearing with realization. Besides this, the in-house test facility enables to confirm the suitability of certain in service materials like transformer oils, etc.

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**Material Testing and
Standards Department**

QUALITY MANUAL

SCOPE

Doc. No: MTS/QM/SC

Copy No:

Issue/Rev. No:01/01

Issue/Rev. Date:01.11.2009/24.05.2018

ISO 9001: 2015 CLAUSE: 1.0

2 NORMATIVE REFERENCE

IS/ISO 9001: 2015 Quality management Systems-Requirements International
Standard Fourth Revision Sept 2015

ISO 9000:2015 Quality Management System Fundamentals & Vocabulary Fourth
Edition Sept 2015

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**Material Testing and
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QUALITY MANUAL
TERMS & DEFINITIONS

Doc. No: MTS/QM/TD
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Issue/Rev. No:01/01
Issue/Rev.Date:
01.11.2009/24.05.2018

ISO 9001: 2015 CLAUSE : 3.0

3 TERMS & DEFINITIONS:

3.1 Customers:- The customers are the departments of the Undertaking for which MTS department carries out testing.

3.2 The intended meaning of the following terms used in the Quality Manual of **Material Testing and Standards Department, BEST, Mumbai**, is as under:

- 1.Applicable: related to this quality management system or any referenced standard.
- 2.Appropriate: reasonable
- 3.Documented: written
- 4.Product: Testing of materials & equipments as per Specifications & Standards given by BEST
- 5.Customer requirement: Material & Equipments testing as per customers required specifications & Standards.
- 6.Shall: must
- 7.Suitable: reasonable for intended purpose.
- 8.Organization: **Material Testing and Standards Department, BEST, Mumbai**
Company: **Material Testing and Standards Department, BEST, Mumbai.**
- 9.Management: DEMTS, SUPDT (CIC), AEMTS, AAOMTS.

Abbreviations (Please make it in alphabetical order)

1. AAOMTS : Asst. Administrative Officer Material Testing & Standards
2. AEMTS : Asst. Engineer Material Testing & Standards
3. AL : Amendment List
4. BEST : Brihanmumbai Electric Supply & Transport Undertaking
5. CAPA : Corrective and Preventive Action
6. CIM : Continual Improvement
7. CNP : Control of Non-Conforming Test
8. CQR : Control of Quality Records
9. CSM : Control & Storage of Material in Stores
10. CSP : Control of Customer Supplied Product
11. DDC : Document and Data Control

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Standards Department**

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Doc. No: MTS/QM/TD

Copy No:

Issue/Rev. No:01/01

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ISO 9001: 2015 CLAUSE : 3.0

12. DEMTS	: Divisional Engineer Material Testing & Standards
13. DL	: Distribution List
14. DR	: Drawings
15. ESS	: Evaluation and Selection of Suppliers
16. FF	: Forms
17. FL	: Files
18. HRD	: Human Resource Department
19. ISO	: International Organisation for Standardization
20. IQA	: Internal Quality Audit
21. ML	: Manuals
22. MAI	: Measurement, Analysis & Improvement
23. MI	: Material Issue
24. MOM	: Maintenance of Machines
25. MAR	: Material Receipt
26. MR	: Management Representative/ Management Responsibility
27. MRV	: Management Review
28. MSW	: Maintaining Suitable Work Environment
29. MTS	: Material Testing and Standards Department,BEST,Mumbai
30. NCPR	: Non Conforming Product Register
31. NCR	: Non Conforming services
32. PCC	: Processing of Customer Complaints
33. PIT	: Product Identification and Traceability
34. PPL	: Production Planning
35. PPC	: Production Planning & Control
36. PR	: Product Realization
37. PUR	: Purchasing

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Copy No:

Issue/Rev. No:01/01

Issue/Rev.Date:

01.11.2009/24.05.2018

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- | | |
|----------------|--|
| 38. QCD | : Quality Control Department |
| 39. QMS | : Quality Management System |
| 40. QP | : Quality Procedure |
| 41. QSF | : Quality System Form |
| 42. QSP | : Quality System Procedure |
| 43. RG | : Registers |
| 44. RM | : Resource Management |
| 45. SC | : Scope |
| 46. SUPDT(CIC) | : Superintendent Centralized Inspection Cell |
| 47. TD | : Terms & Definitions |
| 48. TPR | : Testing Procedure |
| 49. WI | : Work Instructions |

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Material Testing and
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QUALITY MANUAL

CONTEXT OF ORGANISATION

Doc. No.: MTS/QM/QMS

Copy No:
Issue/Rev.No:01/01
Issue/Rev.Date:
01.11.2009/24.05.2018

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4 Context of the Organization –

4.1 Understanding the organization and its context –

Material Testing and Standards Department, BEST, Mumbai has established, documented, implemented and maintained a quality management system for ensuring that the services provided by it conform to specified customer requirements and also for providing opportunities for continuous improvement in the overall quality as per ISO 9001: 2015 International Standard requirements.

Material Testing and Standards Department, BEST, Mumbai has identified internal and external issues (positive and negative factors or conditions for consideration) that are relevant to its purpose of carrying out testing and achieving the intended results of quality management system.

Internal Issues: 1.Delay in testing samples.
2.Use of un-calibrated instrument for testing.
3. Delay in sending test reports to customers.

External issues: 1.Delay in calibration by external agency.
2.Delay in payment to external agency for repairing/maintaining instrument.
3. Delay in further testing by other departments
4.Delay in acceptance of Test Reports by other departments.

4.2 Understanding the needs and expectations of interested parties

The management of **Material Testing and Standards Department, BEST, Mumbai** reviews the quality management system, *twice in a year*, to understand the needs and expectations of its consumers. The review assesses the opportunities for improvement and evaluates the need for changes to the organization's quality management system, including quality policy and quality objectives. Management review committee comprises of DEMTS, SUPDT (CIC)/MR, AEMTS, Dy.EMTS and AAOMTS. MR is the coordinator of all the management review meetings and maintains the "Minutes of Management Review Meeting" The quality system procedure contains "Management Review" and details the method of review.

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Material Testing and
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QUALITY MANUAL

CONTEXT OF ORGANISATION

Doc. No.: MTS/QM/QMS

Copy No:
Issue/Rev.No:01/01
Issue/Rev.Date:
01.11.2009/24.05.2018

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Our major customers that are relevant to the quality management system are :

- ❖ *Material Management Department*
- ❖ *Street lighting Departments*
- ❖ *Operation and Maintenance Departments*
- ❖ *Construction Department*
- ❖ *Erection Departments*
- ❖ *Electrical Works Department*

Requirements of our customers are availability of test reports as per IS in proper format in time.

4.3 Determining the scope of the quality management system

Material Testing and Standards Department, BEST, Mumbai **has established and maintained a quality manual which includes:**

- a. The scope of the quality management system, including details of and justification for any exclusions.
- b. The documented procedures needed for the implementation of the quality management system or reference to them and
- c. A description of interaction between processes of the quality management system. The quality manual is prepared and issued by MR while the DEMTS reviews and approves it.
- d. We do not design the product but provide the service as per customer's requirement. The work involves testing of equipments/materials as per the standard procedures.

4.4 Quality management system and its processes

Material Testing and Standards Department, BEST, Mumbai has established, documented, implemented and maintained a quality management system for ensuring that the services provided by it conform to specified customer requirements and also for providing opportunities for continuous improvement in the overall quality as per ISO 9001: 2015 International Standard requirements.

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QUALITY MANUAL

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Doc. No.: MTS/QM/QMS

Copy No:
Issue/Rev.No:01/01
Issue/Rev.Date:
01.11.2009/24.05.2018

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The Management Representative (MR) is responsible for the preparation and updating of this quality manual & quality system procedure. The DEMTS is responsible for reviewing and approving the quality system documentation. MR is also responsible for the preparation of other documents as required.

To establish, implement, and maintain the quality management system, **Material Testing and Standards Department, BEST, Mumbai** has:

- a. Determined the processes needed for the quality management system and their application and defined standard procedures for all of these processes, which are called “Quality System Procedures”.
- b. Determined the sequence and interaction of these processes as depicted in Annexure I: “Process Interaction Diagram”.

Determined the criteria and methods required to ensure the effective operation and control of these processes as defined in the “Annexure II: “Process Monitoring Diagram ” in the Quality Manual.

- c. Ensured the availability of information necessary to support the operation and monitoring of these processes as per quality system procedures.
- d. Measured, monitored and analyzed these processes as per Annexure II ‘Process Monitoring Diagram’.
- e. Implemented actions necessary to achieve planned results and continual improvement of these processes as per quality system procedures, “Management Review” “Internal Quality Audit”, and “Control of Non Conforming Product”.

Material Testing and Standards Department, BEST, Mumbai has chosen to outsource the following processes and has ensured control over such processes.

(Out sourced process is a process that **Material Testing And Standards Department, BEST, Mumbai**, needs for its quality management system and which the organization chooses to have performed by external parties.)

1. Calibration of instruments/equipments,
2. Testing of Aluminium solder and plumbing metal sticks etc.

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Doc. No.: MTS/QM/QMS

**Copy No:
Issue/Rev.No:01/01
Issue/Rev.Date:
01.11.2009/24.05.2018**

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Material Testing And Standards Department, BEST, Mumbai manages these processes in accordance with the requirements of ISO 9001: 2015. The quality system documentation provides necessary cross-references to the quality system procedures so that the employees are able to understand and implement the quality system. In preparation of the quality system due consideration is given to methods used, skills needed and the training required by personnel involved in carrying out the various activities. It is also ensured that the quality system is effectively implemented and reviewed for continuous improvement. Abbreviations used frequently are defined in the sub section titled “Abbreviations” in the “Terms and Definitions” section.

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QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
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Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

5. Leadership

A quality policy authorized by the DEMTS, is defined and documented. The quality policy and quality objectives set out the organizations' goals in achieving the expectations and needs of the customer. The quality policy is communicated to every employee through training programmes & displays made at key locations in the organization.

5.1. Leadership and commitment

The management of **Material Testing and Standards Department, BEST, Mumbai** is committed to the development and implementation of the quality management system and continually improving its effectiveness by communicating to the employees the importance of meeting customer as well as regulatory and legal requirements. The responsibility, authority & the inter-relation of personnel, who manage, perform & verify work affecting quality is defined and documented & the required organizational freedom, authority & resources are provided.

5.1.1 General

A Management Representative is appointed to ensure the establishment, implementation & maintenance of the quality system. Management review is conducted at regular intervals, at least once in **six month**, to ensure continuity, suitability & effectiveness of the quality system. The quality system procedure "Management Review" gives the details. The top management ensures the availability of resources for achieving quality policy, quality objectives and implementing corrective and preventive action. The resources include manpower, machines, process facilities, inspection facilities, training of personnel, reference and research materials, for management and verification of all quality activities. A documented quality system procedure on "Internal Quality Audit" has been established, implemented and maintained.

5.1.2 Customer focus

Material Testing and Standards Department, BEST, Mumbai ensures that customer needs and expectations are determined, converted into requirements and are fulfilled with the aim of achieving and enhancing customer satisfaction.

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QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
Copy No :
Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

5.2 Policy

5.2.1 Establishing the quality policy

Material Testing and Standards Department, BEST, Mumbai has established and communicated its quality policy as follows:

Material Testing and Standards Department, BEST, Mumbai

POLICY

Quality excellence being the foundation in our service management and the keystone of our goal of customer satisfaction, our policy is to:

- Consistently provide services that meet the quality standards.
- Enhance customer satisfaction.
- Comply with statutory and regulatory requirements.
- Periodically review/update the Quality Management System for its effectiveness and ensuring continual improvement.

DATE : 24.05.2018

DIVISIONAL ENGINEER
Material Testing And Standards Department

5.2.2 Communicating the quality policy

The policy is relevant to the organization's goals and commits to meet the expectations and needs of the customers on quality and statutory requirements. The policy is communicated to all employees through displays in the organization at strategic locations. Employees at all levels are trained to understand the quality policy and their role in implementing and maintaining the policy. The quality policy is reviewed for its continuous suitability and effectiveness during management review meetings.

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ISO 9001 : 2015 CLAUSE : 5.0

5.3 Organizational roles, responsibilities and authorities

Material Testing and Standards Department, BEST, Mumbai ensures that the resources needed to achieve the quality objectives are identified and planned. Quality planning is the responsibility of the DEMTS and its implementation is the responsibility of all the employees of the organization. The planning of the Quality Management System is carried out in order to meet the requirements given in 4.1, as well as the quality objectives. The integrity of the quality management system is maintained when the changes to the quality management system are planned and implemented. The quality system procedures pertaining to the various functional activities in the organization provide guidelines on how to plan and implement the entire quality management system.

5.3.1 Responsibility and authority

Material Testing And Standards Department, BEST, Mumbai has defined and communicated responsibilities and authorities at all levels of the organization to ensure effective implementation of the Quality Management System.

5.3.1.1 Organization Structure

The organization structure of **Material Testing and Standards Department, BEST, Mumbai** as shown in Annexure III depicts the inter – relationship of personnel who manage, perform & verify work affecting quality.

Responsibility and authority pertaining to **Material Testing and Standards Department, BEST, Mumbai** Quality Management System is defined and documented hereunder for personnel who need organizational freedom to:

- a. Initiate preventive action on process, product and on quality system.
- b. Identify and record problems relating to product, process and quality system and initiate, recommend or provide solutions.
- c. Verify implementation of solutions.
- d. Control further processing and delivery of non – conforming product until deficiency has been corrected.

In the absence of the concerned personnel, responsibility will shift to same or lower level and authority will shift to higher level.

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ISO 9001 : 2015 CLAUSE : 5.0

5.3.1.2 Divisional Engineer Material Testing & Standards (DEMTS)

He is responsible and authorized to provide strategic direction, identify the business focus areas and review the progress of the company to ensure continuous growth.

5.3.1.2.1 QMS responsibilities:

- a. To be the chairman of the Management Review Committee.
- b. To define quality policy and objectives of the organization.
- c. To allocate duty and responsibility to the management staff.
- d. Ultimate responsibility for implementation and maintenance of the quality management system.
- e. To provide adequate resources and funds for various activities at **Material Testing and Standards Department, BEST, Mumbai**. Ultimate authority for acceptance of solutions to various problems as suggested by the employees with respect to their work area and providing resources for the successful implementation of the solutions.
- f. To review and approve documents.
- g. To decide and initiate appropriate corrective and preventive action.
- h. To negotiate contracts with the customer to ensure timely delivery.
- i. To review contracts.
- j. To handle customer complaints.

5.3.1.2.2 Functional Responsibilities:

The Divisional Engineer Material Testing & Standards (DEMTS) shall be responsible to Chief Engineer(Planning) for smooth & efficient working of MTS Department . He shall endeavor to achieve the objectives of the dept. by supervision & control of sections.

5.3.1.2.2.1 Material Testing section:

He shall

- a) carry out frequent, inspection of materials certified by AEMTS, and
- b) ascertain problems concerning testing of materials, to consider difficulties faced by other divisions of Electric Supply Branch for materials failed in testing and to consider development activities.
- c) Ensure that the equipments used for testing are duly calibrated by Government recognized laboratories or manufacturers with adequate traceability certificate.

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5.3.1.2.2.2 General:

- a) He shall deal with all internal & external correspondence.
- b) He shall plan & coordinate the work of the sections.
- c) He shall responsible for the submission of Annual reports, Variations in Establishment Schedule & Budget Estimates of the Dept.
- d) He shall control Budget grants.
- e) He shall deal with all the staff matters of the dept.
- f) He shall deal with the matters related with maintenance, replacement and procurement of new testing instrument.

5.3.1.3 Assistant Engineer (AEMTS)

The Assistant Engineer (AEMTS), in grade A5 shall generally assist DEMTS in the performance of his duties.

In particular he shall:

- i. deal with all staff matters of the department,
- ii. deal with all matters connected with accommodation and equipment of the department.
- iii. be responsible for the submission of annul Report and Budget Estimates of the department.

Functional:

He shall

- a) overall supervise the material Testing Lab.
- b) frequently inspect materials already inspected by the staff;
- c) ensure that all the tests are carried out as per standards laid down;
- d) ensure that no delay is caused in testing of the materials;
- e) submit correct analysis of the sample received;
- f) Develops the methods of the tests for various materials & prepare draft standards, where National Standards do not exist.
- g) Plan & follow up development activities;
- h) Plan and execute research activities;
- i) Arrange for testing of materials at various other laboratories where such tests are not feasible in MTS laboratories.
- j) Keep liaison with other laboratories & other facilities;
- k) Keep liaison with manufacturers towards development of better products;
- l) Visit & Keep liaison with manufacturers for testing by suppliers;
- m) Keep in touch with all the latest testing methods & procedures;

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Issue/Rev. date :
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ISO 9001 : 2015 CLAUSE : 5.0

- n) Contribute towards development of National standards;
- o) Keep all concerned officers informed about the drawbacks/improvements in methods & materials used in supply sections;
- p) Maintain safety of personnel & equipments, in his charge;
- q) Keep himself informed the BEST committee proceeding regarding Tender transactions & recommendation therefore;
- r) Ensure that all the personnel are properly trained in the correct use of testing equipments;
- s) Ensure that the equipments used for testing are calibrated by government agencies / manufacturers with adequate traceability certificate.
- t) Ensure accuracy of testing equipments by comparison to national and international standards.
- u) Justify and convince the accuracy of test results to other officers and suppliers if need be.
- v) Clarify such test results as required by any other officer;
- w) Arrange for payment of incentive Bonus to staff and to revalidate the incentive scheme so as to raise the average efficiency standards of the department
- x) Arrange for overtime working of the department, sanction of the management when necessary
- y) Keep himself in touch with proceeding of supply branch/ conference particularly regarding items of testing and problems regarding items of testing and materials
- z) Attend store engineering and co-ordination committee meetings and follow up the proceedings in particular regarding testing and quality of material.
- aa) Keep the cost of testing as low as possible by multiple batch testing and increase in variety and efficiency
- bb) Maintain harmony and discipline in the laboratory
- cc) Update and maintain dead stock and capital inventory record of equipments / materials pertaining to department
- ab) be responsible for the submission of annual reports & budget estimates etc. of Material Testing Laboratory Section.

5.3.1.4 Deputy Engineer DYEMTS I

General:

He shall:

- a. He deal with all staff matters of the dept.
- b. deal with all matters connected with accommodation & equipment of the department.

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ISO 9001 : 2015 CLAUSE : 5.0

- c. be responsible for the submission of Annual Report & Budget Estimates of the dept.

5.3.1.4.1 Duties of Deputy Engineer

The Deputy Engineer (One) shall be in charge of testing of inspection forms, Reference of material testing laboratories , and shall be responsible to AEMTS for inspection, testing and certification of materials.

He shall:

- i) carry inspection of materials
- ii) test materials as per standard methods
- iii) in consultation with AEMTS develop jigs and fixtures and alternative methods for testing materials and equipments
- iv) prepare and check the test reports
- v) ensure that all equipments are in working conditions.
- vi) ensure that all safety precautions are observed while using the equipments for testing
- vii) report about the test carried out, to the concerned department after approval of AEMTS
- viii) keep record of test reports
- ix) plan tools and equipments for test
- x) clear inspection forms within stipulated period of 7 days.

Maintain harmony and discipline in the laboratory

- xi) prepare monthly reports as per standard procedure and submit to AEMTS by 5th of every month. The report should mention the major events and justification for exceeding clearance of references beyond stipulated period.
- xii) ensure that standard documents and testing procedures of various types of materials are kept updated, along with relevant BEST's specifications and also arrange to procure various IS/ BIS booklets national / international publication referred in laboratory / amendments / revision etc.
- xiii) be responsible for maintaining the instruments / equipments, cleanliness etc. for following laboratories:

- i) Schering Bridge Laboratory
- ii) Energy meter testing Laboratory
- iii) Illumination laboratory;

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Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

xiv) prepare output statement of incentive bonus as applicable under the existing scheme by 7th of every month.

xv) For carrying out the above activities he will be normally assisted by following staff.

One Sub Engineer in grade G/GV

One Charge Engineer in grade T8

One test Asst. in grade T5.

5.3.1.4.2 Deputy Engineer (DyEMTS-II) is in charge of testing against tender . Reference of the material testing laboratory and is responsible to AEMTS. His duties are listed below:

He Shall:

- i) Test the samples received against tendered reference
- ii) bring to notice of AEMTS variations required in specification of the items
- iii) prepare specifications of plant and equipments required to be purchased for the material testing and standard laboratories
- iv) maintain plant and equipment of the laboratory for performance and safety
- v) prepare draft standards for methods for test of various materials under instructions of AEMTS.
- vi) keep the record of technical literature and IS/ BIS/ BEST specifications
- vii) develop and arrange the fabrication of jigs and fixtures required for all the testing facilities in consultation with AEMTS
- viii) train all the junior staff in the proper and safe use of testing equipments
- ix) assist AEMTS to prepare annual reports, budget estimates etc of material testing laboratory section.
- x) maintain discipline and cleanliness in the department
- xi) complete the testing of samples received vide tender reference and sample received vide DL from Electrical Works Department within stipulated period of 15 days. Samples received vide DL from Supply Branch Departments are to be tested within 21 days.
- xii) prepare monthly report of the testing carried out on the materials of above references and submit to AEMTS by 5th of every month. The report should mention major event during the month and justification for exceeding the stipulated period for clearing references.

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**Material Testing and
Standards Department**

QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
Copy No :
Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

- xiii) ensure that the standard documents and testing procedures of various types of materials are kept updated alongwith relevant BEST specifications and also arrange to procure various IS/ BIS / BEST booklets, national/ international publication referred in the department on amendment / revision.
- xiv) be responsible for maintenance of instruments/ equipments, cleanliness etc for following laboratories of the department:
- i) Heat run Testing Laboratory
 - ii) HV Testing Laboratory
 - iii) Chemical Laboratory
- xv) Be responsible for implementing the program of calibration of all the instruments/ equipments of the department as per sanction obtained from management and submit monthly reports to AEMTS.
- xvi) for carrying out above activities he will be normally assisted by the following staff:
- i) Two Charge Engineers in grade T 8.
 - ii) One Testing assistant in grade T 5.

CENTRALIZED INSPECTION CELL

Introduction: In order to streamline the procurement of certain sundry materials (presently 231 items),like hand tools and consumables, where no testing is involve a new Centralized inspection cell (CIC) is formed in the MTS department where such items are being decided both at tender as well as lot supply stages, by mere physical inspection. For smooth and efficient working of the cell new post of Superintendent in grade A4 (SUPDT CIC) under BCR 554 dated 10.11.97 was created.

Objective:

First: The Cell shall prepare Tender recommendation and carry out inspection at the time of accepting the lot of 231 items. Earlier as these 231 items were distributed among different divisions for acceptance and recommendations, the work sometimes got delayed. To reduce this delay and streamline the activity, the CIC cell was created.

Second: The cell is responsible for compiling monthly reports of Inspection Forms and Major Tender References (of value over Rs.10 lacs) dealt by various divisions of Supply Branch and put up summary report about progress of Tenders/Inspection Forms to DGM(ES) vide Procedure Order No.123 dated 09.12.1998.

Prepared & Issued By :

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DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
Copy No :
Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

Organisation:

At present the CIC is allocated with one Dy.Engr. in grade G/GVI, One Sub Engineer in grade G/GV, & Two Nawghanies in grade P1/T1 on the establishment of M.T.S. Department.

The routine activities are carried out by the testing staff allocated to the Superintendent (CIC) who arranges to get the material inspected as per the prescribed method and time, under the guidance of DEMTS.

Necessary record on progress of the tenders recommended, Inspection Forms cleared and monthly reports sent to the management, with duplicate copies thereof are maintained by Cell.

5.3.1.5 The Duties and responsibilities of the Superintendent Engineer of CIC.

The Superintendent Engineer (Supdt. CIC), in grade A4 shall generally assist the DEMTS in the performance of his duties.

In particular he shall:

- i) deal with staff matters of the cell.
- ii) deal with all matters connected with calibration of the equipment of department.

Supdt. CIC generally assists the DEMTS in the performance of his duties, to achieve objective:

- iii) He is responsible for all the Functions of the CIC section.

He Shall:

- iv) Overall supervise the section activities.
- v) Frequently inspect materials already inspected by the subordinate.
- vi) Ensure the inspection of material is carried out as per standards laid down.

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
Copy No :
Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

- vii) ensure that no delay is caused in inspection of the materials.
- viii) Suggest changes in existing specification if required.
- ix) Put up the proposal for change in inspecting /recommending authority for existing and newly procured materials if required.
- x) Keep liaison with manufacturers towards development of better products;
- xi) Keep all concerned officers informed about the drawbacks/improvements in materials used in supply section.
- xii) Ensure periodical records of inspection results maintained as per prescribed method.
- xiii) Submit the progress of inspection forms and major tender references dealt with various divisions of electric supply branch.

DUTIES & RESPONSIBILITIES OF OFFICE ASSISTANT IN GRADE AGVIII

5.3.1.6 Assistant Administrative Officer (AAOMTS) in grade A/GVIII shall look after all the Administrative and Establishment work and report to Divisional Engineer (MTS) He shall be responsible:

- i) to prepare various periodical statements (monthly/ quarterly/ half yearly and yearly) to be forwarded to various levels of management
- ii) to supervise the work of clerical staff of the Department
- iii) To assist DEMTS to deal with the internal and external correspondence/ follow ups of departmental proposals
- iv) To prepare and control budget estimates of the department
- v) To update and maintain the dead stock and capital inventory records of the equipments used in the department.
- vi) To amend, revise and update the departmental manual
- vii) To ensure proper records of the test reports and to dispatch them to proper acceptance, authority / inspecting authority within time
- viii) To arrange for payment of incentive bonus / OT payments if any, to the staff and subsequently to obtain management sanctions whenever required

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DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

LEADERSHIP

Doc. No. : MTS/QM/MR

Copy No :

Issue/Rev.: 01/01

Issue/Rev. date :

01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

- ix) To keep follow up of various proposals / reply audit queries, check of all the incoming and outgoing departmental files and put up position as internal MIS to DEMTS before 10th of every month.
- x) To maintain and arrange to reimburse, from time to time, departmental imprest cash.
- xi) To assist SUPDT(CIC) in repairing/ calibrating work of various equipments installed in laboratory for testing various materials
- xii) To assist AEMTS/SUPDT(CIC) in putting up proposals of scrapping / replacement/ new purchase of equipments required in Laboratory from time to time.
- xiii) To ensure proper records of various IS / BIS booklets , other Indian Publication/ International publication purchased by the departments
- xiv) To arrange various test report forms, other stationary items used in the departments by printing/ Xeroxing.
- xv) To deal with all the staff matters as regards to establishment / administrative work.

PROCEDURAL WORKING OF THE DEPARTMENT

This chapter lays down the procedure of working of the department, where BEST Standards already exist, a reference is made.

Testing of Tender Samples:

The Tender Samples received against tenders are referred to the Material Testing Laboratory for carrying out the specified tests, and submitting report thereof. All scheduled tests are carried out as per the standard and specifications laid down for different materials either by BEST or ISI, to the maximum extent possible. In addition to the test results, the report submitted to the recommending authority should also contain a comparative statement about the quality, performance, construction workmanship etc. of the samples. A register is kept which shows the date of receipt and the date of disposal of the Tender to and from the Material Testing Laboratory and the D.L./Note reference no. under which the record is sent. Normally 15 days are allowed for such tests. However, if number of samples are more this period may be extended.

Prepared & Issued By :

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
Copy No :
Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

Testing under Reference of Dept. Letters:

Under this category various in-service materials like transformer oil, C.T.s, P.T.s.etc are referred for testing in MTS Laboratory from various divisions of Supply Branch. Bench marks for clearing these References are 21 days.

• **Testing of electrical materials from Electrical Works Department:**

As per Administrative Order No.220 dtd. 02.05.95, Electrical items under 12 categories are referred for testing under Departmental Letters. Separate record regarding testing of these materials is kept and are sent to Electrical Works Department. The Bench marks for clearing these References are 15 days.

• **Acceptance Testing :**

The materials received in transit stores of the Materials Management (MM) Department against the various purchase orders are subjected to tests, known as “acceptance tests”, for confirming that the supply is according to BEST Specifications and/or approved samples. Wherever, the material is received, the Materials Management (MM) Department send the Inspection Forms giving the particulars of the materials received. After receipt of the Inspection form, the following procedure shall be followed:

- i) Enter the Inspection Form Number & Date in a Register.
- ii) Get the relevant purchase order, and specification details.
- iii) Get the details of variation in the specification, if made after placing the order.
- iv) Obtain details of inspection of approved sample if any and modifications suggested by consuming or Planning Department.
- v) Get the relevant I.S/B.S./BEST Specification if any.,
- vi) Get the approved sample, if any.
- vii) Decide about the tests to be carried out.

Prepared & Issued By :

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
Copy No :
Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

Bench marks for clearing the Inspection Forms in this category are seven days.

- viii) Select at random a fixed number of samples from the lot.
- ix) Carry out the tests as per Standard Methods of Tests, if any, on all samples.
- x) If no standard methods of tests are laid down or no specifications are given, or if no testing equipment is available, the certification should be carried out as per the prevailing methods with the available equipments, at the discretion of AEMTS in consultation with heads of consuming departments. AEMTS shall draw the attention of Planning Department all such cases where improper or no specifications are drawn.
- xi) Whenever the quantity is large, certain tests may be carried out on random samples as per sampling procedure laid down in relevant I.S. or as per common plan adopted by the Department.
- xii) A brief report about the results of tests carried out should be entered in a form, (Appendix D/E Test reports A & B forms.)
- xiii) The inspection form together with the test report (Form A) is dispatched to the inspection authority after making appropriate entry in the register.

Testing of Energy Meters:

Semi automatic Computerised Meter Testing Equipment was installed in M.T.S. Department in June, 1997. Under this category Energy Meters are referred through MRE Department for testing and test reports are sent to Div. Engr. (Meter& Relays).

Formulation of Standard Test Methods:

- i) The standard methods of tests are to be developed by the Material Testing section. For preparing these standards the following procedure shall be adopted.

Prepared & Issued By :

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

LEADERSHIP

Doc. No. : MTS/QM/MR

Copy No :

Issue/Rev.: 01/01

Issue/Rev. date :

01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

- ii) Select items for which the Standard Methods of Tests, can be developed.
- iii) Refer the relevant I.S./BIS./BEST Specification.
- iv) Note down the tests recommend in the above specifications.
- v) Consult the User departments, in respect of their special requirements, if any, about the materials.
- vi) Decide the tests which should be carried out.
- vii) Prepare a draft standard, describing the procedure of testing, and testing equipments required for testing.
- viii) Send the draft standard to DEMTS for finalizing and issuing it as a BEST Standard. All the items required for the Supply Branch should be covered one by one.

5.3.1.7 Human Resource

Human resource is managed by the Personnel Department, BEST and training requirements are dealt by Divisional Engineer (DETIE). The person responsible for communication with the Personnel Department is AAOMTS.

5.3.1.8 Marketing

The marketing function is managed by AAOMTS/AEMTS. He is responsible and authorized to:

- a. Maintain customer communications.
- b. Update the customer complaint records. Carry out the Customer Satisfaction Survey.
- c. Deal with customer requirements & handling customer complaints.
- d. control and monitor all activities being performed by the External Parties as per the defined Terms and conditions

5.3.1.9 Maintenance

This is managed by AEMTS. He is responsible and authorized to:

- a. Maintain and update maintenance history sheets of equipments installed in the Laboratory premises at the time of breakdown.
- b. Ensure that the maintenance schedule of the equipments is strictly adhered to.

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M.R.

DEMTS



Material Testing and
Standards Department

QUALITY MANUAL

LEADERSHIP

Doc. No. : MTS/QM/MR

Copy No :

Issue/Rev.: 01/01

Issue/Rev. date :

01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

- c. To carry out preventive maintenance for all the machines as desired.
- d. To control and monitor all activities being performed by the External Parties as per the defined Terms and conditions

5.3.1.10 Purchase

This is managed by AAOMTS. He is responsible and authorized to:

- a. Ensure that the order is properly placed to the Vendor.
- b. select & evaluate the suppliers in consultation with DEMTS.
- c. Periodically update the approved supplier list.
- d. look after all purchasing functions of the department.
- e. ensure that purchased material is stored properly in stores.

5.3.1.11 Quality Control

This is managed by AEMTS. He is responsible and authorized to:

- a. Carry out the raw material, in-process inspection, & finished product inspection.
- b. Maintain the lab equipments.
- c. Maintain the records of inspection.
- d. Keep the record of non-conforming product.
- e. Prepare Quality Plans.
- f. Analyze customer complaints & take corrective & preventive actions.
- g. To control and monitor all activities being performed by the External Parties as per the defined Terms and conditions

5.3.1.12 Dispatch

This is managed by AAOMTS. He is responsible and authorized to:

- a. Prepare invoice & dispatch the material.
- b. Maintain the dispatch report.
- c. Maintain other excise related records.
- d. To control and monitor all activities to be performed by the External Parties as per the defined Terms and conditions
- e. He is assisted by a Shop Recorder and a Stenographer.

5.3.1.13 Stores

This is managed by AEMTS. He is responsible and authorized to:

- a. Maintain the stock records.
- b. Preservation of material.
- c. Proper Handling of Material.
- d. Verification of stock.

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
LEADERSHIP

Doc. No. : MTS/QM/MR
Copy No :
Issue/Rev.: 01/01
Issue/Rev. date :
01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 5.0

- e. To control and monitor all activities being performed by the external parties as per the defined terms and conditions

5.3.2 Management Representative

Material Testing and Standards Department, BEST, Mumbai; has appointed a member of the organization's management who, irrespective of the other responsibilities shall have responsibility and authority to;

- a. Ensure that Quality System is established, implemented & maintained in accordance with ISO 9001: 2015.
- b. Report on the performance of the quality system to the DEMTS for review and as a basis for improvement of the system.
- c. Plan internal quality audits.
- d. Prepare quality manual & procedures and approve work instructions.
- e. Maintain all documents pertaining to the quality management system.
- f. Organize and co-ordinate management review meetings.
- g. Liaise with external parties on matters relating to quality system.
- h. Create awareness about customer requirements in the organization.

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
PLANNING FOR
QUALITY MANAGEMENT
SYSTEM

Doc. No.: MTS/QM/RM

Copy No:

Issue/Rev.No:01/01

Issue/Rev.

date:01.03.2012/24.05.2018

ISO 9001 : 2015 CLAUSE : 6.0

6.0 Planning for the quality management system

Material Testing and Standards Department, BEST, Mumbai ensures that the resources needed to achieve the quality objectives are identified and planned. Quality planning is the responsibility of the DEMTS and its implementation is the responsibility of all the employees of the organization. The planning of the Quality Management System is carried out in order to meet the requirements given in 4.4, as well as the quality objectives. The integrity of the quality management system is maintained when the changes to the quality management system are planned and implemented. The quality system procedures pertaining to the various functional activities in the organization provide guidelines on how to plan and implement the entire quality management system.

6.1. Actions to address risks and opportunities

Sr.No.	Issue	Requirement	Risk	Opportunity
1	delay in testing samples.	Test Report Submission in 7 days	Delay in utilizing tested material	Reallocation of work/arranging additional manpower
2	Use of un-calibrated instrument for testing.	Testing by use of calibrated instruments	Chances of incorrect test results	Monthly review of pending instruments for calibration
3	delay in sending test reports to customers.	Test Report Submission in 7 days	Delay in utilizing tested material	Giving priority to report submission
4	Delay in calibration by external agency.	Testing by use of calibrated instruments	Chances of incorrect test results/Delay in testing	Early initiation of process/follow-up/calibration by other competent agency
5	delay in payment to external agency for repairing/maintaining instrument.	Testing by maintained instrument	Chances of incorrect test results/Delay in testing	Inform management for delay promptly

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DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
PLANNING FOR
QUALITY MANAGEMENT
SYSTEM

Doc. No.: MTS/QM/RM

Copy No:

Issue/Rev.No:01/01

Issue/Rev.

date:01.03.2012/24.05.2018

ISO 9001 : 2015 CLAUSE : 6.0

6	Delay in further testing by other departments	Test Report Submission in 7/14 days	Delay in utilizing material	Follow-up with other departments
7	Delay in acceptance of Test Reports by other departments.	Test Report Submission in 7 days	Delay in utilizing tested material	Follow-up with other departments

Material Testing and Standards Department, BEST, Mumbai identifies preventive action to eliminate the causes of potential non-conformities to prevent occurrence. Preventive actions taken are appropriate to the impact of the potential problems.

The documented procedure “Corrective and Preventive Action” (MTS/QSP/CAPA) defines requirements for:

- Identifying potential non-conformities and their causes;
- Evaluating the need for action to prevent occurrence of non conformities;
- Determining and ensuring the implementation of preventive action needed;
- Recording results of action taken;
- Reviewing effectiveness of preventive action taken.

6.2 Quality objectives and planning to achieve them

The quality policy is translated into following quality objectives with measurement criteria & responsibility:

Sr.No	Quality Objective	Measurement Criteria	Responsibility
1	To enhance customer satisfaction.	Customer Satisfaction Survey.	<u>AAOMTS</u>
2	To improve the material testing time	Time committed to customer(Std.Time-calculation starts from date of receipt of material for testing and	<u>AEMTS</u>

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M.R.

DEMTS



Material Testing and
Standards Department

QUALITY MANUAL
PLANNING FOR
QUALITY MANAGEMENT
SYSTEM

Doc. No.: MTS/QM/RM

Copy No:
Issue/Rev.No:01/01
Issue/Rev.
date:01.03.2012/24.05.2018

ISO 9001 : 2015 CLAUSE : 6.0

		actual time required date of Tested and dispatched report)	
3	<u>To improve competency of human resources</u>	<u>Conducting training programs as per training calender</u>	<u>SupdtCIC</u>
4	<u>To improve standard time required to carry out activities</u>	<u>No. of activities reviewed from those listed in scheme no. 71 appendix II</u>	<u>AEMTS</u>
5	<u>To carry out research and development activity for improving quality of material used by BEST</u>	<u>No. of R&D activities carried out in the financial year</u>	<u>AEMTS</u>

The quality objectives are measured through performance indicators as outlined in the "Performance Report" which MR submits in the management review. The Quality Objectives are specified for all the functions & levels. These are reviewed for suitability during Management Review meeting.

6.3 Planning of changes

6.3.1 Planning for changes in manpower:

Schedule of two weeks shall be for training of transferred staff/officers for defined period.

6.3.2 Planning for changes in Instruments:

Schedule of one day shall be for training of all concerned for demonstration of working of new instrument for defined period.

6.3.3 Planning for Reduction in manpower:

Allocation or reallocation of responsibilities and authorities shall be carried out.

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**Material Testing and
Standards Department**

QUALITY MANUAL

SUPPORT

Doc. No.: MTS/QM/PR

Copy No:

Issue/Rev No: 01/01

Issue/Rev.Date

:01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 7.0

7 Support

7.1 Resources

7.1.1 General

The management of **Material Testing and Standards Department, BEST, Mumbai** determines & communicates the requirements to competent authority of BEST to provide, in a timely manner, the resources needed to implement, maintain and continually improve the effectiveness of the processes of the quality management system to enhance customer satisfaction by meeting customer requirements.

7.1.2 People

The resources include human resources requirements. The final decision related to provision of human resources is done by concerned department of BEST & copy of same is retained by MTSD.

7.1.3 Infrastructure

The management of **Material Testing and Standards Department, BEST, Mumbai** **provides** the following facilities to achieve the conformity of product:

- a) Buildings, Workspace and associated utilities;
- b) Process Equipments.
- c) Supporting services to facilitate communication, information systems and transport..

The infrastructure facilities include properly maintained workspace, and uninterrupted power supply. Regular maintenance of equipments is carried out. The records of breakdown repairs is maintained. Calibration of Equipments is carried out at defined frequency.

7.1.4 Environment for the operation of processes

The management of **Material Testing and Standards Department, BEST, Mumbai** **identifies** and manages the human, physical and environmental factors of the work environment (which includes noise, temperature, humidity, lighting or weather) needed to achieve conformity of product.

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**Material Testing and
Standards Department**

QUALITY MANUAL

SUPPORT

Doc. No.: MTS/QM/PR

Copy No:

Issue/Rev No: 01/01

Issue/Rev.Date

:01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 7.0

7.1.5 Monitoring and measuring resources

Material Testing and Standards Department, BEST, Mumbai identifies the measurements to be made and the measuring and monitoring equipment required to assure conformity of product to specified requirements.

7.1.5.1 General

Measuring and monitoring equipments are used and controlled to ensure that measurement capability is consistent with the measurement requirements.

7.1.5.2 Measurement traceability

Calibration of Master equipments used for testing purposes is carried out as per specified frequency traceable to National standards. When Measurement traceability is considered to be an essential part of providing confidence in the validity of measurement results, measuring equipment shall be calibrated or verified, or both, at specified intervals, or prior to use, against measurement standards traceable to National measurement Standards; when no such standard exists, the basis used for calibration or verification shall be retained as documented information and safeguarded from adjustment, damage or deterioration that would invalidate the calibration status and subsequent measurement results.

Where applicable, measuring and monitoring equipments are:

- Calibrated and adjusted periodically or both at specified intervals, prior to use, against equipments traceable to international or national standards; where no such standards exist, the basis used for calibration is recorded.
- Safeguarded from adjustments that would invalidate the calibration.
- Have identification in order to determine its calibration status.
- Protected from damage and deterioration during handling, maintenance and storage.
- Calibrated and the results of their calibration recorded.

7.1.6 Organizational knowledge

Material Testing and Standards Department, BEST, Mumbai identifies the knowledge necessary for the operation of its processes and to achieve conformity of product and services. The persons posted in MTSD with other experience in field operating department so that it is easier for them to understand the operation of its processes and to achieve conformity of product and services. .

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**Material Testing and
Standards Department**

QUALITY MANUAL
SUPPORT

Doc. No.: MTS/QM/PR
Copy No:
Issue/Rev No: 01/01
Issue/Rev.Date
:01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 7.0

7.2 Competence

The training needs of the employees are identified taking into consideration the company future plans, Job Profiles & employees responsibilities, experience and skills. Education and training is imparted in accordance to a planned schedule documented in an “Annual Training Calendar” to enhance the skills and competence of the personnel. The effectiveness of the training is evaluated periodically.

Material Testing And Standards Department, BEST, Mumbai

- a) Identifies competency needs for personnel performing activities affecting quality.
- b) Where applicable, provides training to satisfy these needs.
- c) Evaluates the effectiveness of the training provided.
- d) Maintains appropriate records of education, skill, experience, training and qualifications.

Training needs of employees are identified in a meeting of senior management. The internal short duration training are planned & conducted at MTDS. The deputation to outside trainings is done as per the directions of higher authorities. Annual training calendar of internal training programme is prepared. Trainings are conducted and records of trainings are maintained. If training is of one day or of more duration, feedback from the participants is taken. The evaluation of effectiveness is carried in review meetings.

7.3 Awareness

Material Testing And Standards Department, BEST, Mumbai Ensures that its employees are aware of the quality policy and quality objective and the relevance and importance of their activities and how they contribute to the achievement of the quality objectives. It is also made aware about benefits of improved performance and implication of not conforming with the quality management system requirement.

7.4 Communication

Material Testing and Standards Department, BEST, Mumbai ensures communication between its various levels and functions regarding the processes of the quality management system through:

- a. Monthly meetings.
- b. Display Boards.
- c. Telephonic and direct personal.

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M.R

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DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL
SUPPORT

Doc. No.: MTS/QM/PR
Copy No:
Issue/Rev No: 01/01
Issue/Rev.Date
:01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 7.0

7.5 Documented Information

7.5.1 General

The quality management system followed by **Material Testing and Standards Department, BEST, Mumbai** is a means of ensuring that the procedures for all activities in **Material Testing and Standards Department, BEST, Mumbai** are defined and standardized and that they meet the requirements of ISO 9001: 2015. Structure of the quality system documents is as under:

- a. Documented statement of Quality Policy and Quality Objectives.
- b. A Quality Manual
- c. Documented Quality System Procedures and records required by ISO 9001:2015
- d. Documents , including records determined by the organization to be necessary to ensure effective planning , operation and control of its processes.
- e. Testing Manual

7.5.2 Creating and updating

All documents and data including those of external origin such as national and international standards that relate to this quality system are controlled by means of a documented procedure “Document & Data Control” for approval, issue, and change / modification. It is ensured that the documents are adequate for fulfilling the functional needs and are duly approved. It is also ensured that all current documents are easily accessible to persons who need them.

MR maintains the master copy and sends one copy to the controlled copy-holders after ensuring that “Controlled Copy” is stamped on front page .All employees will have access to “Read Only” copies of the documents in LAN/Hard Copies. MR with permission of DEMTS also issues an “Uncontrolled Copy” by marking it as “For reference only” to the persons/organizations as required but no revision services is provided for such documents.

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**Material Testing and
Standards Department**

QUALITY MANUAL
SUPPORT

Doc. No.: MTS/QM/PR
Copy No:
Issue/Rev No: 01/01
Issue/Rev.Date
:01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 7.0

Addition of any new quality system procedures requires changes in the quality manual. In order to avoid frequent changes for addition and deletion of quality system procedures, quality manual is revised for additions or deletions once in a year. For all other changes, the revision is implemented immediately. New Issue number is given after ten revisions.

MR is overall responsible for document and data control. The document's header and footer identify the authorized personnel for approval and issue of documents, document name, document issue, revision number and date.

"Master list of documents" identifies the revision status, the name of the controlled copy holders and the location of documents. Invalid and /or obsolete documents are promptly removed from all points of issue and use and assured against unintended use by marking them as "Obsolete". Marking "Obsolete" identifies any obsolete documents retained for legal or knowledge preservation purpose.

Document and data changes are reviewed and approved by authorized personnel as per original documents unless others are designated for the purpose. In case of review by alternate personnel they shall have access to pertinent information on which to base their review and approval. The amendment details will be recorded in the "Master list of documents".

Anyone who proposes any changes in documents communicates it on a "Document Change Note" to the MR. To effect the changes they must be approved by DEMTS and documented. The sources for initiating document changes are:

- a. Document change request
- b. NCRs raised in internal and external audits
- c. Any technical changes.

7.5.3 Control of documented Information

All quality records belonging to **Material Testing and Standards Department, BEST, Mumbai** which include audit reports, management review records, corrective and preventive action records, and inspection and test records are controlled. A documented procedure "Control of Quality Records" is established and maintained for identification, collection, indexing, access, storage, protection, retrieval, retention and disposal of quality records to demonstrate conformance to quality system requirements.

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**Material Testing and
Standards Department**

QUALITY MANUAL
SUPPORT

Doc. No.: MTS/QM/PR

Copy No:

Issue/Rev No: 01/01

Issue/Rev.Date

:01.11.2009/24.05.2018

ISO 9001 : 2015 CLAUSE : 7.0

All quality records are identified in the respective procedures and at appropriate stages in the performance of related activities. Quality records are completed legibly, stored & retained to ensure ready retrieval to protect against damage or deterioration.

Records retained longer than specified periods are identified. Where agreed contractually, the quality records are made available by DEMTS, for evaluation by the customer or the customer's representative for an agreed period.

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Material Testing and
Standards Department

QUALITY MANUAL

OPERATION, PERFORMANCE EVALUATION & IMPROVEMENT

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

8.0 Operation

8.1 Operational planning and control

Planning of the material / equipments testing & standardization processes in **Material Testing and Standards Department, BEST, Mumbai** has been consistent with the other requirements of the MTSD's quality management system and is documented in a form suitable for the MTSD's method of operation. In planning the processes for material / equipments testing & standardization, the **Material Testing and Standards Department, BEST, Mumbai**, has determined the following, as appropriate:

- a) Quality objectives for the MTSD
- b) Established processes and documents, provide resources and facilities specific to the testing activity.
- c) Verification and validation, monitoring, measurement, inspection and activities specific to the testing of equipments/ materials and the criteria for its acceptance.
- d) The records that are necessary to provide confidence of conformity of the testing processes and resulting reports.
- e) In consultation with AEMTS, plan to develop or check the jigs, fixtures, tools & alternative methods for testing materials & equipments for its availability & effective working.
- f) Ensure for availability of safety equipments, PPTs (Personal protective tools) while using the equipments for testing.

The primary responsibility for the above processes rests with DEMTS, SUPDT (CIC), AEMTS, DyEMTS & AAOMTS

8.2 Requirements for products and services

Material Testing and Standards Department, BEST, Mumbai is committed to fulfilling and enhancing customer satisfaction and has established, documented, implemented and maintained procedures to assist in achieving that objective.

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**Material Testing and
Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

8.2.1 Customer communication

Material Testing and Standards Department, BEST, Mumbai has identified and implemented arrangements for communication with customers relating to:

Testing information related to specifications & Standards.
Enquiries, contracts or order handling, including amendments.
Customer feedback, including customer complaints.
Testing Inspection Reports with tested material

Material Testing and Standards Department, BEST, Mumbai takes efforts to ensure proper customer communication at all stages during and after testing of products by means of processing of Customer complaints and carrying Customer Satisfaction Survey.

8.2.2 Determination of requirements related to the testing/inspection & standardization process

Material Testing and Standards Department, BEST, Mumbai plans and develops the processes needed for testing of equipments . Planning of this process is consistent with the requirements of other processes of the quality management system.

Material Testing and Standards Department, BEST, Mumbai , considers following as appropriate while planning of testing of equipments ,

- Testing requirements specified by the customer including the requirements for storage, delivery and reports.
- Testing requirements not specified by the customer but necessary for intended or specified use.
- Obligations related to testing, including regulatory and legal requirements.
- Any additional requirements considered to be necessary by MTS Dept.

8.2.3 Review of requirements related to the Material Testing & Standardization

Material Testing and Standards Department, BEST, Mumbai reviews the identified customer requirements together with additional requirements determined by the MTS Dept . This review is conducted before the commitment to test the equipment/material and ensures that:

- Testing requirements (Specifications & Standards) are defined.

Prepared & Issued By:

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

OPERATION, PERFORMANCE EVALUATION & IMPROVEMENT

Doc. No.: MTS/QM/MI

**Copy No:
Issue/Rev.No:01/02
Issue/Rev.
date:01.11.2009/19.07.2018**

ISO 9001 : 2015 CLAUSE : 8.0

- b) Where the customer provides no documented statement of requirement,(the customer requirements are confirmed before acceptance.) the document, 'List of items with schedule of tests' is referred
- c) The MTSD has the ability to meet defined requirements.

A review record is prepared as per format. Where testing requirements are changed, the MTS Dept ensures that relevant documentation is amended. The MTS Dept ensures that relevant personnel are made aware of the changed requirements.

DEMTS and AEMTS are responsible for reviewing the customer requirements and verifying **Material Testing and Standards Department, BEST, Mumbai** for the ability to meet them.

8.2.4 Changes to requirements of products and services

Material Testing and Standards Department, BEST, Mumbai measures and monitors the characteristics of the service to verify that the requirements for the service are met. This is carried out at the following stages of the service realization process:

- Material receipt and inspection stage.
- Final Inspection stage.
- Dispatch stage.

Evidence of conformity with the acceptance criteria is maintained . Records indicate the authority responsible for approving of equipment/material. Equipment/material release does not proceed until all the specified activities have been satisfactorily completed, unless otherwise approved by the customer.

8.3 Design and development of products and services

THIS CLAUSE IS NOT APPLICABLE TO OUR ORGANISATION, AS WE DO NOT DO ANY DESIGN OF OUR PRODUCT OR SERVICES. IT IS THEREFORE EXCLUDED.

8.4 Control of externally provided Processes, Products and Services

Material Testing and Standards Department, BEST, Mumbai controls its purchasing processes to ensure purchased product / contract (Out sourced process) conforms to

Prepared & Issued By:

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

OPERATION, PERFORMANCE EVALUATION & IMPROVEMENT

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

specified requirements. The type and extent of control is dependent upon the effect on subsequent realization processes and their output.

8.4.1 General

The DEMTS is the final authority for all purchasing/contract (Out-sourced process) awarding activities as per the approval obtained from BEST Management.

The MTSD evaluates and selects suppliers based on their ability to supply product in accordance with the organization's requirements. Criteria for selection, periodic evaluation and re-evaluation are defined in the "Purchasing Process" of quality system procedure. Purchasing information/Purchasing documents of **Material Testing and Standards Department, BEST, Mumbai** contain information describing the product to be purchased:

- a) Requirements for approval of product, procedures, processes and equipment.
- b) Requirements for qualification of personnel.
- c) Quality management system requirements.

8.4.2 Type and extent of Control

Material Testing and Standards Department, BEST, Mumbai identifies and implements the activities necessary for verification of purchased product as per the specified purchase requirements.

8.4.3 Information for external providers

A supplier/ service provider is evaluated and graded according to quality of services he / she provides.

8.5 Production and service Provision

8.5.1 Control of production and service provision

Material Testing and Standards Department, BEST, Mumbai plans and carries out Material /Equipment Testing and standardization provision under controlled conditions. Controlled condition shall include, as applicable.

- a) The availability of information that describes the characteristics of the testing of the equipments/materials,

Prepared & Issued By:

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

- b) The availability of work instructions, as necessary
- c) The use of suitable equipment,
- d) The availability and use of monitoring and measuring equipments/ methods, forms and formats,
- e) The implementation of monitoring and measurement, and
- f) The implementation of release, delivery and post-delivery activities.

8.5.2 Identification and traceability

Material Testing & Standards Department identifies the equipment /material received for testing by giving it identification no. as “ Tenderer No.-Item No.-A-sample No.(In case of more than one sample)”, for tender sample and “ Inspection memo No.-sample No.” for lot samples and also ensures that the equipment/material is identified throughout its testing process till it is delivered to the customer. The status of the equipment such as (tested ok/ tested not ok/ under test) is specified.

The Organization shall validate any processes for Material /Equipment Testing and standardization provision where the resulting output cannot be verified by subsequent monitoring & measurement. The organization shall establish arrangements for these processes including, as applicable

- a) defined criteria for review and approval of the processes.
- b) approval of equipment and qualification of personnel.
- c) use of specified methods and procedures.
- d) Preparation of standards
- d) requirements for records
- e) revalidation

8.5.2 Identification and traceability

Material Testing & Standards Department identifies the equipment /material received for testing by giving it identification no. as “ Tenderer No.-Item No.-A-sample No.(In case of more than one sample)”, for tender sample and “ Inspection memo No.-sample No.” for lot samples and also ensures that the equipment/material is identified throughout its testing process till it is delivered to the customer. The status of the equipment such as (tested ok/ tested not ok/ under test) is specified.

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**Material Testing and
Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

8.5.3 Property belonging to customers or external providers

Material Testing and Standards Department, BEST, Mumbai considers the equipments/materials received for testing as the customer property and exercises care with it while it is under its control or being tested by it. The records of the equipments/materials received for testing are maintained by MTS Dept throughout its operation. The equipments/material is suitably protected from damage. MTS Dept identifies, verifies, protects and maintains this customer property received for inspection/testing. Occurrence of any customer property that is lost, damaged or otherwise found to be unsuitable for use is recorded and reported to the customer.

8.5.4 Preservation of Tested Material/Equipments /Reports

Material Testing and Standards Department, BEST, Mumbai preserves the material/equipments received for testing & reports generated throughout internal processing till the same is delivered to the customer. This includes identification of material/equipment, precaution during handling / testing, packaging if any for delivery, storage and protection from damage/theft.

8.5.5 Post Delivery Activities

Material Testing and Standards Department, BEST, Mumbai meets requirements for post-delivery activities associated with Material /Equipment Testing and standardization provision. MTS Department shall consider:

- a) Statutory and regulatory requirements;
- b) the potential undesired consequences associated with material testing;
- c) the nature, use and intended lifetime of its products and services;
- d) customer requirements;
- e) customer feedback.

8.5.6 Control of changes

Material Testing and Standards Department, BEST, Mumbai review and control changes for services, to the extent necessary to ensure continuing conformity with requirements. It also retains documented information describing the results of the review of changes, the person(s) authorizing the change, and any necessary actions arising from the review.

Prepared & Issued By:

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M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

Doc. No.: MTS/QM/MI

**Copy No:
Issue/Rev.No:01/02
Issue/Rev.
date:01.11.2009/19.07.2018**

ISO 9001 : 2015 CLAUSE : 8.0

8.6 Release of Products and services

Material Testing and Standards Department, BEST, Mumbai identifies and implements the activities necessary for verification of purchased product as per the specified purchase requirements. A supplier/ service provider is evaluated and graded according to quality of services he / she provides.

8.7 Control of nonconforming Material Testing & standardization

Material Testing and Standards Department, BEST, Mumbai ensures that the service provided is as per customer's requirement. Any nonconformance observed like error in reports, incomplete testing, testing not as per specification/standards and damage to equipments during testing is recorded and nonconformance report is generated as per procedure (MTS/QSP/CNCR)

9.0 Performance evaluation

9.1 Monitoring, measurement, analysis and evaluation

9.1.1 General

Material Testing And Standards Department, BEST, Mumbai conducts periodic survey for assessing the Customer Satisfaction. To ensure continual improvement of the quality management system, internal audit is periodically conducted. To check the quality of services rendered monitoring is done of testing process conducted.

Material Testing and Standards Department, BEST, Mumbai applies suitable methods for measurement and monitoring of those realization processes necessary to meet customer requirements. When planned results are not achieved, corrections, and corrective actions are taken as appropriate.

9.1.2 Customer satisfaction

Material Testing and Standards Department, BEST, Mumbai has established a system for customer satisfaction by recording customer complaints and obtaining

Prepared & Issued By:

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**Material Testing and
Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

customer feedback. These are analyzed and actions planned to achieve customer satisfaction.

Mumbai plans the audit program taking into consideration the status and importance of the activities and areas to be audited as well as the results of previous audits. The audit scope, frequency and methodologies are defined and specified in the “ Internal Audit Calendar”. Audits are conducted by personnel other than those who perform the activity being audited as per the “Internal Audit Schedule” . The observations of the Auditors are recorded in the “Auditor Observations Form” and the non-conformities detected are recorded in the “Non conformity report”. At the end of the audit process all the observations are summarized in the “Internal Audit Summary Report”.

The documented procedure “Internal Quality Audit” includes the responsibilities and requirements for conducting audits, ensuring their independence, recording results and reporting to management.

The management responsible for the area being audited ensures that actions are taken without undue delay to eliminate detected non-conformities and their causes. Follow up activities include the verification of the actions taken and the reporting of the verification results. MR presents “Internal Audit Summary Report” during the management review meeting as explained in the quality system procedure of “Management Review” (MTS/QSP/MRM)

9.1.3 Analysis and evaluation

Material Testing and Standards Department, BEST, Mumbai collects and analyses appropriate data to determine the suitability and effectiveness of the quality management system and to identify improvements that can be made. This includes data generated by measuring and monitoring activities and other relevant sources.

Material Testing and Standards Department, BEST, Mumbai analyses this data to provide information on:

- a. Customer satisfaction and/or dissatisfaction.
- b. Conformity to service requirements
- c. Characteristics of processes & their trends including opportunities for preventive actions.
- d. Suppliers.

Prepared & Issued By:

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DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

OPERATION, PERFORMANCE EVALUATION & IMPROVEMENT

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

9.2 Internal audit

Material Testing and Standards Department, BEST, Mumbai shall conduct internal audits **once in every year**.

MR is responsible for the planning and effective implementation of the internal audit procedure (MTS/QSP/IQA). **Material Testing and Standards Department, BEST, Material Testing and Standards Department, BEST, Mumbai** plans the audit program taking into consideration the status and importance of the activities and areas to be audited as well as the results of previous audits. The audit scope, frequency and methodologies are defined and specified in the “ Internal Audit Calendar”. Audits are conducted by personnel other than those who perform the activity being audited as per the “Internal Audit Schedule” . The observations of the Auditors are recorded in the “Auditor Observations Form” and the non-conformities detected are recorded in the “Non conformity report”. At the end of the audit process all the observations are summarized in the “Internal Audit Summary Report”.

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9.3 Management Review

9.3.1 General

The management of **Material Testing and Standards Department, BEST, Mumbai** reviews the quality management system, twice in a year , to ensure its continuing suitability, adequacy and effectiveness. The review assesses the opportunities for improvement and evaluates the need for changes to the organization’s quality management system, including quality policy and quality objectives. Management review

Prepared & Issued By:

Approved By:

M.R.

DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

OPERATION, PERFORMANCE EVALUATION & IMPROVEMENT

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

committee comprises of DEMTS, SUPDT (CIC)/MR, AEMTS, Dy.EMTS and AAOMTS. MR is the coordinator of all the management review meetings and maintains the “Minutes of Management Review Meeting” The quality system procedure “Management Review” and details the method of review.

9.3.2 Review input

Inputs to management review include current performance and improvement opportunities related to the following:

- a. Results of audits.
- b. Customer feedback.
- c. Process performance and product conformance.
- d. Status of preventive and corrective actions.
- e. Follow-up actions from earlier management reviews.
- f. Changes that could affect the quality management system.
- g. Recommendations for improvement.

9.3.3 Review output

The outputs from the management review include decisions and actions related to:

- a. Improvement of the quality management system and its processes;
- b. Improvement of product related to customer requirements;
- c. Resource needs.
- d. Results of management review.

10. Improvement

10.1 Continual improvement

Material Testing and Standards Department, BEST, Mumbai plans and manages the processes necessary for the continual improvement of the quality management system.

Material Testing and Standards Department, BEST, Mumbai facilitates the continual improvement of the quality management system through the use of the quality policy, objectives, audit results, analysis of data, corrective and preventive action and management review.

Prepared & Issued By:

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**Material Testing and
Standards Department**

QUALITY MANUAL

OPERATION, PERFORMANCE EVALUATION & IMPROVEMENT

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

10.2 Nonconformity and corrective action

Material Testing and Standards Department, BEST, Mumbai ensures that the service provided is as per customer's requirement. Any nonconformance observed like error in reports, incomplete testing, testing not as per specification/standards and damage to equipments during testing is recorded and nonconformance report is generated as per procedure (MTS/QSP/CNCR)

Material Testing and Standards Department, BEST, Mumbai takes corrective action to eliminate the causes of non-conformities in order to prevent recurrence. Corrective action is appropriate to the impact of the problems encountered.

The documented procedure "Corrective and Preventive actions" (MTS/QSP/CAPA) defines requirements for:

- a. Identifying non-conformities (including customer complaints).
- b. Determining the causes of nonconformity.
- c. Evaluating the need for actions to ensure that non-conformities do not recur.
- d. Determining and implementing the corrective action needed.
- e. Recording results of action taken.
- f. Reviewing the effectiveness of corrective action taken.

10.3 Continual Improvement

Material Testing and Standards Department, BEST, Mumbai plans and manages the processes necessary for the continual improvement of the quality management system.

Material Testing and Standards Department, BEST, Mumbai facilitates the continual improvement of the quality management system through the use of the quality policy, objectives, audit results, analysis of data, corrective and preventive action and management review.

10.4 Internal Quality Control Checks :

Competence of resources is verified. The resources include Human Resources, Infra Structural Resources, Work Environment and Informational requirements.

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DEMTS



**Material Testing and
Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

10.4.1 Replicate testing checks of retained items :

The laboratory carry out retesting of retained samples as per prescribed schedule. The retained samples are tested by different testers to measure the vital parameters by performing re-testing on the same. Effectiveness of capability of testing by new resource is verified by carrying out re-testing of same sample by new resource and experienced resources. The results of experienced resources and new resources are compared with respective to experienced resources. The acceptable limit criteria is +/- 5%.

In case, the values found outside the defined criteria, remedial action will be performed.

10.4.2 Use of Certified Reference Material (CRM)/ Reference Standard Material (RSM).

The laboratory has maintained material as a Certified Reference Material (CRM)/ Reference Standard Material which is used for quality checks.

10.4.3 Intermediate Checks:

While regular testing, if values fall beyond acceptable limit, testing was carried out with reference material / reference standard material to maintain confidence with calibration status of reference materials according to defined procedure

10.4.4 Replicate test or calibration using the same or different methods :

Replication is the repetition of a experimental condition so that the variability associated with the testing process can be estimated.

The replicate testing was carried out periodically to verify the results and to develop necessary skills.

10.4.5 Correlation of results for different characteristics of an item :

It is a simple correlation in which two variables vary together. The result of one variable affects the results of another variable.

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**Material Testing and
Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

Doc. No.: MTS/QM/MI

Copy No:

Issue/Rev.No:01/02

Issue/Rev.

date:01.11.2009/19.07.2018

ISO 9001 : 2015 CLAUSE : 8.0

If a material failed in one test, it has an effect on the correlated test results. e.g. in case of 315 A HRC Fuse, due to the exceeding the specified values of watt loss, the said HRC fuse did not comply non-fusing characteristics. It shows the correlation between watt loss and non-fusing characteristic. In case of 1.5 sq.mm, 3 Core, PVC Copper cable, due to less diameter of the conductor than the specified value, the measured value of the resistance found above the specified value. It shows the correlation between the area of the conductor & resistance.

10.4.6 In-Service Check :

The Instruments are tested before and after calibration process to confirm variation in accuracy.

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DEMTS



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Standards Department**

QUALITY MANUAL

**OPERATION,
PERFORMANCE
EVALUATION &
IMPROVEMENT**

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Issue/Rev.No:01/02

Issue/Rev.

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ISO 9001 : 2015 CLAUSE : 8.0

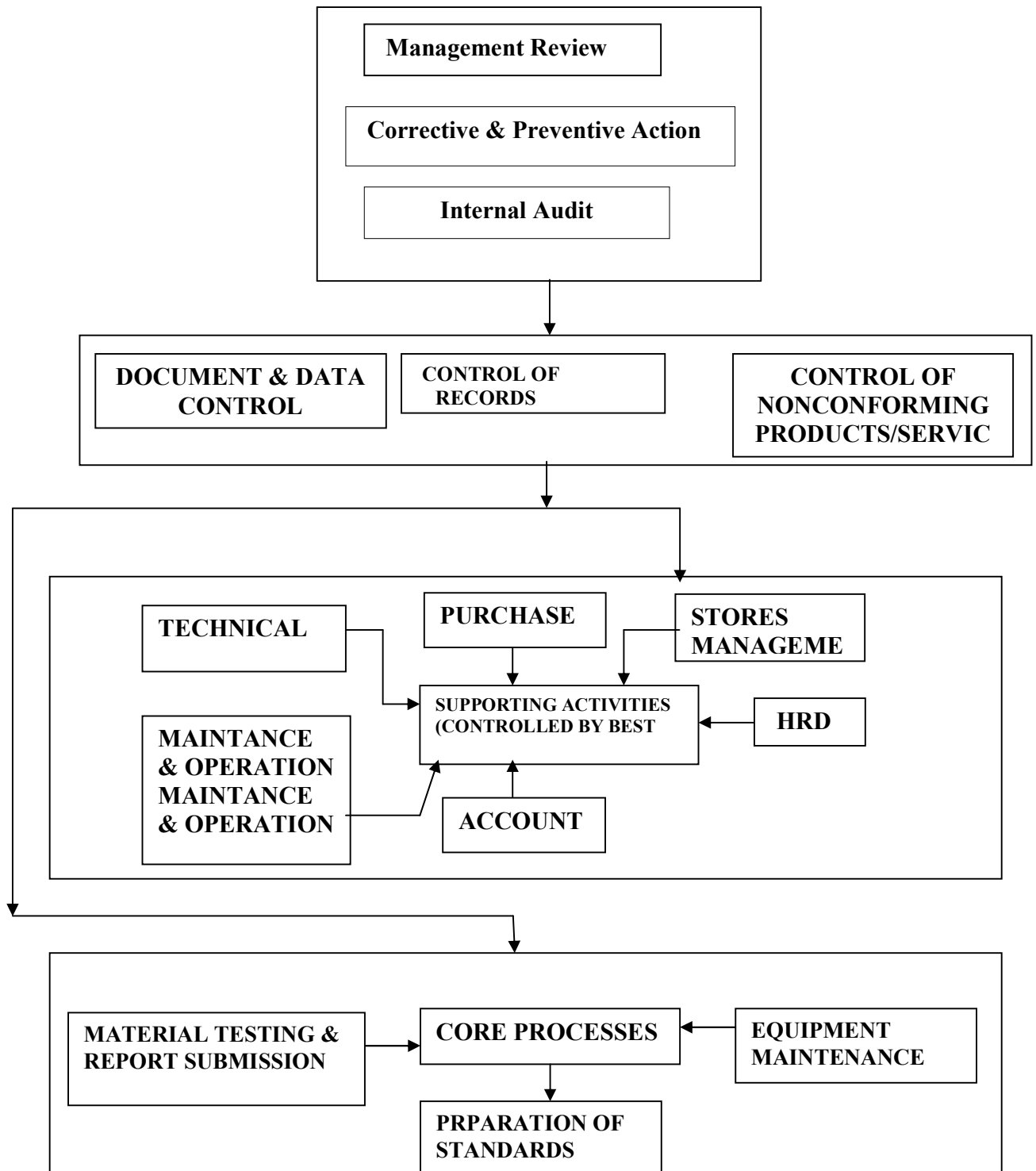
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Annexure I: PROCESS INTERACTION DIAGRAM



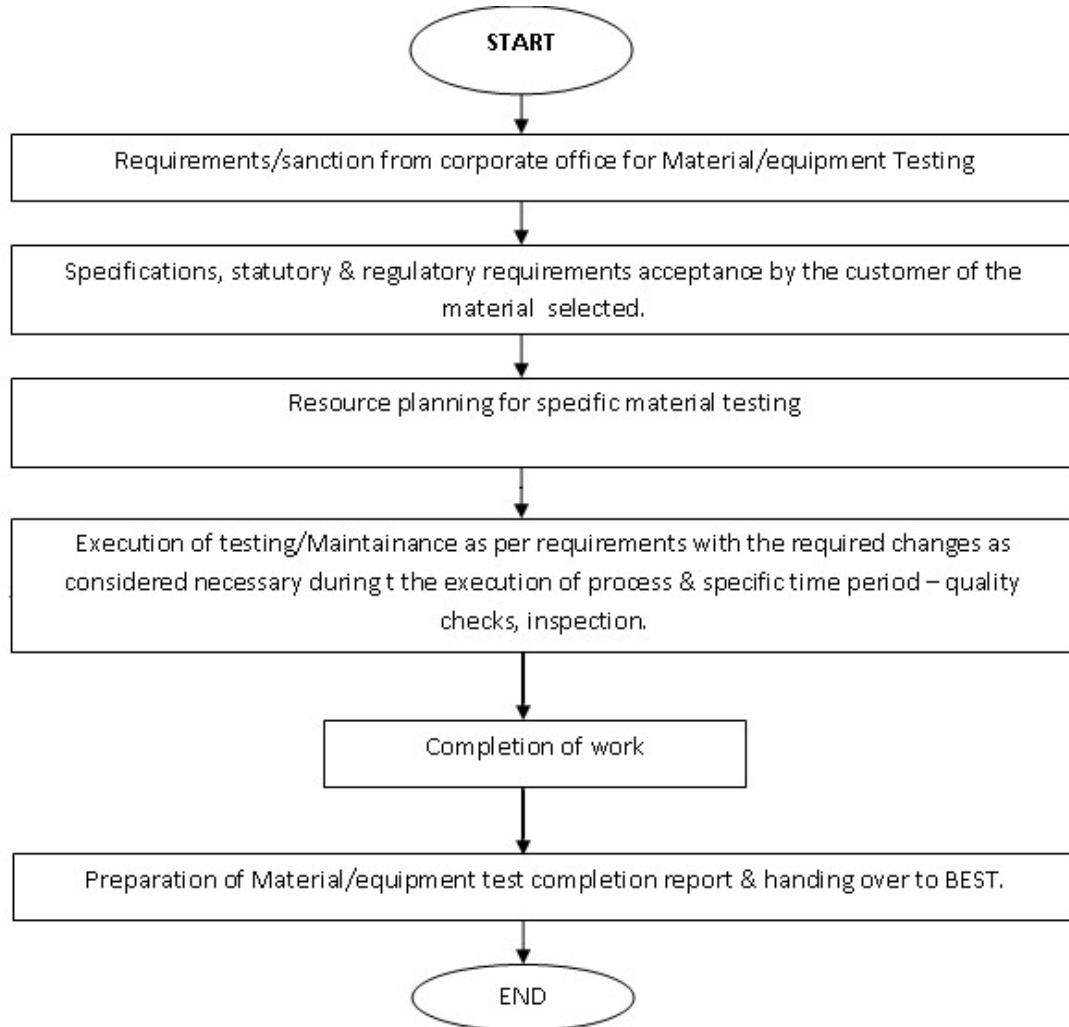
ANNEXURE II: PROCESS MONITORING DIAGRAM

INPUT	QUALITY PROCEDURE	SYSTEM	OUTPUT
Results of audits	Management Review Procedure		Management Review Record
Customer feedbacks			
Process performance and product/service conformity			Improvement of the effectiveness of the quality management system and its processes
Status of preventive and corrective actions			Improvement of the product/service related to the customer requirements
Follow up actions from previous management reviews			Identification of Resource Needs
Changes that could affect the quality management system			
Recommendations for improvement			
Records and observations towards compliance of the requirements of Quality Management System	Internal Audit		Internal Audit Report
Annual audit plan			Non conformity report
Internal audit schedule			Audit Summary Report
Audit planning and checklist			Corrective and preventive actions
Customer requirements	Customer communication and feed back		Electricity Generation
Availability of resources			Corrective & Preventive actions.
Terms and conditions			
Internal requirement	Purchasing		Purchase documents
Supplier complaints			Purchase order
Supplier evaluation			List of approved suppliers

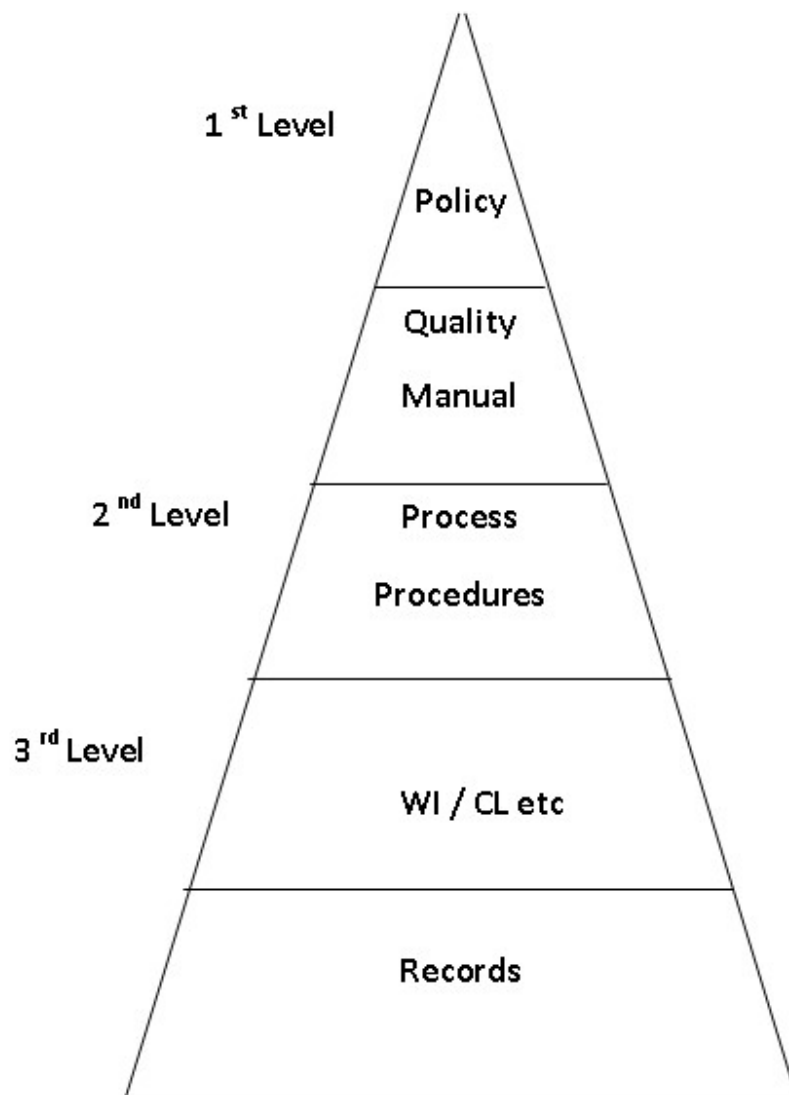
INPUT	QUALITY PROCEDURE	SYSTEM	OUTPUT
<i>Customer complaint</i>	<i>Customer complaints and feedbacks</i>		<i>Corrective and preventive action on customer complaints</i>
<i>Customer satisfaction survey</i>			<i>Customer satisfaction</i>
<i>Non conformities after any review</i>	<i>Corrective & Preventive Action</i>		<i>Actions documented in review report.</i>
<i>Audits</i>			<i>Actions documented in customer complaint report.</i>
<i>Management review</i>			<i>Actions documented in internal audit report.</i>
			<i>Actions documented in management review report</i>
<i>Individual training preferences</i>	<i>Human resource management</i>		<i>Annual training calendar</i>
<i>Organisational requirements</i>			<i>Skill, knowledge, competence enhancement</i> <i>Training records</i>

Annexure IV

PROCESS FLOW CHART



ANNEXURE V: QMS Documentation



ORGANISATION CHART OF M.T.S. DEPARTMENT

