



QUALITY ASSURANCE PROGRAM

FOR

PROJECT ENGINEERING & SYSTEMS DIVISION

RC Puram, Hyderabad-502032, Telangana State, India



	Prepared by	Reviewed by	Approved by
Signature	-Sd-	-Sd-	-Sd-
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PROJECT ENGINEERING & SYSTEMS DIVISION - HYDERABAD

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Date: 07.02.2020

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1. ABOUT PROJECT ENGINEERING & SYSTEMS DIVISION (PE&SD):

PE&SD is one of the important units of BHEL & deals with:

- Providing EPC solutions to
 - ✓ CPP requirements of Customers in Industry Business Segment
 - ✓ Re-heat cycles up to 150 MW STG unit size for all business sectors including International Operations
 - ✓ GT based open cycles, GT based cogeneration & combined cycles power plants
 - ✓ Turbo Blowers and Booster Compressor Stations
 - ✓ Systems Engineering, BOP supply and E&C for new business areas like Water Systems, EBOP, Solar Thermal power systems, IGCC, Stand-alone boilers, Compressor drives, Defense projects, Air cooled condensers etc.
- Fuel Systems design and supply for large GTG CCP and co-generation projects
- Package design and supply of Fire Protection Systems for all Power generation plants

PE&SD is also involved in other activities such as engineering of layouts, System Engineering and sizing of Bought-out items for Mechanical, Electrical and Controls & Instrumentation equipment / packages, and also Erection and commissioning of sister unit products as well as bought out equipment at project sites.

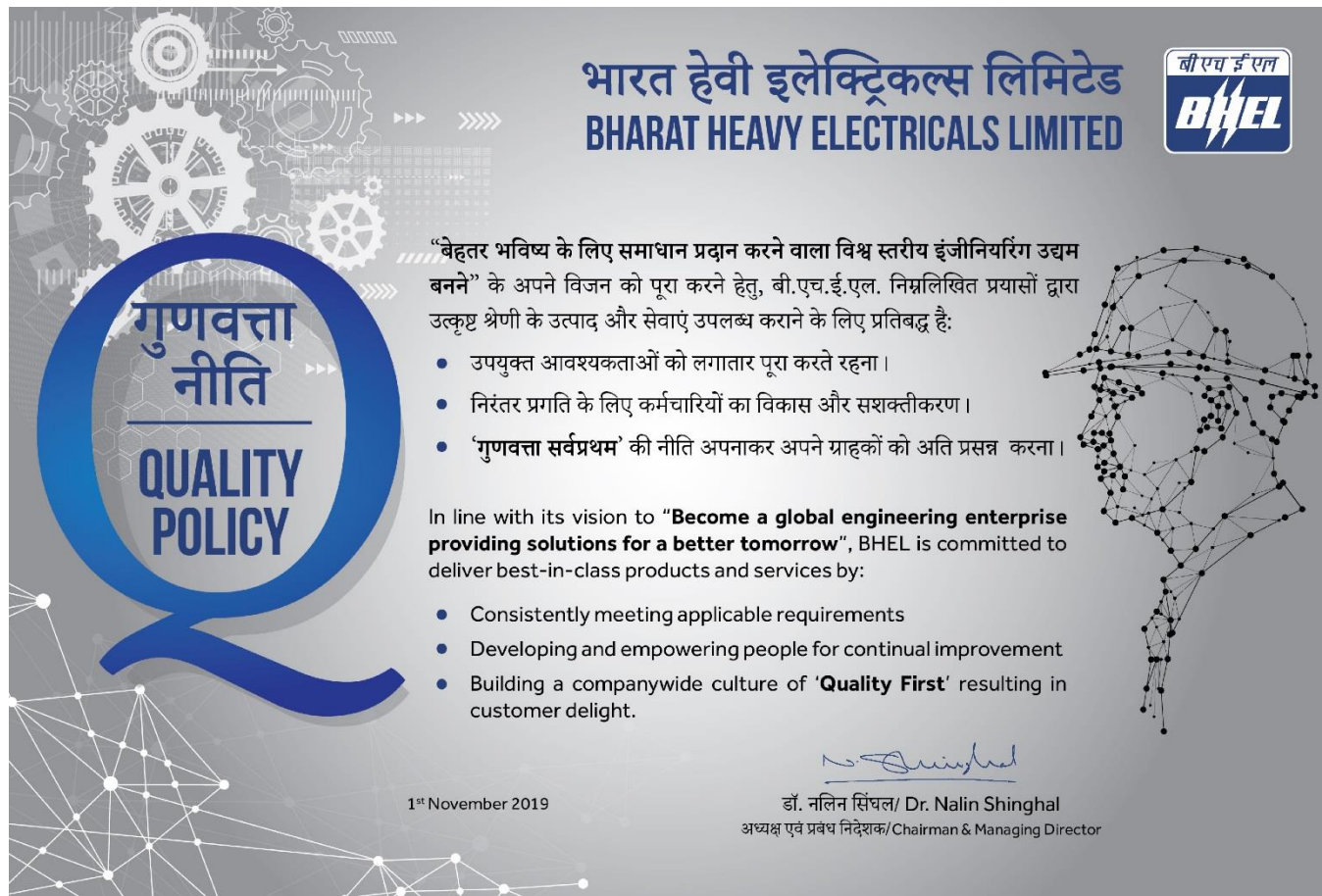
Indicative list of Product profile for bought out equipment:

Sr. No	PRODUCT TYPE
1	<u>Mechanical</u> – Gas conditioning Skid, Fuel forwarding system, Filtration Skids, Fuel tanks, Pretreatment plants, DM plants, Various Pumps, Storage tanks, Cooling towers, Fire Fighting Systems, AC & Ventilation Systems, Piping, Pipe fittings etc.
2	<u>Electrical:</u> LT Switchgear, HT Switchgear, ECS, Transformer, Bus Ducts, Control cables, Power cables, Cabling System, DC system, Illumination package etc.
3	<u>C&I:</u> DCS, PLC, Field instruments packages, Analyzers, SWAS, Signal cables etc.

2. Vision, Mission & Values:



3. Quality Policy:



गुणवत्ता नीति
QUALITY POLICY

भारत हेवी इलेक्ट्रिकल्स लिमिटेड
BHARAT HEAVY ELECTRICALS LIMITED

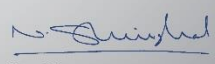
“बेहतर भविष्य के लिए समाधान प्रदान करने वाला विश्व स्तरीय इंजीनियरिंग उद्यम बनने” के अपने विजन को पूरा करने हेतु, बी.एच.ई.एल. निम्नलिखित प्रयासों द्वारा उत्कृष्ट श्रेणी के उत्पाद और सेवाएं उपलब्ध कराने के लिए प्रतिबद्ध है:

- उपयुक्त आवश्यकताओं को लगातार पूरा करते रहना।
- निरंतर प्रगति के लिए कर्मचारियों का विकास और सशक्तीकरण।
- ‘गुणवत्ता सर्वप्रथम’ की नीति अपनाकर अपने ग्राहकों को अति प्रसन्न करना।

In line with its vision to “**Become a global engineering enterprise providing solutions for a better tomorrow**”, BHEL is committed to deliver best-in-class products and services by:

- Consistently meeting applicable requirements
- Developing and empowering people for continual improvement
- Building a companywide culture of ‘**Quality First**’ resulting in customer delight.

1st November 2019


डॉ. नलिन शिंगल/ Dr. Nalin Shinghal
अध्यक्ष एवं प्रबंध निदेशक/Chairman & Managing Director

4. Quality Objectives:

- To enhance Quality of purchased products, Systems and Services that complies to applicable requirements by improving key processes.
- Encourage commitment, innovation & team work of all employees through capability building.
- To enhance added value by optimized solutions at reduced cost.
- Enhance Customer Delight.



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5. ISO 9001:2015 Certificate:

BUREAU VERITAS
Certification

BHARAT HEAVY ELECTRICALS LIMITED
(PE&SD)

BHEL, PE&SD, R.C.PURAM – 502 032, TELANGANA STATE, INDIA.

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organization has been audited and found to be in accordance with the requirements of the Management System standard detailed below.

Standard

ISO 9001:2015

Scope of certification

**SYSTEM ENGINEERING, DESIGN & DEVELOPMENT, PROCUREMENT,
INSPECTION AND ERECTION & COMMISSIONING OF EQUIPMENT &
PACKAGES FOR POWERPLANTS AND PROCESS INDUSTRIES**

Original cycle start date: 21 March 2013

Expiry date of previous cycle: 15 March 2019

Recertification Audit date: 25 January 2019

Recertification cycle start date: 16 March 2019

Subject to the continued satisfactory operation of the organization's Management System,
this certificate expires on: 15 March 2022

Certificate No. IND 19.8915 U Version : 1 Revision date: 17 January 2020

Signed on behalf of BVCH SAS – UK Branch
Jagdheesh N. MANIAN
Head – CERTIFICATION, South Asia
Commodities, Industry & Facilities Division

BUREAU VERITAS
Certification

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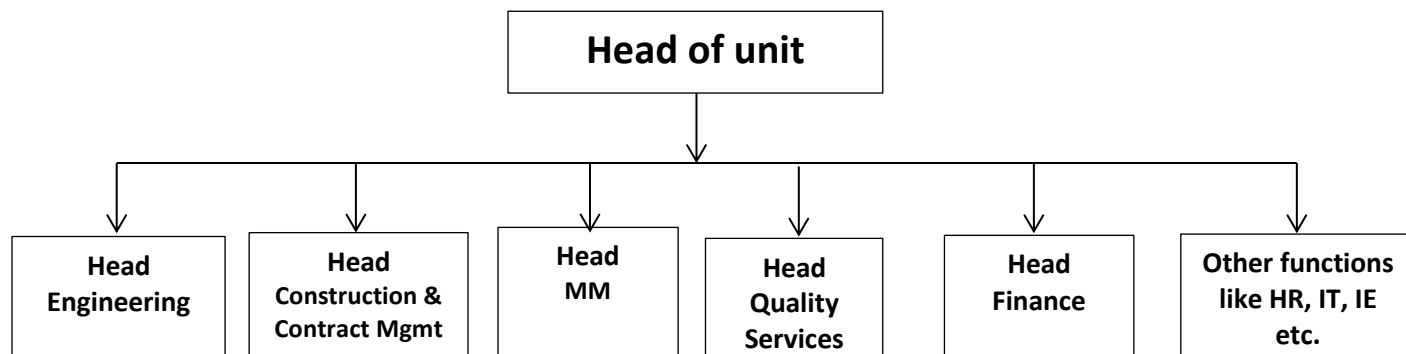
Certification body address: 5th Floor, 66 Prescott Street, London, E1 8HG, United Kingdom.

Local office: Bureau Veritas (India) Private Limited (Certification Business)
72 Business Park, Marol Industrial Area, MIDC Cross Road "C",
Andheri (East), Mumbai – 400 093, India.

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization.
To check this certificate validity please call +91 22 6274 2000.



6. ORGANISATION CHART:



7. ORGANISATION AND RESPONSIBILITY:

The Departmental Procedures describes the interrelated responsibilities and authorities of various departments towards effective and coordinated quality functions. Engineering is responsible for ensuring the Project / Contract requirements through product specification, engineering documents etc. Quality Assurance (QA) establishes and reviews the quality assurance program for its adequacy. Head-Quality Services is responsible to the Head of the unit and has the freedom to identify and exercise corrective action on problems related to quality. Head-Quality Services co-ordinates the overall quality efforts and is responsible for implementing the quality program and his authority includes the right to stop any work which is not in accordance with code or contract. The decision of Head-Quality Services can't be overruled on matters affecting the quality. Quality Control (QC) is responsible for execution and maintenance of quality requirements and documentation of quality aspects. The position wise responsibilities of personnel in Quality Assurance and Quality Control are defined in the relevant departmental procedures.

8. LEADERSHIP & COMMITMENT FOR QUALITY:

The Head of unit, is a member of the Corporate Management committee and reports to the Director (IS&P). Equipped with the state-of-art engineering know-how, the unit focuses on continual improvement of Quality of its products and services. Unit head will conduct Quarterly Review Meetings to assess the effectiveness of the existing Quality Management System.

9. RELATIONSHIP MANAGEMENT WITH SUPPLIERS:

Supplier registration is one of the primary and important activities of MM functions. This is the entry point of supplier in BHEL. Suppliers are chosen carefully. In this process Engineering department ensure all the technical requirements for the required product are met. Quality Department ensures that the supplier is having necessary manufacturing and testing facilities.

Suppliers are audited by "Trained and Certified Assessor (TCA)". The input is sent to the Material Identification and Supplier Control Committee (MISCC) for registration.

10. INSPECTION CATEGORIZATION PLAN (ICP):

All applicable major items /packages for a project are listed in this document. These items /packages are classified into categories based on their functional criticality. Quality plan approval agency and scope of inspection are broadly indicated in the ICP.



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11. MANUFACTURING QUALITY PLAN (MQP):

All the major bought out items shall have the MQP. It is one of the reference documents for inspection. MQPs are divided into 4 stages, which are listed below:

1. Raw material stage
2. In Process stage
3. Final inspection and testing
4. Preservation & Packing

Scope of inspection shall be as per approved Inspection Categorization Plan.

12. DOCUMENT CONTROL:

Methods are defined for Document identification, change control, record of revisions, withdrawal of obsolete documents, Master Documentation list and control of distribution list etc. for PE&SD unit.

About retention of the documents:

All the documents like correspondence and drawings etc., are retained till the completion of the project. However, while disposing off the records the agency concerned will look into the need for the information & retain the same for 5 years or longer period, if required.

13. PROCUREMENT CONTROL:

All the bought out items are procured from approved vendors with necessary source inspection. Materials and bought out items are always procured with necessary test certificates. Continuous evaluation of quality of supplies is carried out for important items and reliable vendors are retained. Material Management procures them according to the technical specification. Quality Assurance (QA) ensures the quality requirements through manufacturing Quality Plan and Field Quality Plan. Quality Control carries out source inspection as per the approved MQP, Data sheet and approved drawings.

14. QMS AUDITS:

BHEL has a comprehensive plan of periodic system audit to verify the effectiveness of the Quality Management System program. System audits are performed by Quality Internal Auditors in all the areas twice in a year.

Apart from the internal audit, third party audit (by certification body) is also being conducted twice in a year.

The audit report is circulated to the entire concerned department. The correction, corrective actions & preventive actions are responded by Head of the concerned sections within 15 days.

15. EDUCATION AND TRAINING:

BHEL has in-house training programs designed to suit every cadre. Training program at the time of induction of personnel are organized by Human Resources Development Centre. Training program related to quality are organized by Quality Assurance department at various levels of workers, supervisors and executives. Training forms a part of the career development programs and efforts are continuously made to update and disseminate new technology.

16. INSPECTION ARRANGEMENTS:

BHEL has inspection arrangements with the many reputed agencies like M/s TUV-SUD, M/s SGS India Pvt Ltd. In addition to the above, BHEL Quality Control / Customer/Consultants also carry out inspection as per approved Inspection Categorization Plan (ICP).



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17. PRESERVATION AND PACKING:

All the bought out items are packed & stored as per BHEL standard packing procedures.

18. SITE FEEDBACK SYSTEM:

Any discrepancies in the products supplied to sites are brought to the notice through Site Action Requests (SARs). Committee has been formed for analysis of the site complaints. The analysis of the complaints is carried out periodically to find out the major problem areas, in which corrective actions are initiated.

19. CUSTOMER COMPLAINT HANDLING SYSTEM:

All the complaints are sent to the contract management for immediate complaint registration and the complaint is forwarded by contract management to the concern closing department. The complaint is brought to the committee for the root cause analysis, corrective action and preventive action. The committee ensures that the corrective action and preventive actions are implemented.

20. ABBREVIATION:

SL No.	Acronym	Abbreviation
1.	GTG	Gas Turbine Generator
2.	IGCC	Integrated Gasification Combined Cycle
3.	CCP	Combined Cycle Power Plant
4.	PLC	Programmable Logic Controller
5.	ECS	Electrical Control System
6.	DCS	Distributed Control System
7.	IS&P	Industry Sector & Power
8.	SWAS	Steam & Water Analysis System
9.	MM	Material Management
10.	IT	Information Technology
11.	IE	Industrial Engineering
12.	HR	Human Resources

21. RECORD OF REVISIONS

Revision No.	Date	Revision Details	Revised by	Approved by
00	17.04.2015	First Issue	-----	ARC (-Sd-)
01	18.05.2016	ISO certificate, TPIA details and Organization chart are updated.	KPP (-Sd-)	ARC (-Sd-)
02	29.09.2018	Revised inline with Quality policy & QMS Manual.	KPP (-Sd-)	ARC (-Sd-)
03	07-02-2020	Revised inline with Quality policy & ISO 9001:2015 certificate	KMK (-Sd-)	ARC (-Sd-)