



**NEELACHAL ISPAT NIGAM LIMITED
IRON AND STEEL PLANT
KALINGA NAGAR INDUSTRIAL COMPLEX
DUBURI, ORISSA - 755026**

**GENERAL SPECIFICATION
FOR
QUALITY SYSTEM, INSPECTION &
TEST OF PLANT / EQUIPMENT
AT MANUFACTURER'S PREMISES
(GS-05)**



**MECON LIMITED
RANCHI - 834002
INDIA**



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ENCLOSURES:

- i) Form No.11.20.(DQM)F-09 Rev-0 - QAP for Structural & Mechanical Equipment
- ii) Form No.11.20.(DQM)F-10 Rev-0 - QAP for Electrical Equipment
- iii) Form No.11.20.(DQM)F-11 Rev-0 - QAP for Refractory Materials.
- iv) Form No.11.20.(DQM)F-5/2 Rev-0 - Inspection Call Proforma.
- v) Form No. 11.20.(DQM).F-30 Rev 0 – QAP for engineered & Manufactured Items
- vi) LIST OF MECON OFFICES and Contact Address Details



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**GENERAL SPECIFICATION ON QUALITY SYSTEM, INSPECTION
& TEST OF PLANT & EQUIPMENT AT MANUFACTURER'S
PREMISES**

1.0 GENERAL

- 1.1 Inspection & testing of plant & equipment shall be carried out by MECON/ NINL at the works of successful tenderer during manufacturing and/or on final product to ensure conformity of the same with the acceptable criteria of technical specifications, approved drawings, authenticated manufacturing drawings and reference national / international standards.

2.0 QUALITY SYSTEM REQUIREMENTS

The successful tenderer must recognise the importance of quality and follow defined quality programme in all manufacturing and quality control activities of the product. Contractor must define and implement the tasks and controls that will provide needed assurance, in case manufacturing of product is sub-contracted either partly or fully and/or for the procured components of the product. All bought-out equipment or component shall be procured from vendors issued duly approved by the project authority.

MECON/ NINL reserve the right to verify the quality programme and entire product characteristics to assure the intended and specified quality of the product.

3.0 QUALITY ASSURANCE PLAN (QAP)

- 3.1 The successful tenderer shall furnish Quality Assurance Plan (QAP) for respective equipment after completion of detailed engineering and finalisation of billing schedule / equipment identification number for MECON's approval at least one month prior to start of manufacturing.
- 3.2 QAP shall be prepared & furnished by Contractor in Form Nos. **11.20(DOM)F-09,10 , 11 (specimen blank enclosed)** for structural & mechanical equipment, electrical equipment and refractory materials respectively , primarily for bought-out items. For **engineered and manufactured items** of any category **format F-30** may be utilized. Such QAPs shall be prepared either based on generic quality assurance plan , if furnished by MECON to the successful tenderer, alongwith the placement of purchase order or these should be based on standard QAP / test plan etc being followed by Manufacturer . QAPs must be submitted in four (4) sets for approval, maximum within 60 days' from the placement of order . **QAP submitted in any format other than those mentioned above will not be accepted.**
- 3.3 The successful tenderer shall indicate procurement source and furnish to MECON, during the submission of QAP, copies of P.O., Sub-P.O., T.S., approved GA drawings/ data sheets & detailed manufacturing drawings, as backup reference materials for scrutiny & final approval by MECON. The submission & subsequent approval of QAPs shall be ensured to be restricted to one round only.
- 3.4 Inspection and test requirements shall be decided with due consideration of factors like safety, duty cycle, operating conditions, equipment life, environmental conditions, place of installation and statutory regulations, as applicable, for a particular equipment. Any, additional type or special tests or routine tests if found necessary to establish the intended quality, the same shall have to be incorporated in the QAP without any commercial implication.



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3.5 Detailed QAP shall be prepared by the successful tenderer in consultation with Sub-contractors / Manufacturers .

4.0 CALIBRATION OF MEASURING EQUIPMENT

4.1 All the measuring equipment used for inspection & testing shall be calibrated and appropriate accuracy class of measuring equipment shall be used. Calibration standards used for calibration of measuring equipment shall be traceable to national standards of National Physical Laboratory (NPL), New Delhi with unbroken chains of comparison.

4.2 Valid calibration certificate for all measuring equipment used during inspection and testing at manufacturer's works, with traceability to national standards of NPL/ NABL accredited laboratories shall be furnished along with inspection call prior to undertaking inspection by MECON/ NINL.

Calibration certificate shall also indicate reference no. of calibration standards calibrated by NPL/NABL accredited laboratories and copies of such calibration certificates of calibration standards shall included in the compiled dossiers of inspection/test results.

5.0 TEST CERTIFICATES AND DOCUMENTS

5.1 For each of the items being manufactured as per approved QAP , following test certificates and documents, as applicable for each of the equipment, in requisite copies including original, duly endorsed by the Manufacturer/successful tenderer with appropriate linkage to project, purchase order and acceptance criteria etc shall be submitted to MECON/ NINL.

- i) Raw materials identification & physical and chemical test certificates for all materials used in manufacture of the equipment (except IS: 2062-1992 Gr.A & IS: 210-1993, FG-150).
- ii) WPS, PQR & WPQ documents as per applicable code.
- iii) Details of stagewise inspection & rectification records for fabricated items, castings, forgings and machined articles.
- iv) Control dimension chart with records of alignment, squareness etc.
- v) Manufacturer's material and performance/relevant test certificates for all bought-out items.
- vi) Details of heat-treatment and stress relieving charts as per specification.
- vii) Non-Destructive Test reports as per respective code.
- viii) Static/dynamic balancing certificate for rotating components/machines.
- ix) Hardness test certificate.
- x) Pressure/Leakage Test Certificates.
- xi) Performance Test Certificates for all characteristics.
- xii) Routine / type / calibration /acceptance / special test (Type Tests etc) certificates for electrical items.



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xiii) Surface preparation and painting certificates.

xiv) Certificates from competent authority for the items coming under statutory regulations.

5.2 Where physical and chemical test certificates of material are not available, the successful tenderer/Sub-contractor shall arrange to have specimens and test samples of the materials, tested in his own laboratory at his cost and submit the copies of test results in requisite numbers to MECON/NINL for review. Number of test samples against each heat/cast/lot or batch of materials, as applicable shall be as per relevant Indian or International Standards.

5.3 Where facilities for testing do not exist in the successful tenderer/Sub-contractor's laboratories or in case of any dispute, samples and test pieces shall be drawn by the successful tenderer/Sub-contractor in presence of MECON/ NINL and sealed sample shall be sent to any Govt. approved /NABL accredited laboratory for necessary tests at former's own cost.

5.4 The MECON/ NINL shall have the right to be present and witness all tests being carried out by the successful tenderer/Sub- contractor at their own laboratory or approved laboratories. Also, the Inspection Agency shall reserve the right to call for confirmatory test on samples, at his discretion.

6.0 INTERNAL INSPECTION BY SUCCESSFUL TENDERER / MANUFACTURER

6.1 Inspection and tests shall be carried out by Contractor/ Manufacturer in accordance with approved drawings, T.S., P.O., and approved QAP. They shall maintain records of each inspection and test carried out and signed documents shall be submitted to NINL/MECON for verification.

6.2 The successful tenderer shall carry out their internal inspection & obtain clearance from statutory bodies e.g. IBR, CCE, TAC, Weights & Measures, safety, IE rules etc. prior to offering any equipment for NINL/MECON's inspection in accordance with approved QAP.

6.3 The successful tenderer/ Manufacturers shall identify all the inspected equipment/component/raw materials & shall maintain the record of status of inspection viz. inspected & found acceptable, require rectification/rework, rejected etc.

6.4 The successful tenderer shall establish and maintain procedures to ensure that product that does not conform to specified requirements, is prevented from inadvertent use or installation. The description of non-conformity that has been accepted subsequently by MECON/ NINL by concession and/or of repairs, shall be recorded.

Repaired and reworked product shall be offered for re- inspection to MECON/ NINL alongwith records of corrective action taken.

7.0 MANUFACTURING AND INSPECTION SCHEDULE

All contractors shall submit the schedule for manufacturing and inspection indicating equipment / components, sub- assembly/ assembly. Date of approval of drawings / data sheets. Address of manufacturer with contact person and scheduled date of inspection. Such reports shall be submitted to respective MECON Inspecting Offices with a copy to Inspection Co- ordinating Office once in a month.



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These monthly reports shall state the planning for next three months. Submission of first reports must commence one month prior to commencement of manufacturing activities of the product.

8.0 METHOD OF UNDERTAKING INSPECTION & TESTING BY MECON/NINL

8.1 Inspection call shall be given only on readiness of the equipment/ assembly/ sub-assembly as per all approved relevant drawings and QAP. In case, equipment/ assembly/ sub-assembly offered for inspection are found not ready, all the cost of visit of MECON's engineer shall have to be borne by the successful tenderer.

If the equipment/assembly/sub-assembly after inspection found not acceptable, require rework and involve MECON's re-inspection, all the cost of such re-inspections shall also have to be borne by the successful tenderer, as per procedure.

8.2 Inspection call shall be floated to MECON, Ranchi in the enclosed Form No.11.20(DQM)F-05/2.REV-0 duly filled in, with ten days clear margin, enclosing all documents like test Certificates, Internal Inspection Reports, P.O., Sub-P.O., T.S., Approved QAP, approved GA drawings/ data sheets and manufacturing drawings. Inspection calls without above documents shall be treated invalid and ignored. The hard copy of such documents must also accompany a CD (comprising computer readable files) containing the identical documents .

8.3 The successful tenderer shall offer substantial quantities for economical inspection consistent with the size of order.

8.4 On receipt of the Inspection call, pertaining to particular package / equipment / item, QA & Inspection group of MECON, Ranchi (Overall co-ordinating office for Inspection activities) shall organize inspection visit or shall issue Inspection assignment to other MECON office (based on nearness to the vendor's manufacturing works / relevant job expertise). For further inspection pertaining to the same package / equipment / item, successful tenderer may forward the subsequent inspection calls to the respective MECON offices (as identified per initial assignment), with a copy to QA & Inspection Section, MECON, Ranchi.

9.0 OBLIGATIONS OF SUCCESSFUL TENDERER

9.1 The successful tenderer shall provide all facilities and ensure full and free access of the Inspection Engineer of NINL/MECON to their own or their Sub-Contractor's premises at any time, during contract period, to facilitate him to carry out inspection & testing of the product during or after manufacture of the same.

9.2 The successful tenderer shall delegate a Representative / Co-ordinator to deal with MECON/ NINL on all inspection matters. Representative of successful tenderer shall be present during all inspection at Sub-Contractor's works.

9.3 The successful tenderer shall comply with instructions of MECON/ NINL fully and with promptitude.

9.4 The successful tenderer/ Sub-Contractor shall provide all instruments, tools, necessary testing & other inspection facilities to MECON/ NINL free of cost for carrying out inspection.

9.5 The cost of testing welds by ultrasonic, radiographic and dye penetration tests etc. in the fabrication workshop shall be borne by the successful tenderer.



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- 9.6 The successful tenderer shall ensure that the equipment/assembly/ component of the plant and equipment required to be inspected, are not dismantled or despatched before inspection.
- 9.7 The successful tenderer shall not offer equipment for inspection in painted condition unless otherwise agreed in writing by MECON/ NINL.
- 9.8 The successful tenderer shall ensure that the equipment and materials once rejected by the MECON/NINL, are not re-used in the manufacture of the plant and equipment. Where parts rejected during inspection have been rectified as per agreed procedures laid down in advance, such parts shall be segregated for separate inspection and approval, before being used in the work.

10.0 STAMPING AND ISSUE OF INSPECTION DOCUMENTS

- 10.1 **Inspection Memo:-** For rejected items/items, which do not conform to Technical Specification in one or more quality characteristics requiring rectification / rework, Inspection Memo shall be issued indicating therein the details of observation & remarks. All the non-conformities with respect to specification of the product shall be indicated in the Inspection Memo for further quality control by successful tenderer.
- 10.2 **Inspection Certificate:-** On satisfactory completion of final inspection & testing, all accepted plant & equipment shall be stamped suitably and Inspection Certificate shall be issued by the MECON for the accepted items.

11.0 GENERAL CLAUSE

- 11.1 Inspection & tests carried out by MECON/NINL shall not absolve the responsibility of the successful tenderer/ Manufacturer to provide acceptable product as per the terms of contract nor shall it preclude subsequent rejection.
- 11.2 NINL/ MECON reserve the right to inspect any product at any stage of manufacturing beyond pre-identified stages & hold points of approved QAP.