



QUALITY MANAGEMENT SYSTEM

1. OBJECTIVES:

ABS is in the process for achieving the ASME U-STAMP & ISO 9001-2000 Certificates.

The manufacturing and QC departments operate on most effective systems developed for the fabrication, material control, stage inspections, document and data control. These systems comply with the quality control and documentation requirements of ISO 9001-2000 and ASME U – Stamp accreditation.

ABS, being the manufacturer of equipment for Oil & Gas, Petrochemical industries, other process and manufacturing industries, has developed a very efficient in-house Q.C. System. This department monitors the fabrication quality by adopting the set procedure and stage inspection during fabrication. This system supports the testing and inspection requirements of internationally recognized standards and codes, such as:

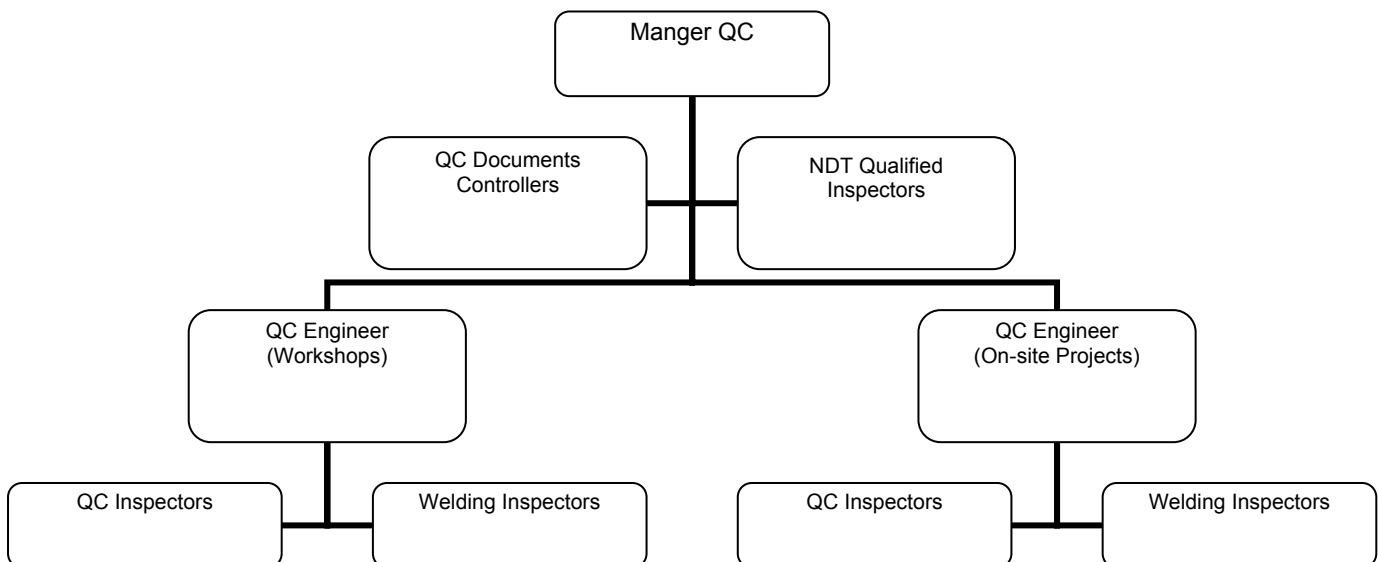
ASME Section VIII-Div. 1,2 & BS 5500 for Pressure Vessels, Heat Exchangers, Columns and Reactors, ASME Section II (A,B,C, D) for material and filler material selection, ASME Section V for NDT, ASME Section IX welders and welding procedures qualification, TEMA – RCB for Heat Exchangers, API 661 for Air Coolers / Heaters, API 650 for Storage Tanks and ANSI standards for Pipe lines.

2. Q.C. DEPARTMENT:

Q.C. department is headed by Q.C Manager who is assisted by Q.C. Inspectors, welding Inspectors and documentation and data controllers.

The in-house team of Inspectors carries out visual, dimensional and other stage inspections during fabrication, whereas NDT is subcontracted to a qualified NDT agency. The qualification documents and past similar experiences record of authorized level II or level III NDT personnel are reviewed by the Q.C Manager and after satisfaction the agency is appointed.

ORGANIZATION OF QC DEPARTMENT





QUALITY MANAGEMENT SYSTEM

2.1 FUNCTION OF QC DEPARTMENT:

- To make the Inspection & test plans, according to the technical requirement of specific job and ensure the implementation of these plans.
- To ensure the quality of material, workmanship and welding procedures in accordance with relevant codes and approved procedures.
- To check, verify and approve the manufacturing activities according to ITP.
- To carry out the NDT (such as RT, UT, PT, MT, dimensional checking, hydrostatic and pneumatic testing) and witness the “HOLD” points during manufacturing and maintain the record of ITP’s Travelers and check lists.
- To detect the non-conformities and propose the procedures for rectification.
- To ensure the rectification of non-conformities, according to the approved procedures.
- To keep the documentary records of Mill test Certificates, material reports, inspections, tests, non-conformities & their corrections and the M.D.Rs.

3.0 QUALITY CONTROL & PROCEDURAL DOCUMENTATION:

To provide guideline for manufacturing and quality control measures, to the technical staff of the company, various methodologies and procedures have been developed in a documented form.

These documents are prepared in accordance with the requirement of ISO 9001-2000, applicable codes, good engineering practice and previous experiences for the execution of various fabrication jobs and complete turn key projects.

Following documents are available as a guideline:

3.1 Methodologies & Procedures:-

- Steel Storage Tanks
- Shop Fabricated Plant Piping Spools
- Steel Structures
- Sand Blasting & Painting
- Cross-country Pipeline

3.2 QC Documentation:-

- QC manual for Pressure Vessel & Heat Exchangers
- Inspection & Test Plans for Storage Tanks
- Inspection & Test Plans for Pressure Vessels & Heat Exchangers
- Inspection & Test Plans for Steel Structures
- QC Plans for Plant Piping
- Inspection & Test Plans for Cross-country Piping

3.3 Operational Documents:-

- Production Planning and Control (Project Implementation)
- Material Control Manual (Inspection & Non- Conformities Control)
- Purchasing Procedure (Local and Foreign Material Procurement)
- Safety Manual (Safety & Environmental Protection)



QUALITY MANAGEMENT SYSTEM

3.4 Test Procedures:-

- Hydrostatic Testing
- Full water Leak Test
- Oil Penetrant Test
- Magnetic Particle Test
- Pneumatic Test
- Peaking & Banding Test
- Radiographic Examination
- Vacuum Test
- Galvanizing Adhesion Testing

Written procedures, check lists and travelers are available in above documents for checking, inspection & testing for various activities such as; drawings review, material inspections, fabrication stage inspections, surface preparation and coating, etc.

4 INSPECTION & TEST PLANS:

Upon receiving a Purchase Order, a work order is prepared and a copy is provided to Quality Control Department. Quality Control Department reviews the design, drawings, specifications and specific test and inspection requirements.

An "Inspection & Test plan" is prepared by the Quality Control Department which is based on the client's specific requirement, good engineering practices, applicable codes and specification.

Following tests and examinations are carried out during fabrication and field erection works:

- | | |
|--|--|
| - Dimensional inspection | - By in-house inspectors |
| - Welding visual inspection | - By in house welding inspector |
| - Dye Penetrant Tests (PT) | - By in house welding inspectors |
| - Radiography Testing (RT) | - Sub contracted to qualified agency |
| - Magnetic Particle Tests (MT) | - Sub contracted to qualified agency |
| - Ultrasonic Test (UT) | - Sub contracted to qualified agency |
| - Destructive Mechanical & Chemical analysis | - Sub contracted to approved testing Laboratory. |
| - Welding procedure qualification test | - Sub contracted to approved testing Laboratory. |

5.0 TESTING EQUIPMENT:

5.1 NDT Equipment (Available with approved NDT Agency)

- | | |
|---------------------------------------|------------------------------------|
| - Radiographic Testing Machine | = Tech Ops 660, 20 & 100 Curies. |
| - Ultrasonic Flaw detector | = USK-75 / USL – 32, 0.5 to 10 MHz |
| - Magnetic Particle testing Equipment | = Probe type Yoke, 1000 Amps. |

5.2 Destructive Testing Equipment & Machines (Available with our approved Agency)

- Universal Testing Machine
- Charpy Impact Tester
- Hardness Tester
- Spectrometer
- Pressure gauges testing / calibration bench
- Measuring Tapes calibration Jig.



QUALITY MANAGEMENT SYSTEM

5.3 Welding Inspection Instruments and Gauges

- Fillet weld measuring gauges
- Hi-Low measuring gauges
- Bevel measuring gauges
- DC / AC Ampere meter (Clamp Type Tester)
- Digital Thermometers (for PWHT temperature checking)

5.4 Pressure / Leak Testing Equipment

- Pump for pressure testing (upto 20,000 PSI)
- Pressure gauges (upto 16,000 PSI)
- Compressor for Pneumatic tests (upto 150 PSI)
- Pressure / holding and relief valves.