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TUBE PRODUCTS INCORPORATE

QUALITY SYSTEM MANUAL

SECTION – 1

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QUALITY SYSTEM MANUAL

SECTION – 2

DISTRIBUTION LIST

The controlled copies of quality system manual shall be issued by Mr and distributed among the following personnel:

Sr. No.	ISSUED TO
1	Managing Director (M.D.)
2	Head of Department – Marketing
3	Head of Department – Quality Assurance
4	Head of Department – Production
5	Head of Department – Finance and Accounts.
6	Head of Department – Stores & Despatch
7	Head of Department – Personnel & Administration
8	Head of Department – Project (Contracts, Planning & Co-ordination)
9	Head of Department – Maintenance

Only above mentioned personnel are entitled to get any revisions or amendments to Quality System Manual.

Uncontrolled copies of Quality System Manual may be issued at the discretion of the Managing Director and these do not fall under the amendment services.

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SECTION – 3

MANUAL AMENDMENT SHEET

Sr. No.	Section No.	Old Rev. No.	Current Rev. No.	Rev. Details	Date	Authorization
1	All Section		00	First Issue	01/10/1999	M.D.
2	All Section	00	01	Second Issue	01/03/2000	M.D.
3	All Section except 4.1.1	01	02	Third Issue	01/07/2000	M.D.
4	All Section except 4.1.1	02	03	Fourth Issue	12/06/2001	M.D.
5	All Section	03	04	Fifth Issue	01.03.2003	M.D.

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SECTION –4. Quality Management System.

4.1 General Requirement.

The management of Tube Products Incorporate has established documented, implemented and maintained Quality Management System, which includes all the functions/activities that affect the quality of the product given to the customers.

Section-4.2 Documentation requirement

4.2.1 General

The management of Tube Products Incorporate has established, documented, implemented and maintained quality management system, which includes all the functions/activities that affect the quality of the product given to the customers.

The documented quality management system shall be in the form of the following Quality manuals.

Quality procedure manuals, work instructions, formats and quality planning.

4.2.2 Quality Manual

Quality System Manual:

This forms the tier one of the documented quality system covering the requirement of the ISO 9001-2000 standard. It is intended to be used by the company's top management and for customer as and when agreed. As appropriate, the sections of the Quality System Manual give reference to the relevant procedures.

Quality system procedures

This forms the tier two of the documented Quality Systems. It is intended to be used for the designated personnel of different departments. References to relevant ISO standards are made in the procedures and work instructions. Procedure contains references to the relevant work instructions and formats as appropriate. Procedures are prepared as per the requirements of the ISO 9001-2000 standard and are consistent with the quality policy of the company.

Work Instructions

These forms tier three of the documented quality system. They define detailed step by step instructions how various operations are performed.

Formats:

These forms tier four of the documented quality system. These are referred to in procedure. All the formats are controlled by respective departmental heads / section Incharge as per documented procedures.

4.2.3. Control of documents:

General

The management follows documented procedures for controlling all documents and data which affect the performance and effectiveness of the quality system. These documents and data include Quality System Manual, Procedure Manual, Work Instructions, Formats, Codes of practice, National/International standards/ Drawings, Quality Plans and Customer Specifications.

Documents and Data Approval and Issue:

It is ensured for documents control is established to ensure that only the latest revision (s) of document are available for use. Master list of all documents with current revision status is maintained and is readily available with all the departments and precludes use of invalid/obsolete documents.

The revision status of the document is identified by means of revision number on each page of the documents.

Document Changes

The management has established procedure for effecting changes to document and data through review and approval by the designated authority. Changes to documents are identified by recording the nature of changes in the amendment sheet or on the document itself. The revision number is recorded on the documents.

The authority for operation and approval for various tier of the documented quality system are as follows:

Sr.No.	Manual/Tier	Prepared	Checked	Approved	Issued
1.	Quality System Manual	MR	-	MD	MR
2.	Procedures	Member of department	HOD	HOD	MR
3.	Work Instruction	Member of department	HOD	HOD	MR
4.	Formats	Member of department	HOD	HOD	MR
5.	Standard/Specification	-	-	-	HOD-QA
6.	Drawings	Draftsman	HOD	HOD	HOD

"CONTROLLED' copies of any documents are copies in which the holder received addition, updates or changes to the documents. Each page of such document is marked with red ink colour as "CONTROLLED COPY IF STAMPED RED".

"UNCONTROLLED" copies are copies in which the holder does not receive additions, updates or changes to the manual. Uncontrolled copies are issued only on written request and are for information along. No record is maintained for uncontrolled copies.

The pertinent issues of appropriate documents are made available at all locations when operations are carried out.

The controlled copy-holders are responsible to remove all invalid and/or obsolete documents from points of use to prevent unintended use. Obsolete documents if any retained for legal and for knowledge preservation purposes are identified appropriately and stored separately. Master copy of "OBSOLETE" documents shall be retained by the Management Representative for a period of 12 months from the date of the following revisions.

Changes to documents and data are reviewed and approved by the same functions, which performed the original review and approval.

The head of Department –QA shall update the applicable published standards and copies, so that the latest applicable standards and codes are available.

Responsibility: Management Representatives.

Reference: P: MR: 002 Procedure for document of data control.

4.2.4. Control of records

The Quality records are identified, indexed, filed and stored so that they are retrievable. They are stored in suitable environment to prevent deterioration or damage. The quality records demonstrate conformance and effective operations of the quality systems.

The procedure for control of quality record specifies list of Quality record, their retention period and shops to maintain and dispose item. All the quality records are legible. The retention periods of the quality records are as specified in the respective procedure manuals. Quality records stored in electronic media are suitably stored and prevented from unauthorized usage.

Where contractually agreed, the customer may have access to the quality records for an agreed period for evaluation.

Responsibility: Management Representatives and All department heads for their respective records.

Reference: P: MR: 004 Procedure for control of Quality records.
P: MR: 002 Procedure for document and Data Control.

Section-5. Management Responsibilities.

5.1. Management Commitment

This Quality System Manual is the guiding part of the Quality assurance activities of TUBE PRODUCTS INCORPORATE. Quality Manual describes the Quality Policy and objectives of the company and provides the reference to the procedure for operating and maintaining Quality Management System as per ISO 9001-2000 standard for manufacturing with the sole aim of achieving Quality in every activity and working for continuous improvement. The management is committed to meet requirement of the customers with a sound Quality System in operation.

The quality systems adopted in TUBE PRODUCTS INCORPORATE are tuned to meet ISO 9001-2000 requirement and they signify the move and determination of the company towards total Quality Movement.

5.2. Customer Focus

Customer requirements are adequately defined, documented and the company has the capability to meet the contractual requirement.

5.3. Quality Policy

QUALITY POLICY

We at TPI are committed to satisfy customer requirements in terms of Quality and strive to be their preferred business partner by adhering to ISO 9000 Quality Management System, with continuous improvement.

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TUBE PRODUCTS INCORPORATE

QUALITY SYSTEM MANUAL

Management Responsibility

QUALITY POLICY

WE AT TPI ARE COMMITTED TO SATISFY CUSTOMER REQUIREMENTS IN TERMS OF QUALITY AND STRIVE TO BE THEIR PREFERRED BUSINESS PARTNER BY ADHERING TO ISO 9000 QUALITY MANAGEMENT SYSTEM WITH CONTINUOUS IMPROVEMENT.

Place: Baroda **Janak Katakia**
Date: 1st March, 2003 **Managing Director**

OBJECTIVES

Quality in terms of

(a) Aiming Zero defect products
(b) Supplying products as per agreed specification
(c) Timely supplying of products to the customers
(d) Identifying and imparting requisite training to our employees.
(e) Providing resources for continuous improvement and developments
(f) Increasing customers.

TPI's MOTTO

"EXCEL WITH TALENTS, TRIUMPH WITH EFFORTS"

Section 5.4 Planning:

5.4.1 Quality Objective:

Quality in term of

(a) Aiming zero defect products.

(b) Supplying products as per agreed specifications.

(c) Timely supplying of products to the customers.

(d) Identifying and imparting requisite training to our employees.

(e) Providing resources for continuos improvement and developments

(f) Increasing customers.

TPI's MOTTO

"EXCEL WITH TALENTS, TRIUMPH WITH EFFORTS"

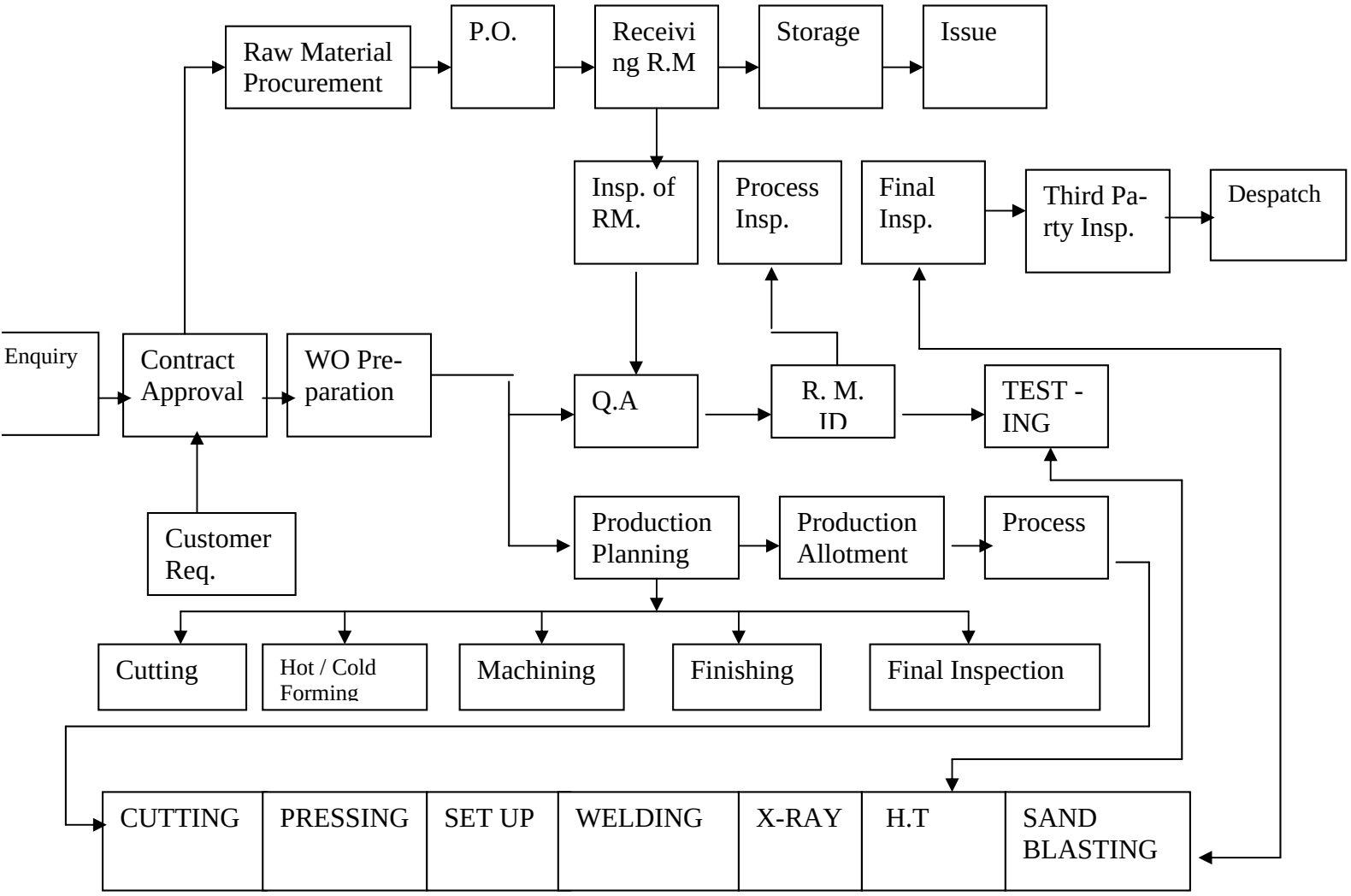
5.4.2 QMS PLANNING

The Management of Tube Products Incorporate has identified and planned the activities and resources needed to achieve quality requirements specified in purchase order. Quality planning is carried out in management review wherein any additional requirements in terms of facilities, equipment, personnel are considered and allotted by management. The management is committed to achieve the specifications and requirements of customers / inspection agencies / applicable codes for the product. Testing / inspection facilities are identified and made available either in house or from outside agencies.

Contract Quality Planning is done by the company to meet the specific requirements of the purchase order terms. Quality plans are prepared during inquiry stage if required by the customer. On receipt of order, quality plan are prepared by Quality Control Engineers and submitted to the client / inspection agency for approval. Quality Plan describes the stages at which checks are carried out, applicable code / standard, quality records and the amount of inspection.

Responsibility: HOD – Q.A.
Reference: P: QAD: 009 – Procedure for Quality Planning.

QMS FLOW CHART



The management of Tube Products Incorporate has established Process Flow Chart and the department wise objectives for the smooth operation of all activities in the organization.

5.5 - Responsibility, Authority and Communication.

The responsibility, authority and the inter relation of personnel who manage, perform and verify work affecting quality shall be defined and documented, particularly for personal who need the organizational freedom and authority to: -

(a) Initiate action to prevent the occurrence of any non-conformities relating to the product, process and quality system.

(b) Identify and record any problems relating the products, process and Quality systems.

(c) Initiates recommend or provide solutions through designated channels.

(d) Verify the implementation of solutions.

(e) Control further processing, delivery of installation of nonconforming product until the deficiency or unsatisfactory condition has been corrected.

(f) In absence of HOD / Manager, next Senior person shall take over the responsibility of HOD / Manager.

(i) MANAGING DIRECTOR (MD)

MD is responsible for

(a) Overall management of the Company
(b) Providing resources for the performance of work.
(c) Deciding on the overall business policy
(d) Deciding on new ventures/diversification.
(e) Import decisions.
(f) Appointment of MR.

(ii) HOD Marketing

Head of Marketing Department Report to Managing Director and responsible for: -

(a) Overall functions of marketing department/contract review.
(b) Development of new business.
(c) Preparation of marketing plan.
(d) Monitoring submission of all tenders/offers prepared by the marketing engineers and contract review of order acceptance by the marketing engineers.
(e) Registration and approval/review of our firm with customers and inspection agencies.

(iii) MARKETING ENGINEERS

Marketing Engineers: reports to Head of Marketing and are responsible for: -

(a) Receipt of all enquiries and preparation of offer.
(b) Ensure requirements are clearly addressed in the offer and deviations are highlighted.
(c) Submission of offers.
(d) Verify and review whether orders received from customers are as per quote / tender.
(e) Issue of work orders on order acceptance.
(f) Issue of order amendments to all concerned functions.
(g) Marketing Engineers (Seniority wise) shall act an In-charge of Marketing in absence of Head of Department –Marketing.

(iv) HOD PROCUREMENT (PURCHASE)

Head of Procurement (Purchase) department reports to MD is responsible for: -

(a) Selection of Sub-Contractor/Vendor based on ability to meet the requirement.
(b) Preparation and authorization of purchase order.
(c) Assessing Sub-contractors' / Vendors' performance at regular intervals.
(d) Maintain records of all purchase activities.

(v) HOD PROJECTS (CONTRACTS, PLANNING OF CO-ORDINATION)

Project (contracts, planning and co-ordination) report to MD and is responsible for:

(a) Monitoring of work order/completion.
(b) Liaisons with customers during orders execution.
(c) Follow-up with clients for payment.
(d) Issue dispatch instruction to plant based on customer instruction.
(e) Billing and preparation of all documents.
(f) Co-ordinate with customer for dispatch clearance.
(g) Attending to customer complaints and coordinating internally with HOD production and HOD QA.

(vi) QUALITY ASSURANCE & TECHNICAL (QA & T) INSPECTION.

HOD – QA, T & I report to M.D. and are responsible for: -

(a) Disposition of the Non-confirming Products by re-grading or scraping.
(b) Identifying and controlling further processing of non-confirming product until he deficiency or unsatisfactory conditions has been corrected.
(c) Approval of production process to meet the customer requirement.
(d) Selection of necessary plant and machinery for achieving the quality requirement.
(e) Initiation of preventive action on product Non-conformities.

(vii) QUALITY ASSURANCE ENGINEERS

Quality Assurance Engineers reports to HOD QA & T & I and are responsible for:-

(a) Responsible for all inspection activities in the plant.
(b) Identifying and recording any problems relating to product/process.
(c) Verify implementation of solutions to problems identified.
(d) Responsible for calibration of inspection/measuring/test equipment.
(e) Liaisons with external third party inspection agencies.
(f) Product identification and trace ability.
(g) NDT activities like UT & MPI.
(h) Approval of quality plans.
(i) Approval of new sub contractors/vendors.
(j) Monitoring product quality.
(k) Control of non-confirming Products.
(l) Inspection of test status.

(viii) NON-DESTRUCTIVE TESTING (NDT)

Head of NDT dept. reports to Head QA& I and is responsible for: -

(a) Carrying out radiography as per order requirement.

(b) Release of product for further processing after radiography.

(c) Ensure repair is re-inspected as per the order terms and release for further process.

(d) Maintenance of radiography records of inspection.

(e) Ultrasonic testing (UT).

(ix) LABORATORY (LAB)

Head of Lab department reports to Head QA & I and is responsible for: -

(a) Carryout physical/chemical test as per requirement.

(b) Calibration and maintain the conditions of the test equipment.

(c) Establish welding procedures.

(d) Approval & welding electrodes and their issue.

(e) Testing and approval of welders for the welding procedures.

(f) Monitoring of welding procedures carried out in the plant.

(g) Positive Material Identification (PMI)

(x) HOD –PRODUCTION

HOD Production reports to MD & is responsible for:-

(a) Achieving the targeted planned production in the plant.

(b) Planning the material requirements and initiate procurement.

(c) Preparation of production programme based on material availability.

(d) Determining economic manufacturing quantity in consultation with marketing.

(e) Control of sub-contracting activity and pacing orders.

(f) Providing status on orders under execution to department.

(g) Ensuring the use of suitable production equipment.

(h) Deciding the day-to-day priorities of the plant.

(i) Ensuring correction/preventive action are implemented and effective.

(j) Ensuring good house keeping practices and safe working in the plant.

(k) Ensuring timely completion of orders.

(l) Co-ordinates in resolving customer complaints.

(m)Monitoring Product Quality.

(xi) WELDED PRODUCTION

Head of Welded Production department reports to HOD production and is responsible for:

(a) Timely completion of order.

(b) Co-ordination with Quality Assurance for in-process inspection.

(c) Ensure proper use of production equipment.

(d) Responsible for control and operations of Heat treatment process.

(e) Ensuring identification traceability is maintained throughout the production cycle.

(f) Ensuring repair/ re-work is carried out as per instruction of QA department and offers the product for re-inspection.

(g) Ensuring good house keeping practices are followed in the plant.

(xii) SEAMLESS PRODUCTION

(COLD FORMING, HOT FORMING, CONVENTIONAL & FINISHING)

Head of Seamless Production Department reports to HOD Production and is responsible for:

(a) Achieving the day-to-day production as per HOD Production's instruction.

(b) Ensuring the production activities are carried out under controlled conditions.

(c) Ensure availability of tools and raw material for the production plan.

(d) Reporting on any problems during production to HOD Production.

(e) Co-ordination with QA for in-process inspection.

(f) Carrying out repair / rework as per Q.A. instruction.

(g) Rejection and segregation of damaged product / raw material.

(h) Maintenance of Mandrel tooling / Die.

(i) Ensure good house keeping practices are followed in the plant.

(xiii) MAINTENANCE

Head of Maintenance department reports to HOD production and is responsible for: -

(a) Preparations of Preventive Maintenance schedule.

(b) To carry out maintenance activities as per schedule.

(c) Preparing and maintaining records of maintenance.

(d) Attending breakdown of machine.

(e) Monitoring availability of spaces.

(f) Provisions and maintenance of utilities of the plant.

(g) Ensure good house keeping practices are followed in the plant.

(xiv) STORES AND DESPATCH

In-charge/Head of Stores and Despatch department reports to HOD Production / MD and is responsible for: -

(a) Receiving the materials as per the purchase orders.

(b) Offer the incoming material to inspection department.

(c) Verification of physical stock periodically.

(d) To maintain required stock level.

(e) Disposal of scrap.

(f) Maintenance of store records.

(g) Issue of materials.

(h) Stocking of finished products.

(i) Control of customer supplied products.

(j) Packing and despatches of finished products.

(xvi) PERSONNEL AND ADMINISTRATION (P&A)

Head of P&A department reports to MD and is responsible for: -

(a) Arranging training programs.
(b) Maintenance of training records.
(c) Induction and Orientation of New Employees.
(d) Ensure good house keeping and safe working practices.

5.5.2 Management Representative

MR R. Dhayanidhi Sr. Engineer is nominated as the Management Representative (MR) with effect from 1.6.2001 vide internal memo no. TPI/MD/LAL/2001 by the Managing Director in view of the resignation of Mr. Ashit Patel from the service in the company.

Mr. Nagendra Rao is appointed as Sub Management Representative with effect from 26.12.2001 vide internal memo No.TPI/MR/2377/2001.

Management Representative is responsible for: -

(a) Development and implementation of quality systems in line with ISO 9001-2000 standard.
(b) Monitoring and reporting for effectiveness in quality system to the management.
(c) Organizing management review meeting.
(d) Liaison with external agencies for quality system certificate/audit.
(e) Planning and conducting internal audit as per schedule.
(f) Documents review and control.

5-5.3 Internal Communications:

Mode of Communication:

Documented formats and written communication (inter office memo) have been followed.

5-6. Management Review

The management shall review the quality system every three months. MR calls the Management review meeting and frequent reviews may be held if needed, at the discretion of Managing Director.

1) Managing Director	**-**	**Chairman**
2) Management Representative	**-**	**Secretary**
3) Head of Marketing Department	**-**	**Member**
4) HOD Quality Assurance & Technical	**-**	**Member**
5) HOD Production	**-**	**Member**
6) HOD Projects	**-**	**Member**
7) HOD Purchase	**-**	**Member**
8) Special invitees as decided by the MD.		

The Committee reviews the followings: -

- **Points mentioned in the Agenda for the meeting**
- **Quality Planning**
- **Any other matter as felt necessary.**

Records of the management reviews are maintained.

Responsibility: Managing Director/Management Representative

Reference : P: MR: 001 Procedure for Management Review.

6. Resource Management

6.1. Provision of resources:

The management of Tube Products Incorporate has identified the resources requirement and has determined that resources are adequate to achieve the quality levels specified in orders requirement.

6.2.1 Human Resources:

The management has identified the resources requirements of trained personnel for performance of work and verifications activities. Trained personnel are allocated for internal quality audit. Where required by the applicable standard of codes, personnel performing inspection activities are qualified by external agencies. Additional resources requirement are identified in management review meeting.

6.2.2. Compliance, awareness and training:

(a) The management has ensured that all employees, whose performance affects quality, have the appropriate experience and training in order to carry out their tasks to the standard, which shall meet the customer's quality requirement.

(b) Procedure is established to identify the training needs of all such employees to plan and arrange relevant training and to maintain training records for these staff. The effectiveness of the training is monitored and accordingly improvements are made in the training programs.

Responsibility: Head of P & A Department

Reference : P: TRG: 001-Precedure for training.

6.3 Infrastructure:

The management has established and maintained the infrastructures needed to achieve conformity to product requirement.

That is buildings, workspaces, suitable process equipments, test equipments, software and hardware, laboratory facilities, transport and communication. Machine capabilities list is attached in Annexure A.

6.4 Work environment

The company shall identify and ensure that all activities relating to the Quality System procedure are carried out under controlled conditions.

Suitable working environment in the factory premises shall be maintained. House keeping and safety requirements shall be closely monitored and the factory area shall be kept clean and marked for area or activity identification.

Section – 7 Product realizations

7.1 Planning Product realization

The Management of Tube Products Incorporate has identified and planned the activities and resources needed to achieve quality requirements specified in purchase order. Quality planning is carried out in management review, where in any additional requirement in terms of facilities, equipment, personnel are considered and allotted by management. The management is committed to achieve the specifications and requirement of customers/inspection agencies/applicable codes for the product. Testing/Inspection facilities are identified and made available either in house or from outside agencies.

Contract Quality Planning: -

Contract quality planning is done by the Company to meet the specific requirement of the purchase order terms; Quality plans are prepared during enquiry stage, If required by the customer. In receipt of order, quality plans are prepared by Quality Control engineers and submitted to the client/inspection agency for approval. Quality plan describes the stages at which checks are carried out, applicable code/standard, Quality records and the amount of inspections.

The Management shall ensure that records, which give evidence that the product has passed inspection and or test with defined acceptance criteria, are established and maintained.

Responsibility: HOD (QA & T) / QA ENGINEER

Reference: P: QAD:009 –Procedure for Quality Planning.

7.2 Customer related processes.

The company has established and maintained procedure for customer related processes and for co-ordination of these activities.

Contracts are reviewed as defined in the procedure to ensure that the requirements are adequately defined, documented and the company has the capability to meet the contractual requirements.

Any amendments to the original contract are resolved with the customer. Such changes are documented and informed to the concerned department as per documented procedure.

Any deviations between contract and enquiry are resolved.

Code requirements, if any applicable to the products are identified and documented.

The ability of organization to ensure capability for compliance with those requirements is determined before order is accepted.

The contract requirements are transferred to all relevant departments to comply with contractual requirement.

All communications from the customers during the course of contract is received and replied whenever required by the customer; contract status is sent to the customer.

Records of all contracts are maintained for the period specified in the procedure.

Responsibility: Head of Marketing Dept. and
HOD Projects (Contracts + Planning & Coordination)

Reference: P: MKT:001 – Procedure for Contract Review
P:OPRN:001 – Addressing customer complaints:

7.3 Design and Development:

Tube Products Incorporate has followed the standard design. Standard codes are given in Annexure B.

7.4 Purchase

7.4.1 Purchasing Process:

The Management has ensured that purchased products and material effecting quality of the product conform to the requirements / specification or standards.

7.4.2 Purchasing Information:

Raw material and consumables affecting the product quality are procured from approved sub-contractors. For this purpose Head of Procurement department maintain list of approved sub-contracts. The performance of approved Sub-contractors is evaluated and records are maintained.

Purchase documents clearly describe the product ordered. Purchase orders are reviewed for adequacy and approved prior to release.

7.4.3 Verification of purchased products

The verification arrangement and method of product release are specified in the order where required.

Responsibility: Head of procurement Department.

Reference: P: PUR: 001 – Procedure for procurement

P: PUR: 002 - Procedure for Registration of Sub-Contractor

P: PUR: 003 - Procedure for evaluation of Sub-Contractor

P: PUR: 004 - Procedure for Job Work.

7.5 Production & Service Provision

7.5.1 Control of Production and Service provision.

Tube Products Incorporate has established documented procedures to ensure the process affecting product quality are carried out under controlled conditions.

The main processes carried out are:

Fabrication

Welding

Heat treatment

Hot forming

Cold forming

Procedures are established which specify the manner of production, use of suitable equipment and working environment. Special process and equipments are monitored and controlled. Welding and Heat treatment are the special processes.

Welding is carried out by qualified welders who are qualified by external agencie4s, if required welding engineer controls welding processes. Welding consumables are inspected upon receipt and issue is controlled. Heat treatment is carried out under contractual conditions and records of the time temperature cycle are maintained.

Planning Section controls material planning and shop loading. Procedures ensure that products are manufactured in time to meet the delivery commitments.

Responsibility: HOD – Production.

Reference:

P: PWD: 001- Procedure for manufacture of welded fittings

P: PWD:002- Procedure for H/T of fittings.

P: LAB:002 – Procedure for welding process control.

P: HFD: 001 – Procedure for cold forming.

P: PSD:001 – Procedure for hot forming.

P: PSD:002 – Procedure for finishing of seamless fittings.

P: PSD:003 – Procedure for manufacture of seamless fittings (Conventional)

P: MNT:001 - Procedure for Preventive Maintenance.

P: MNT: 002 - Procedure for Breakdown Maintenance.

P: STR:001 – Procedure for receipt, storage and issue of Materials.

P: STR:003 – Procedure for packing and dispatch of finished goods.

P: STR:004 – Procedure for control of customer supplied products.

P: STR: 005 – Procedure for materials handlings.

7.5.3 Identification and traceability:

Tube Products Incorporate has established, documented procedures for product identification and traceability from the incoming stage up to the delivery stage.

Raw material on receipt is marked with a unique ID No. which is noted on the material/Mill test certificates. The products manufactured from the lot of raw material carry the ID No. marked on the body during all stages of manufacture. When necessary material is identified and traceability verified as per order terms by the third party Inspection Agency.

Responsibility: HOD QA & T and QA & I Engineers.
Reference: P: QAD:006 – Procedure for identification & traceability.

7.5.4. Customer Property

Customer supplied product is verified on receipt and any damages are reported in writing to the customer. The product is stored and issued to production by stores Incharge. Any customer supplied product that is lost, damaged or otherwise unsuitable for use is recorded and reported to the customer.

HOD Project is responsible for Co-ordination with the customer and stores in-charge is responsible for safe custody, preservation and handling.

Responsibility: Head of department – Stores & Despatch.
Reference: P: STR: 004 – Procedure for Customer Property.

7.5.5. Preservation of Product

Tube Products Incorporate has established and maintained documented procedure for handling, storage, packaging, preservation and delivery of product.

The organization has provided methods and means of handling that prevent damage or deterioration of the product and have ensured that handling methods and equipment are adequate, safe and available.

Storage areas or stock rooms are provided to prevent damage or deterioration of raw material, in process material and finished product pending use or delivery and methods for authorizing receipt, and the despatch is defined. The condition of the products in stock is assessed by Stores to detect deterioration at periodic intervals.

Finished product is packed as per customer's specification and requirement.

Products, which require preservation have shelf life are identified. These are used as a first in first out basis. Care is taken that no product is used after shelf life of the product is over.

The management has ensured preservation during all stages of manufacture and the proper conditions of the goods after final inspection and testing is maintained. Where contractually specified, this protection is extended to include delivery to destination.

Responsibility: HOD of Stores & Despatch Department

Reference: P: STR:001 - Procedure for Receipt, Stores and Issue of Materials
P: STR:003 - Procedure for packing and despatch of finished goods.
P: STR:005 - Procedure for Material handling.

7.6 – Control of Monitoring and Measuring devices:

The Management has established and maintained procedures to ensure that all monitoring and measuring devices are identified, controlled, maintained and calibrated at the specified intervals of time with clearly defined acceptance / rejection limits.

Equipments having suitable accuracy and precision are selected for appropriate inspection and testing considering the measurements to be made and accuracy required.

Where deemed necessary, help of outside agency is taken for the calibration of those equipment, which cannot be calibrated, in house.

The calibration is done against certified equipment having tractability to national or international standards. If such standard do not exist, the procedure for calibration is either documented or calibration is done based on equipment manufacturer's recommendation. The process employed including type of equipment, unique identification, location, frequency of checks, acceptance criteria and check method is defined and also the action taken when results are not satisfactory.

It is ensured that calibration is carried out in a specified environment. The Management has ensured that the handling, preservation and storage of inspection, measuring equipment is such that the accuracy and fitness for use is maintained. All users of equipment are properly trained and authorities in its usage, storage and calibration system.

The identification and calibration status of all inspection, measuring and test equipment are documented and maintained. Records of calibration of these equipments are also maintained. The inspection, measuring and test equipment is safeguarded from adjustment, which would invalidate the calibration setting.

Wherever required by the customer or his representative the technical data or calibration records pertaining to inspection, measuring and testing equipments are made available to the customer.

Responsibility: HOD – QA & T – QA & I Engineers

Reference: P: QAD:005 – Procedure for Control of measuring, Inspection & Test equipment.

8. Measurement Analysis and improvement.

8.1 General

Quality plan covering all the inspection and testing activities necessary to assure product Quality is prepared for orders, whenever requested by the customer, the Head-Quality control is responsible for implementation and maintenance of quality plan.

8.2 Customer Satisfaction:

8.2.1 Customer Satisfaction:

The management has established and maintained the customer satisfaction measurement in the procedure of "Addressing customer complaints". Minor and major complaints have been classified in the procedure.

8.2.2 Internal Audit

The management has ensured that the internal audits are performed regularly to verify the implementation and effectiveness of the quality system elements. Internal audits are conducted to cover all departments and functions every three months.

Trained personnel are provided to conduct internal quality audits. The audits are planned, performed and recorded in accordance with documented procedures, Schedules for quality audit is prepared by Management Representative and issued to auditees and Auditors in advance.

It is ensured that audit is conducted by the person who is independent of that function.

The finding of the internal quality audit is documented and submitted to the Head of the Department for the area being audited and also the Management Representative.

Accordingly, the Head of Department concerned takes the corrective action based on the finding of the internal quality audit.

The Management Representative presents the summary of audit finding in the Management review meetings and ensure that it is necessary time bound corrective actions are taken. Follow-up audit are conducted to verify and record the implementation and effectiveness of corrective actions taken. The management assesses the implementation and effectiveness of corrective action resulting from previous audits.

Responsibility: MR
Reference: P: MR: 005 – Procedure for Internal quarterly Audit.

8.2.3. Monitoring and Measurement of process

The Company shall documentation elaborate quality plan covering all the inspection and testing activities necessary to assure product quality. The quality assurance is responsible for implementation and maintenance of quality plan.

Quality Assurance Engineer shall establish and implement to monitor the in-process inspection and testing system to ensure that a product has satisfied acceptance criteria before it passes to the next stage of production. All in-process inspection and testing is followed as per Quality Plan.

Production Engineer is responsible for holding the product unit the in-process inspection and testing is done and necessary documents are generated as specified in the quality plan. The management shall ensure that records, which give evidence that the product has passed inspection and or test with defined acceptance criteria, are established and maintained. Records shall identify the inspection authority responsible for the release of the product, where the product fails to pass any inspection and or test shall be treated as per procedure for control of non-conforming products.

8.2.4 Monitoring and Measurement of Product

Incoming material is inspected as per documented procedure and material specifications. Quality Assurance and inspection establishes and implements in-process inspection and testing to ensure that a product has satisfied acceptance criteria before it passes to the next stage of production. All in-process inspection and testing is carried out as per Quality Plan.

The company has an established procedure of "POSITIVE RECALL" in cases the materials are required to be released provisionally for production under urgent conditions.

In process is responsible for holding the product until the in process inspections and testing is done and necessary documents are generated as specified in the Quality Plans.

The final inspection and testing for the product is done in accordance with relevant document procedures and Quality Plans.

The stage inspection/testing is witnessed by third party inspection agencies whenever specified in the quality plans. Head-Quality Assurance & Inspection is responsible to liaison with external agencies.

Inspection and test records are maintained which provide evidence that the product has been tested.

Responsibility: HOD – QA &T and QA &T Engineers.

Reference: P: QAD:001 Procedure for Incoming Inspection.

P: QAD:002 Procedure for Inspection of welded fittings.

P: QAD:003 Procedure for Inspection of Seamless fittings.

P: QAD:004 Procedure for Inspection of Forged fittings.

P: NDT:001 Procedure for Radiography testing.

P: LAB:001 Procedure for Physical and Chemical testing.

8.3 Control of Non-conforming Products

The Company has established procedure to ensure that product which does not conform to specified requirements is prevented from inadvertent use. Such control provides for identification, evaluation, segregation and disposal of non-conforming product and for notification to the concerned functions.

The Quality Assurance In-charge is responsible for reviewing product. The non-conforming product may be reworked to meet specification, accepted without repair by deviation, downgraded or scrapped. Repair and / or re-worked product is re-inspected as per normal inspection procedure and Quality Plan. Records of the same are maintained. If agreed in the contract the proposed use or repair of non-conforming product is reported for concession to the customer or his representative. Records of such concession are maintained.

Responsibility: HOD- QA & T – QA & I Engineers
Reference: P: QAD:008 – Procedure for Control of Non-conforming Product

8.4 Analysis of data

Statistical Techniques are used where appropriate to ensure compliance with contractually specified product characteristics.

Statistical techniques used by the company are:

1) **To measure, establish and maintain welders' performance records by means of analysis of weld repair.**

2) **Part Analysis and cause & effect diagrams for analysis of repair and rejection in the manufacturing process.**

3) **Application of sampling techniques.**

Responsibility: All Heads of the Department
Reference: P: STQ:001 Procedure for Statistical Techniques.

8.5.1 Continual Improvement

The Management has established, implemented, maintained and monitored the departmentwise objectives for the continuous improvement of quality management system.

Summary of reports like analysis of process waste, analysis of machine down time, analysis of customer complaints have been made and reviewed for continual improvement.

8.5.2 Corrective action

The instances of Product Process System non-conformities are reviewed to identify the causes on con-conformities. These are identified by analyzing the rejection reports / trends, re-work trends, customer complaints and quality system audit report.

The system non-conformities are reported by the internal audits and third party audits through Non-conformance Report (NCR). For any product / process/ system non-conformity causes of the non-conformities is determined and recorded and the corrective action is initiated. The corrective action is verified by the internal auditors during internal quality audit for effectiveness, wherever necessary appropriate statistical analysis is used. The effectiveness of the corrective action is reviewed in the management review meetings.

The customer complaints are referred to by Marketing Contracts Co-ordination Dept. to HOD-Production who is responsible for taking necessary corrective action. HOD production will resolve the same with assistance from HOD-QA & I.

8.5.3 Preventive Action

Inspection reports, concessions granted, audit reports, quality records and customer complaints are used to detect analysis and eliminate potential causes of non-conformities. Statistical techniques are used where appropriate.

The steps needed to deal with any problem requiring preventive action are determined. The designated authority initiates preventive action and it is ensured that these are effective by monitoring.

The status of the preventive action is reported in the Management Review Meetings.

Responsibility: Head of the Departments
Reference: P: MR:003 – Procedure Corrective and Preventive Action
P: OPRN: 001 – Procedure for adhering customer complaints.

ISO 9001

TUBE PRODUCTS INCORPORATE

QUALITY SYSTEM MANUAL

INTRODUCTION

TUBE PRODUCTS INCORPORATE / TPI shall mean Tube Products Incorporate (Prop: Topack Fittings Ltd.) which was founded in the year 1980 as a part of the TOPACK GROUP. Keeping in mind the future prospects and growth of the group, the management had decided to promote Tube Products Inc. (TPI) as one of the leaders in Pipe Fittings Forged (SW / Threaded), Butt welded (seamless and welded) and Flanges (Forged and Plate) to meet the bulk and urgent demands of local and global refineries, fertilizers, Hydrocarbon, petrochemical, gas processing, specialty chemicals and energy plus power & engineering sector industries.

Over the years, following stringent and consistent quality norms, modernization of plant and equipment, improvement in production and process technologies, and creation of capacities, TPI has gown to become the largest in size & volume, manufacturers and exports / suppliers of "Coded" Steel & Alloy Steel piping components / products viz. pipe fittings (seamless, forged and welded), flanges (plate and forged), Piping spools (Cladded / Non-cladded) and of bulk piping accessories viz. Pipes (Seamless and ERW), Plates/coils/sheets/rods, Gaskets, Fasteners, Nozzles etc. under globally renowned Third Party Inspection Agencies like ABS, BV, DNV, EIL / CEIL, Lloyds, PDIL, TUV, etc. and esteemed EPC Agencies like Bechtel, Chemtex, Chiyoda, H&GC, Jacob's, Kvaerner Power Gas, Lurgi, Linde, TOYO Eng. (India) Lt., Tecnimont ICB, Tata Consulting Engineers, TATA Projects Ltd., UHDE etc. plus reputed LSTK Contractors like Chematur Deutsche Babcock, Daelim, Hyundai, Larsen & Toubro, Mitsubishi, Mitsui, Petrofac, Samsung Eng. Co. ltd., etc. to various core sector industries locally and globally. Presently, TPI enjoys a good share of the Indian marked (coded).

TPI has workshops with the latest, state of the art, modern facilities and highly efficient auto mandrel machines, CNC plate cutting and pipe bending machines, in-house lab for Non-Destructive and Destructive (physical) testing, Spectrometer for alloy verification during PMI and Wet Chemical testing, continuous Heat Treatment Facilities running on LPG / Propane to reduce Sulphur contamination and to control pollution, and conveyorised material handling systems with freight elevators. To cater to the growing needs of the Local and Global markets, TPI has adopted Stock & Sale concept by maintaining raw material and finished goods inventory and is gearing up to attain higher market shares in the International markets of Europe, USA, UK and Middle East Asia.

COMPANY PERTINENT DETAILS

01	Name of the Firm	:	TUBE PRODUCTS INCORPORATE (Prop: Topack Fittings Ltd.)
02	Works Plus Office	:	460, GIDC, Por-Ramangamdi Dist. Vadodara 391 243, India
	Phone	:	0091 265 5545212/5545213/5545214
	Fax	:	0091 265 2831031
	E-mail	:	**tpiad1@sancharnet.in** / **tpi@technet-online.com**
03	Mailing Address	:	748/8 GIDC Estate, Makarpura Vadodara 390 010, India
	Phone	:	0091 265 2638440
	Fax	:	0091 265 2638679
	E-mail	:	**tpiad1@sancharnet.in** / **tpi@technet-online.com**
04	Contact person	:	Mr. Janak Katakia (MD) Mr. Nalin Vora, G.M. (Commercial)
05	Product Range	:	Steel & Alloy Steel pipe fittings (Forge, Seamless and Welded), Piping Spools (Cladded / Non-cladded), Flanges (Forge & Plate) & Bulk Piping Accessories / Components viz. Pipes /Tubes /Plates /Coils / Sheets, Rods etc.
06	Land Coverage of Office	:	
	At Por	:	700 Sq. Mtrs.
	At Vadodara	:	350 Sq. Mtrs.
07	Land coverage of Works facilities (at Por)	:	32000 Sq. Mtrs. Plot area 17000 Sq. Mtrs. covered and 19500 Sq. Mtrs. open.
08	Location		
	Por Works Facility	:	25 Kms. from Vadodara Railway Station on National Highway No. 8 (Mumbai-Agra) Approx. 400 Kms North of Sahar International Airport (Mumbai) and Approx. 30 Kg. Kms from Vadodara Domestic Airport.
	Vadodara Office	:	10 Kms. from Vadodara Railway Station

PATRONAGE / APPROVALS

SHOP APPROVALS

Bureau Veritas Industrial Services (BVIS)
Det Norske Veritas (DNV)
Engineers India Limited (EIL)
Indian Boiler Regulation (IBR)
Lloyds Register Industrial Services (LRIS)
MECON
Projects & Development India Ltd. (PDIL)
Tata Consulting Engineers (TCE)
TUV.

STATUTORY APPROVALS

Indian Boiler Regulatory Body (IBR)

CONSULTANTS, EPC CUM PROJECT MANAGEMENT CONTRACTORS

ABB Lummus
Bechtel Engineering Ltd.
Chematur India Ltd.
Chemtex Engineering India Ltd.
Chiyoda Engineering
Daelim Engineering Ltd.
Dalal Engineering India Ltd.
Engineers India Ltd.
Haldor Topsoe
Hyundai Heavy Industries Ltd.
Hyundai Engineering Ltd.
Jacob's H&GC India
Kvaerner Power Gas
Larsen & Toubro Limited
L & T Chiyoda Ltd.
Linde Process Technologies India Ltd.
Lurgi India Co. Ltd.
Mitsui Industries
Mitsubishi
MW Kellogs
MECON
R. J. Associates, etc.
Siir Tec Nigi Spa
Snam Progett
Samsung Engineering Co. Ltd.
Tata Consulting Engineers
Tata Projects Ltd.
Tecnimont ICB
Toyo Engineering India Ltd.
UHDE India Ltd.

VALUABLE DOMESTIC CLIENTELE

ABB
ATV Projects
Andhra Sugar
Blacke Durr Ltd.
Bharat Heavy Pressure Vessels
Bharat Heavy Engineering Ltd.
Bridge & Roof CO (India) Ltd.
Bharat Petroleum Corporation Ltd.
Chambal Fertilizers & Chemicals Ltd.
Cochin Refineries Ltd.
Daelim
FACT-FEDO
Gujarat Machinery Manufacturers
Godrej & Boyce Engineering Ltd.
Gujarat State Fertilizers & Chemicals
Gujarat Narmada Valley Fert. & Chem.
Gujarat Alkalies & Chemicals Ltd.
Gas Authority of India Ltd.
GEI
Hindustan Petroleum Corporation Ltd.

Apollo Tyres Ltd.
Cargill India Pvt. Ltd.
Chennai Petroleum Corpn. Ltd.
Deutsche Babcock
Hyundai Heavy Industries
Indian Petrochemicals Corpn. Ltd.
ISGEC
Indian Oil Corporation Ltd. (All Refineries)
Ingersoll Rand Ltd.
IFFCO
INDO-RAMA
Jindal Praxair
KRIBHCO
Larsen & Toubro Ltd.
Mangalore Chemical & Fert. Ltd.
Mangalore Refinery & Petrochemical Ltd.
Madras Fertilizers Ltd.
Modern Petrofils Ltd.
Narmada Chematur & Chemicals
NICCO Projects Ltd.
Anwesha Comtech Pvt. Ltd.
Chandra Engg. & Mech. Pvt. Ltd.
Hikal Chemicals
National Fertilizers Ltd.
Numaligarh Refineries Ltd.
Nirma Ltd.
NOCIL
Oil & Natural Gas Corporation Ltd.
PACL
Prag Bosimi
Reliance Industries Ltd.
Steel Authority of India Ltd.
Siemens
TELCO
Thermax Ltd.
Southern Petrochemicals Ind. Corpn.
Tata Chemicals Ltd.
Tamil Nadu Petro Products
Torrent Gujarat Biotech Ltd.
Zuari Agro Industries Ltd.

VALUABLE GLOBAL CLIENTELE

USA	Fittube Inc. Forgings	Flanges & Fittings Co.
	Global Products	Liberty Equip. & Supply Co.
	Norca Corporation	Profit Piping Components
	Silbo Ind. Inc.	Universal Southern Corpn.
UK	Carbern	Burton Delingpole
FRANCE	Trouvay & Cavin (Intl.) Sa	
SINGAPORE	Rimagas Pte. Ltd.	Velcom (South-East) Asie Pte. Ltd.
KUWAIT	Khalid, KNPC Ltd., Petrogas Kuwait	
SWITZERLAND	Santrade	
SAUDI ARABIA	Belleli Saudi Heavy Industries	

TPI wishes to express its gratitude and sincere appreciation to all the regular and new clienteles as well as co-operation of qualified engineers, technicians and workers for bringing in continuous improvement in production techniques.

ISO 9001

QUALITY SYSTEM MANUAL

TUBE PRODUCTS INCORPORATE
(Prop: TOPACK FITTINGS LTD.)
PLOT NO. 460, GIDC,
POR-RAMANGAMDI
DIST. VADODARA 391243
GUJARAT – INDIA

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Fax: 0091 265 831031
E-mail: tpiad1@sancharnet.in / tpi@technet-online.com
Website: www.tubepro.com

ANNEXURE – B

STANDARDS

Sr. No.	STANDARD DESCRIPTION	EDITION No.
01	ASTM VOLUME 01.01	1999
02	ASTM VOLUME 01.03	1999
03	ASTM VOLUME 01.04	1999
04	ASTM VOLUME 03.01	1999
05	ASME SECTION II C	1998
06	ASME SECTION V	1998
07	ASME SECTION VIII DIV.1	1998
08	ASME SECTION IX	1998
09	ANSI B16.5	1981
10	ANSI B16.9	1993 & 2001
11	ANSI B16.10	1986
12	ANSI B16.20	1993
13	ANSI B16.28	1986
14	ANSI B 31.3	1996
15	ANSI B36.10	1985
16	ANSI B36.19	1976
17	MSS-SP-25	1978
18	MSS-SP-43	1976
19	MSS-SP-75	1993
20	MSS-SP-83	1987
21	MSS-SP-97	1995
22	API-51	1995
23	NACE MR-01-75	1986

ANNEXURE – A

OFFICE & FACTORY	:	458/460, GIDC ESTATE POR-RAMANGAMDI DIST. VADODARA 391 243
PLOT AREA	:	32000 SQ. METERS Covered : 17000 Sq. Mtrs. Open : 19500 Sq. Mtrs.
CONNECTED POWER LOAD	:	300 KVA

DETAILS OF EQUIPOMENTS FOR MANUFACTURING FACILITY FOR PIPE FITTINGS:

INDEX

(1) PRESS SHOP

S. No.	Machinery	Qty.
1	Press – Capacity 800 Ton	1 No.
2	Press – Capacity 1000 Ton	2 Nos.
3	Press – Capacity 500 Ton	2 Nos.
4	Over Head Crane – Capacity 15 Ton	1 No.
5	Radial Drilling Machine Make - Batliboi Ram Height - 4 ½' Radial / Arm Length - 4' Drill Capacity - 75 Ø	
6	Rectifier – 80 OCV	6 Nos.
7	Rectifier – 160 OCV	2 Nos.
8	Plasma Unit	1 No.
9	Sub Arc Welding	1 No.
10	AG-7 Portable Electric Grinder	12 Nos.
11	AG-5 Portable Electric Grinder	3 Nos.
12	Shaft Grinder	3 Nos.
13	Oven – Portable	3 Nos.
14	Compressor	

(2) FURNACE SHOP

S. No.	Machinery	Qty.
1	Oil fired / Gas fired Furnace Size : 4400 mm length 2400 mm length 2300 mm height	1 No.
2	Gas fired Furnace Size : 3200 mm length 2200 mm length 1200 mm height	1 No.
3	Electric Furnace Size : 3000 mm length 2500 mm length 1000 mm length	1 No.
4	Continuous Furnace Gas Fired (Wesman Make) Size 6000 mm length 2000 mm length 600 mm length	1 No.
5	Electric Furnace Size 600 mm length 700 mm length 400 mm length	1 No.
Note: All Furnaces are upto 1200° C Temperature		
6	Rectifier – 160 OCV	1 No.
7	Radial Drilling Machine Make - National Ram Height - 4' Radial / Arm Length - 2 ½" Drilling Capacity - 250 Ø	1 No.
8	AG-7 Portable Electric Grinder	4 Nos.
9	AG-5 Portable Electric Grinder	1 No.
10	Shaft Portable Electric Grinder	1 No.

(3) WELDING SHOP

S. No.	Machinery	Qty.
1	Welding Rectifier – 80 V	15 Nos.
2	Welding Rectifier – 160 V	5 Nos.
3	AG-7 Portable Electric Grinder	44 Nos.
4	AG-5 Portable Electric Grinder	11 Nos.
5	Shaft Portable Electric Grinder	12 Nos.
6	Portable Oven	6 Nos.
7	Stationary Oven	4 Nos.
8	Chain Pulley Blocks	8 Nos.

(4) X-RAY SHOP

S. No.	Machinery	Qty.
1	X-ray Machine – 300 KVA	1 No.
2	Gama Machine – IR - 192	1 No.

(5) & (6) FORGE SHOP / MACHINE SHOP NO.1

S. No.	Machinery	Qty.
1	Press – Capacity 400 Ton	2 Nos.
2	Press – Capacity 150 Ton	1 No.
3	Press – Capacity 250 Ton	1 No.
4	Press – Capacity 1000 Ton	1 No.
5	Centre Lathes	14 Nos.
6	AG-7 Portable Electric Grinder	3 Nos.
7	AG-5 Portable Electric Grinder	1 No.
8	Shaft Portable Electric Grinder	4 Nos.
9	Bench Grinder	2 Nos.
10	Welding Rectifier	2 Nos.
11	Overhead Crane – Capacity 5 MT	1 No.
12	Oil Fired Furnace Size 2400 mm length 1400 mm length 150 mm length	1 No.

(7) PIPE CUTTING SHOP

S. No.	Machinery	Qty.
1	Bend Saw Pipe Cutting Machine	2 Nos.
2	Centre Lathes	3 Nos.
3	Shaping Machine	1 No.
4	Bench Grinder	1 No.

(8) SAND BLASTING SHOP

S. No.	Machinery	Qty.
1	ELGI Compressor	1 No.

(9) MANDREL SHOP - A

S. No.	Machinery	Qty.
1	Mandrel Machine	2 Nos.
2	Press – Capacity 250 Ton	1 No.
3	Pipe Bending Machine	1 No.
4	Welding Rectifier – 80 OCV	1 No.
5	AG-7 Portable Electric Grinder	1 No.
6	Shaft Portable Electric Grinder	1No.
7	Bench Vice	2 Nos.
8	Chain Pulley – Capacity 1.5 Ton	2Nos.

(10) C. N. C. PLASMA CUTTING SHOP

S. No.	Machinery	Qty.
1	Plasma Unit – 100 Amp	1 No.
2	Compressor (Air)	1 No.
3	C.N.C. Machine	1 No.

(11) POWER HOUSE

S. No.	Machinery	Qty.
1	D. G. Set – 250 KVA	1 No.

(12) LABORATORY

S. No.	Machinery	Qty.
1	Charpy 'V' Notch Impact Testing Machine	1 No.
2	Universal Tensile Testing Machine - 40 Ton Capacity	1 No.
3	Chemical Testing Machine (Spectro Meter) Make BAIRD – Upto 20 elements	1 No.
4	Hardness Tester (Brinell)	1 No.
5	Electric Furnace Size 450 x 300 x 300 mm	1 No.
6	AG-5 Portable Electric Grinder	1 No.
7	Stationery Ovens	2 Nos.
8	Polishing Machine – 1.5 HP	1 No.

(13) TEE PLANT

MAIN BUILDING
SR. NO. 13 TO 19

S. No.	Machinery	Qty.
1	Forming Press – 500 Ton	1 No.
2	Centre Lathes	5 Nos.
3	Bench Grinder	1 No.
4	Magnet Drill Machine	1 No.
5	Small Portable Electric Grinder	1 No.
6	Oil Filter Machine	1 No.
7	Welding Rectifier – 80 OCV	1 No.

(14) MANDREL SHOP – B

S. No.	Machinery	Qty.
1	Mandrel	2 Nos.
2	Press –2 50 Ton	2 Nos.

(15) MACHINE SHOP – 2

S. No.	Machinery	Qty.
1	Centre Lathes	14 Nos.
2	AG-7 Portable Electric Grinder	1 No.
3	Bench Grinder	1 No.

(16) PAINTING SHOP

S. No.	Machinery	Qty.
1	Painting Plant Unit	1 No.

(17) FINISHING SHOP

S. No.	Machinery	Qty.
1	Shoot Blasting Machine Elbow Capacity upto 8" size	2 Nos.
2	Shoot Blasting Machine Elbow Capacity upto 16" size	1 No.
3	Number Punching Machine	5 Nos.
4	Hydraulic pallet Truck	1 No.
5	Portable Electric Shaft Grinder	7 Nos.
6	AG-7 Portable Electric Grinder	1 No.
7	Fort Lift – Capacity 3 MT	1 No.

(18) POWER HOUSE – B

S. No.	Machinery	Qty.
1	Diesel Generator – Capacity 250 KV	1 No.

(10) MATERIAL HANDLING & TANKS

S. No.	Machinery	Qty.
1	Lifts – Capacity Maximum 3 Ton	2 Nos.
2	Conveyors	3 Nos.
3	Conveyor Dismantled	1 No.
4	Fork Lift (Capacity 3 Ton – 1 No.) (Capacity 2 Ton – 1 No.)	2 Nos.
5	LPG Tank (5 Ton each)	2 Nos.
6	LDO Tank (11000 Ltrs. Each)	2 Nos.
7	Mobile Crane –Capacity 10 Ton	1 No.
8	Tractor	1 No.
9	Tempo	3 Nos.
10	Container Loading Ramp	1 No.
11	Weigh Bridge – Capacity 60 MT	1 No.

(20) QUALITY CONTROL DEPARTMENT

S. No.	Machinery	Qty.
1	Poly Hardness tester –Various Capacity	1 No.
2	Moly Tester – Various Capacity	1 No.
3	DP Test Sets – Various Capacity	10 Nos.
4	Magnaflux – Various Capacity	1 No.
5	Pyrometer – Various Capacity	1 No.
6	Hydraulic testing Machine	1 No.
7	Q.C. Measuring instruments Micrometers, Verniers, Pistol Calipers	

(21) N.D.T. DEPARTMENT

S. No.	Machinery	Qty.
1	Ultrasonic Testing Machine	1 No.
2	X-ray Machine – 200 KVA	1 No.
3	Radiography Viewer	2 Nos.