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CHAPTER - 1

COMPANY INTRODUCTION
1.1 COMPANY PROFILE

Raajratna Fasteners Pvt. Ltd. is India’s Leading Fasteners manufacturing company located at Ahmedabad – Mehsana highway, Gujarat. To get the better demand in the market it receive ISO 9001 certification, which assure customers of highest quality products at par with National & International standards. Raajratna Fastener Pvt. Ltd. has range of Fasteners are widely acclaimed for quality and consistency. We are committed to strive constantly and innovate the entire range of fasteners to provide exciting and feasible solutions to customers.

MANAGEMENT BODIES

Managing Director: - Nareshbhai B. Sanghvi
Directors: - Arvindbhai D. Sanghvi
Babubhai D. Sanghvi
Tarachand D. Sanghvi
Bankers: - Standard Charted Bank
          Axis Bank
1.2 PREFACE

As part of Diploma (Mech.) program, we have assigned some practical project work or training. So I have prepared a comprehensive project report on all over industry with the help and guidance of Production Manager: Mr. V. M. Patel of Rajratna Fasteners Pvt. Ltd.

The purpose behind industrial visit and preparation of project report to study the particular co. form the view point of its history and development and functional departments like, Production dep., Marketing dep., HRM dep., and Finance dep.

“This practical training give a chance to know how efficiently one can use theoretical knowledge in practical world of management “

So I have chosen Raajratna Fasteners Pvt. Ltd.
It is one of the biggest and reputed co. in Fasteners.

Due to practical training in Raajratna Fasteners Pvt. Ltd., I came to know about various aspects of the co. It is indeed a golden opportunity for me in the management study and a matter of esteem by itself.
1.3 ORGANISATION STRUCTURE

- Director
  - Sales Executive
  - Prod. Manager
  - Admin Manager
    - Coordinator
    - Production In charge
  - Supervisor
    - Operator
    - Workers
1.4 RESPONSIBILITY CHART

<table>
<thead>
<tr>
<th>Marketing</th>
<th>marketing management</th>
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<tr>
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<td>Purchase</td>
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<td>Production</td>
<td>Production Manager management</td>
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<td>I.S.O. – M.R.</td>
<td>Factory management</td>
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<td>House keeping (work shop)</td>
<td>factory management</td>
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<td>Human resources</td>
<td>factory management</td>
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<td>Communication</td>
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<td>House keeping (office)</td>
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<td>Resource management</td>
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<tr>
<td>Dispatch</td>
<td>Packing I/C</td>
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CHAPTER - 2

PRODUCT INTRODUCTION
2.1 PRODUCTS

Raajratna Fasteners Pvt. Ltd. established with a view to done product named as under:

<table>
<thead>
<tr>
<th>Product</th>
<th>Image</th>
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<tbody>
<tr>
<td>Machine Screw</td>
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<td>Dry Wall Screws</td>
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<td>Screw Type</td>
<td>Image</td>
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<td>Chipboard Screws</td>
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<tr>
<td>Hex Head Bolts</td>
<td><img src="image2.png" alt="Hex Head Bolt" /></td>
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<tr>
<td>C'Sk Socket Screws</td>
<td><img src="image3.png" alt="C'Sk Socket Screw" /></td>
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<tr>
<td>Carriage Bolts</td>
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</tr>
<tr>
<td>Rivets</td>
<td><img src="image5.png" alt="Rivet" /></td>
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2.2 MANUFACTURING

Requirements of Fasteners are initiated by the Sales Section who forward a copy of requirement as per Customer orders.

Based on the requirements, Production and Delivery Plans are prepared.

The drawings define the sequence of production. The activities follow through the workmanship guidelines sheets within suitable working environment.

Individual operator carries out in-process monitoring. Records are maintained and if there is any non conformance observed it is reported and logged. The Operators notify supervisor for any problems or any deviation and receive instructions for corrective actions.

Daily Production Report is logged by all operators.

Identify each Batch as unique number for identification and Traceability.

Ensure Daily Maintenance of all identified equipments.

The production sequence for Screws and bolts are as defined

a. Cold forging

b. Cleaning [ Wooden Tumbling ]

c. Rolling

d. Oil Removal

e. Pickling

f. Water Rinse

g. Drying

h. Packing

The production sequence for Threaded Studs and bars are as defined

a. Receive finished size bars

b. Rolling

c. Packing
2.3 MANUFACTURING PROCESS

The production process shall be planned and carried out through the following Processes and Sections

1. Engineering Process
2. Stores Section
3. Manufacturing Process for
   - Screws and bolts
   - Threaded Studs and bars
4. Maintenance Process

1 Engineering Processes

The Engineering team shall plan and initiate all activities for any new product development or modification. This shall include special Customer Requirements. Current Addition of Applicable standards shall be used to select specification of the fasteners. Tool drawing shall be prepared for each stage of manufacturing. Part drawing shall also be prepared.

Master list shall be maintained having information of the Part description, Identification Code, Quantity and Current Revision number of the drawing. All original drawing shall bear a Red stamp “Master” at the rear side of the copy. Controlled issue shall be done and the information of Revision number shall be logged. A Red stamp marking “Controlled” shall be placed at the front side of the copy. All old drawings shall be promptly destroyed. The Engineering section shall participate with Quality and Production Section for validation of the tooling and approval of the First part production processes.
2. **Stores Section**

Stores Operation shall be done through two separate sections.

- One - For SS Wire Coils / Bars and Packaging material.

  Inward receipt of material shall be logged, verified for Physical Condition, Weight, Quantity and receipt of test reports where applicable. The requirements of material shall be verified with reference to Open Purchase Orders.

  Tags shall be placed for identification. Separate identified area is maintained for all Production related Material. With Colour Code on the raw material coil.

- Two - For Tooling and Maintenance parts.

  Inward receipt of Tools shall be logged, verified for Physical Condition, and receipt of Inspection reports. Quality Control Section shall be informed of the receipt of Tools. Inspection or verification shall be carried out in accordance with Inspection Plan and Drawings. Based on the Inspection tools shall accept or rejected. For new tooling First Part Qualification shall be done and the records of such shall be maintained.

  Stores shall have unique storage location for tools and each shall have location identification.

  Records of Tool issue, return and condition verification shall be maintained.

  For Consumables and Maintenance items, Inward receipt of material shall be logged, verified for Physical Condition, Weight and Quantity. Indenting Section shall be informed of the receipt of Material. Inspection or verification shall be carried out and based on the decision material shall accepted or rejected.
2.4 APPLICATIONS OF THE PRODUCTS

1. vehicle
2. marine industries
3. building
4. furniture
5. bridge
6. chemical industries

2.5 EQUIPMENTS/MACHINE USED IN THE MANUFACTURING THE PRODUCT

Machine photo:-

Nut & bolt formar

Coil stand  die&punch  die&punch
2.6 Process chain of cold forging

Raw Material → Heat Treatment → Surface Treatment → Cold Forming → Formed Part

Metal Removal → Heat Treatment → Metal Removal → Finished part

Open Extrusion & Traps extrusion
CHAPTER -3

VARIOUS COMPONENT
3.1 VARIOUS COMPONENT

- PUNCH
- TEPAR
- RING GAUGE
- PLUGE GAUGE
- DIE ASSEMBLY
- PUNCH ASSEMBLY

BOLT FORMER MACHINE WORKING 4- STAGE

1. AFTER CUT OFF, IN 1st STATION “HEAD IS CONICAL SHAPE”.
2. IN 2nd STAGE “HEAD IS CIRCULAR SHAPE”.
3. IN 3rd STAGE “POINTING IS HELD IN EXTRUSION PROCESS”
4. AND IN LAST STAGE “HEAD IS IN HEX SHAPE THROUGH TRIMMING DIE”.
decreasing the diameter of the blank by pushing it through a smaller hole
- reduces size without yield loss

- Cold Forging:
  - generic term describing the combination of cold heading with cold extrusion

- Cold Forging machines - by the number of dies and blows
  - for example:
    - 1 Die/2 blow
    - 2 Die/3 blow
    - 2 Die/4 blow
CUT-OFF KNIFE TRANSFERS BLANK TO DIE-CENTER

CUT-OFF KNIFE
CUT-OFF DIE
WIRE
WIRE STOP
CUT-OFF LENGTH

CUT-OFF KNIFE RETRACTS
FIRST PUNCH
BLANK

HEADING DIE
CHAPTER -4

QUALITY MANAGEMENT
4.1 QUALITY MANAGEMENT:-

**Inward Inspection - Raw Material**

Raw Material shall include Wire Coils, Bright Bar and Packaging Material. All incoming Material receipt shall be tagged and logged. Inspection shall be carried out by the Production coordinator as per Inspection Plan. Ensure the receipt of the Supplier Test and Inspection reports. The same shall be verified and the record shall be maintained.

Records of Receipt, Inspection activity, acceptance, non-conformities or rejection are kept wide log register.

Accepted material shall have approval tag and stored at the storage location. Non Conforming material shall be shifted to the identified Area.

As when required the material shall be picked up and used for production.

**Inward Inspection - Tooling**

All tools developed by Suppliers shall have identification and on receipt shall logged. Ensure the receipt of the Supplier Test and Inspection reports. The same shall be verified and the record shall be maintained.

Inspection shall be carried out by Tool Store coordinator as per Inspection Plan.

Controlled Engineering Drawings shall be used for inspection.

Records of receipt, Inspection activity, acceptance or non-conformities are kept wide Inspection Report.

As when required the tooling are issued to production and logged wide Tool Issue Slip.
First Part Inspection and Qualification

First part manufactured by each new tool shall be inspected by Tool Store Coordinator, Quality person along with person from Engineering.

Controlled engineering drawing shall be used for inspection.

Records of Inspection, acceptance or non-conformities are kept wide Inspection Report.

If the part inspected is conforming to requirements, the tooling is declared qualified.

If any non-conformance is found, the nonconformance is analysed and necessary correction on tooling is planned and carried out.

Inward Inspection - Other Material & Consumables

All material receipt shall be logged. Inspection for verification of Quantity and receipt without any damage shall be carried out by Store coordinator. Further confirmation shall be done by the indenting person before accepting the material.

Inprocess Inspection

Individual operator carries out in-process inspection as in accordance to the requirements of the Drawing. Records of verification by the supervisor are maintained.

Controlled Engineering Drawings shall be used for inspection.

Accepted material is tagged and forwarded for next process.

Non-conformities are logged, reviewed and action for rework or scrap is decided.

Final Inspection

Final inspection shall be carried out by Quality Control Engineer as per Inspection plan.

Controlled Engineering Drawings shall be used for inspection.

Records of Inspection, acceptance or non-conformities are kept wide Inspection Report.

Non-conformities are logged, reviewed and action for rework or scrap is decided.
**Final packaging inspection**

Final packaging inspection shall be carried out by the Packaging Section as per Inspection plan.

No Records of Inspection are kept.

Non-conformities are logged, reviewed and action for rework or scrap is decided.
CHAPTER -5
ADVANTAGES OF COLD FORGING & RAW MATERIAL
5.1 Advantages of Cold Forging

- Design Versatility
- High strength parts from non-heat-treatable alloys
- Most cost effective way vs. milling, machining, hobbing and chemical etching
- High production rates
- Metallurgical Effects
- Grain flow
- Improves strength, hardness, toughness & fatigue resistance
- Material Savings

5.2 RAW MATERIAL

- AISI – S.S. 302 HQ
- AISI – S.S. 304
- AISI – S.S. 304 MD
- AISI – S.S. 304 L
- AISI – S.S. 304 HC
- AISI – S.S. 316
- AISI – S.S. 316 L
- AISI – S.S. 316 LA
- AISI – S.S. 317
- AISI – S.S. XM7

5.3 CONSUMABLE MAT.

- Carbide & Steel Tooling
- Pickling Chemical
- Wooden Powder
- Forging Oil
- Corrugated Boxes ( Plain )
- Corrugated Boxes ( Printed )
- Labels
- BOPP Tape
- Wooden Pallets
- PP Strap
CHAPTER -6

LIST OF FORMATS
6.1 MASTER LIST OF FORMATS

⇒ QUOTATION
⇒ ORDER VERIFICATION
⇒ DESPATCH ORDER
⇒ CUSTOMER SATISFACTION SURVEY
⇒ CUSTOMER COMPLAINT
⇒ INTERNAL AUDIT PLAN
⇒ NON CONFORMITY (AT PROCESS STAGE)
⇒ NON CONFORMITY (AT CUSTOMER STAGE)
⇒ BREAKDOWN REGISTOR
⇒ MAINTENANCE CHECK SHEET
⇒ DOCUMENT DISTRIBUTION
⇒ TRAINING LOG REGISTOR
⇒ EMPLOYEE’S DATA
⇒ SKILL MATRIX
⇒ MACHINE DOWN TIME REPORT
⇒ LINE INSPECTION REPORT (FORGING)
⇒ LINE INSPECTION REPORT (ROLLING)
⇒ DAILY REPORT FOR PICKLING
⇒ INWARD REGISTOR (RAW MATERIAL)
⇒ RAW MATERIAL ISSUE SLIP
⇒ PURCHASE ORDER
⇒ SUPPLIER EVALUATION
⇒ CALIBRATION PLAN
⇒ TOOL INSPECTION REPORT
⇒ IN HOUSE CALIBRATION REPORT
⇒ FINAL INSPECTION REPORT
⇒ TOOL CONSUMPTION REPORT
⇒ TOOL CARD
⇒ INWARD REGISTOR (TOOLING)
⇒ EMPLOYEE’S TRAINING RECORD
⇒ INTERNAL AUDIT REPORT
⇒ COMMERCIAL CUM TECHNICAL SHEET
⇒ INVOICE (INTERNATIONAL)
⇒ INVOICE (DOMESTIC)
6.2 DISTRIBUTION CHANNEL
6.3 PUBLIC RELATIONS

There are many clients in this company so most of international & domestic publicity very well knows that the company produces highly reliable products at cheap rates.

It is public company, so relations are easy increased by company at national or international level.

A Partial List of Our International Business

- France
- Germany
- Turkey
- U. K.
- Sweden
- U.S.A.
- Greece
- Brazil
- Spain
- Italy
- Poland
- South Africa
- Nederland
- Switzerland
- U.A.E.
- Czech Republic
- Shri Lanka
- Austria
6.4 PLANNING OF MARKETING DEPARTMENT

➤ Customer complaint shall be attended in ten days from the receipt of the complaint

➤ 100% of the complaint shall be attended in time

➤ Sales of Fasteners shall pick up by 15% international market & 5% Domestic market by the end of financial year 2007-08

➤ By the end of year 2007-08, fifteen new international customers would be developed.

➤ By the end of year 2007-08, ten new domestic customers would be develop

6.5 EMPLOYEES SERVICES

The employee benefit and service refers to the incentives, which are provided to the employee so that are unarranged and motivated. It consists of recreational facilities, Wages, Bonus, and many other facilities like that.

Raajratna Fasteners Pvt. Ltd. co. also gives a facility to its employees as per the good rules and revaluation under below.

♦ MEDICAL FACILITIES

♦ UNIFORM

♦ LOAN FACILITIES

♦ HOUSING FOR EMPLOYEES

♦ MILK TEA OFFICE

♦ INSURANCE FACILITIES

♦ COUNSELING

♦ CULTURAL ACTIVITY

♦ TRANSPORTATION
CHAPTER - 7

LIST OF THE PROBLEMS & SOLUTIONS
7.1 LIST OF THE PROBLEMS FOUND DURING THE MANUFACTURING PROCESS OF THE PRODUCT.

During the manufacturing of the Nuts and Bolt by Cold forging process following numbers of the problems.

- In the continuous manufacturing process of the product in the cold forging machine it is necessary to supply the oil continuously to minimize the temperature. This Processing Oil is continuously reused in the process so chances of the filter chock up are more.

- Motor pulley foundation bolt become loose.

- Pulley grooves and belt profile miss-match.

- Due to the continuous working of the machine the belt of the gear and pulley becomes hot which resulted in the elongation of the bolt.

- Improper selection of the Raw material which break the Die & Punch.

- Improper clearance between Die and Punch.
- Rough surface and unmatched profile of the Die,
- The Hardness range of the Die material is very high or less.
- Die tempering is not proper so chances of the stress on die.
- Die setting not proper die & punch gap very less.
7.2 POSSIBLE SOLUTIONS OF THE PROBLEMS

- Tight belt sufficiently not to tight or loose
- Pulley grooves and belt profile always matching require.
- Check daily foundation bolt either loose or not.
- Raw material tensile maintain has requirement only
- Maintain die & punch gap minimum 0.5mm to avoid heating problem
- Die surface mirror polish require
- Die hardness Continues manufacturing process for schedule Timely clean oil
  maintain 60-62 BHN.
- Do tempering properly ½ hrs at 400 temperatures and keep room temperature
- Maintain die & punch gap minimum 0.5mm to avoid heating problem
CONCLUSION

After undertaking This industrial training, I can conclude that of management. Because such industrial training help the student in matching theoretical knowledge with its practical implementation.

As far as the co. “RAAJRATNA FASTENERS PVT. LTD.” is concerned, I can that it is good market value in India & Across the world.