A Study on Codification in a Light Engineering Industry

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Abstract: Inventory of materials can be controlled by proper Codification. Codification ensures simplification, variety reduction.While doing codification materials can be divided into number of groups and subgroups. An attempt has been made in a light engineering industry to classify the materials. This will help in identifying the materials in a logical way and locate the materials as per according to their size, shape and orientation. In this paper we are demonstrating the importance of codification in a engineering company. Inventory management of the engineering items are discussed. This paper is published based on the actualwork done in a MSME engineering company in Hyderabad which are manufacturing Industrial Filters.

Keywords:Codification, Inventory Management, simplification, Classification

1. INTRODUCTION

Manufacturing is the process of converting raw materials in to finished goods. Availability of materials at right time and right quantity is important. This can be done by maintaining the materials in sufficient quantity to avoid the shortage of materials and in a most economical way of purchasing. This can be done by maintaining the materials in a store is very essential. Materials management is a central function responsible for planning and controlling the materials flow, effective utilization of resources to ensure customer satisfaction. In many organizations 60% of the cost involved in materials. By controlling the cost of the materials organization can benefit to improve their profits.

Materials Management involves materials planning, procurement, inventory management and despatch of the materials to the customer. There are five important functions in a manufacturing a product. They are

1) Engineering drawing and specifications including bill of materials
2) Operations sequence, equipment required and standard time.
3) Time required to completion of the operation
4) Equipment and materials availability
5) Quantity required based on the customer orders

In addition to the above it is also necessary for proper utilization of resources, transportation, and distribution of materials. This can be done by standardize the materials required, reduction of size and variety, interchangeability steel plates, wire meshes, electrodes, Fasteners, bearings, Pipes and pipe fittings of various materials of construction, various sizes, shapes depending upon the customer orders. For understanding of these materials, a common language is necessary to identify these materials in a scientific way. This can be done by adopting the proper codification system.

2. Types of Codification Systems
1. There are several methods of codification system. They are

   a) **Alphabetic System**: Letters are used for classification of the materials. English alphabets 26 letters can be used for classification of materials.

b) **Simple Numeric or Sequence System**: Numbers are used for classification of the materials.
c) **Combination system**: Combination of Both alphabet and numeric can be used.
d) **Block system**: Range of numbers can be used for eg 1800-1899 for raw materials 1700-1799 for in process inventory etc.
e) **Decimal System**: Numbers are assigned such that each group represents main group, subgroup. The advantage is we can accommodate new items in the existing system.
f) **Numeric System**: The first number indicates a specific class and subsequent digits can be used for further classification.
g) **Mnemonic System**: It is alphabet system with easy memory
h) **Six or Nine Letter codes**:We can assign letters for classification.
   Objectives of Codification:
   a) To avoid lengthy description
   b) Logical identification of the materials
   c) Avoid duplication of the items
   d) Standardize the items
   e) Variety reduction
   f) Good record keeping and accounting
   g) Proper location and indexing of the items in a stores
   h) For better coordination with the purchase department for procurement planning

3. CODIFICATION PROCEDURE

While doing codification, we have to understand the sequence of steps necessary to decide which

Type of codification is necessary to suits the   Enterprises requirement. This can be done once

We understand the products are to be manufactureAnd materials used for conversion of raw materials in to finished goods. The steps are

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1. Identification of products to be manufactured
2. Identification of each and individual items
3. Convert the all materials in to 10 to 20 groups
4. Each group is further divided into sub groups
5. Brainstorming the codification scheme
6. Decide codification numeric, alphanumeric
7. Finalisation of Codification schema
8. Preparation of groups, sub groups and catalogue
9. Training the personal about the new scheme.
10. Develop a Codification Manual.

4.. COMPANY profile and Materials used

The organization manufacturing various industrial filters in water, oil and gas application. They are
Manufacturing the parts based on the Specifications which are given in the drawings.
The organization makes a production plan based on The customer delivery requirements.
The various materials used in the manufacturing Process are.
1) Carbon Steel, GI, SS Pipes
2) Wire meshes of different size and shapes
3) Various type of valves Ball valves, Globe
   Valves, Butterfly valves of various material
   Of construction.

4) Bearings
5) Fasteners
There are 10,000 items are used in manufacturing.

Presently in organization there is no codification and materials are laying at shop floor, some materials are placed in racks.

The following are the problems faced at present

1. Identification of materials is cumbersome
2. Some materials are laying in stores which are not useful to the production.
3. Shortage of materials when required
4. Spot purchase of materials at extra cost
5. There is no proper labelling
6. Mixing of various materials
7. Workers are not aware of the storage Methods
8. There is no Codification manual.

  After brainstorming with the production, administration and management organization is decided to go for a Numerical codification system. There is flexibility to incorporate additional items in to the system without changing the existing system.

4. CODIFICATION SCHEMA

  There are various methods of codification procedure adopted. Alphabets, Numeric, Alpha numeric. We have selected 10-digit numerical mode. Each number position is unique and are designed based on the type, shape, material of construction, orientation and application. The main schema of the system is illustrated given below.

Main Group	Subgroup	MOC	Type	Location
XX	XX	XX	XX	XX

  The first two digits indicate the main group for example Pipe, Pipe fitting, Valve, Plate, Painting etc.

  The next two digits indicate Subgroup for example. The Plate may be round, square, hexagonal

  The next two digits indicate Material of Construction for example Brass, Steel, Stainless Steel, Poly Propylene

  The Next two digits indicate the size of the material for example 15NB, 25NB, 40NB Pipe

  The last two digits indicate the location of the material where the materials can be stored.

Illustration: Let us understand one example how the codification scheme is applied
25 NB Butter valve CI material can be coded as
40 1010 25   20
The First two digits are main group
The main group is valve 40.
The Next two digits indicate type of valve
*The subgroup is Butterfly valve is **10***
The next two digits are Material of construction
*The material of construction is CI **10***
The next two digits are size of the valve is 25mm
*For 25 mm valve the code is **25***
The last two digits indicate location of the stores

*The location is indicated as Rack No. **10***
Illustration 2
15NB GI Pipe with location rack 20 is.
Indicated by
10 10 10 15 20
The first two digits indicate main group pipe.
*The code for pipe is **10***
The next two digits indicate subgroup.
*The subgroup is Round pipe the code is **10***
The next two indicate MOC is GI
The code for GI is 10
The next two digits indicate size of pipe
The size of the pipe is

*15 NB the code is **15***
The last two indicate Rack 20

The above procedure is repeated for 10,000 items grouped in to 20 and given 10 digit code for Plates, Pipes, Pipe fittings, Valves, Wire Meshes, Welding electrodes, Bearings.

6. CONCLUSION

Inventory of materials can be ensured proper codification. Codification minimizes the number of items, and grouped in to 20 main groups and further divided into various sub groups based on the size, shape, orientation, material of construction. This will ensure proper identification of materials by stores, purchase, and accounts person. Based on the frequency of use and orientation the materials can be stored in a rack. This will eliminate duplication, ensures traceability of materials in stores is possible.

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