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Safety and Maintenance Management System in Textile Industries

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ABSTRACT:-

Textile refers to any filament, fiber, or yarn that can be made into fabric or cloth, and the resulting material itself. The word originally referred only to woven fabrics but now includes knitted, bonded, felted, and tufted fabrics as well. The basic raw materials used in textile production are fibers, either obtained from natural sources like wool or produced form chemical substances such as nylon and polyester. Most cloth is made from either wool, cotton, or flax, depending on the area and location. Textile manufacturing is one of the oldest of man 'stechnologies. Maintenance has proved to be the means of achieving the goal of their efficiency in an industry and more so in the Textile industry which is labor – oriented. Due to lack of proper maintenance and unskilled labor, machines get worn out and, in some cases, they are not reparable properly and have to be discarded. Safety Management play a major role in textile industry. Here the review has been conducted to evaluate the area of maintenance and safety management in textile industry and in general in order to get a better understanding of the subject. The study would help in understanding the various aspects of maintenance and safety management system in textile industry.

I. INTRODUCTION

Textile refers to any filament, fibre, or yarn that can be made into fabric or cloth, and the resulting material itself. The word originally referred only to woven fabrics but now includes knitted, bonded, felted, and tufted fabrics as well. The basic raw materials used in textile production are fibres, either obtained from natural sources like wool or produced form chemical substances such as nylon and polyester. Most cloth is made from wool, cotton, or flax, depending on the area and location. Textile manufacturing is one of the oldest of man's technologies.Indian Textile is one of the largest industries in the world with a massive raw material and manufacturing base. The Indian economy is largely dependent on the textile manufacturing and trade, in addition to other major industries. About 27 percent of the foreign exchange earnings are from export of textiles and clothing alone. The sector contributes about 14 percent to industrial production and three percent to the GDP of the country. Around eight per cent of the total excise revenue collection is contributed by the textile industry. So much so, it accounts for as large as 21 per cent of the total employment generated in the economy.

Around 35 million people are directly employed in textile manufacturing activities. Indirect employment, including the manpower engaged in agriculture based raw material production like cotton and related trade and handling, could be around another 60 million. This industry is poised to meet the increased global competition in the a post 2005 trade regime under WTO.9 The textile industry in India has also a strong multi- fiber raw material production base, a vast pool of skilled personnel, entrepreneurial talent, good export potential and low import content. Production systems are flexible, dynamic and vibrant. However, the industry ‘s strengths get substantially diluted on account of production process disadvantages in certain areas in terms of technology and supply- chain management deficiencies. Textile exports are expected to touch $50 billion by 2010, half of which will go to the US.

II. RELATED WORK

Cornelius (2006), in his doctoral study, mentions about the textile industry in Virudhunagar District of Tamil Nadu including textile mills of different volumes. The study observes that there is significant variation in the production and export of yarn in the textile mills in Virudhunagar of five years in contention of the study. The study observes that there has been a decrease in employment opportunities in the mill sector.

George (2002), in his doctoral study analyses the problems of Ready Made Garments Industry in Tamil Nadu and the study reveals that the labour relationship is more cordial in the domestic units than in exporting units. Labourabsenteeism, demand for higher wages and higher bonus are the major labour problems in the garment industry. The other problems include labour turnover, trade union militancy, labour strikes etc. Government of Tamil Nadu (1999), set up a committee for studying the problems of textile units under the industries department. Modernization of machinery, imparting training on new operational lines and financial restructuring with appropriate capital leverage are the important recommendations of the committee. Technical committee (1999), constituted by the Government of Tamil Nadu, for studying the problems of private textile mills in Tamil Nadu came up with the report that private textile units in Tamil Nadu are facing many hurdles such as backlog of modernization, low profit, high costs of borrowings and debts, lack of consumption and high cost of labour and power. Exemption of sales tax, productivity norms and the creation of seed capital fund are some of the rehabilitation measures suggests by the committee.

Kumar (1997), conducted a research on cotton spinning mills in Tamil Nadu. His thesis identifies the deciding factors behind the financial as well as productive performance of spinning mills coming under different categories. The study proposes the formation of a technical review committee in every textile unit for closely monitoring the production areas leading to better labour productivity and performance.

Sitra (1992)conducted a study on cost control and costing in spinning mills in Tamil Nadu. The study assesses the causes of sickness and identified the symptoms that portend the sickness in spinning mills. The study cuts open the fact that in the textile industry the sickness is mainly caused by the incapacity and slipshod attitude to induct the cost control measures in time. The study also identifies certain conditions to be compiled with by the sick mills in order to get into the list of revived units.

Binoy (2011), in his doctoral study, attempts to examine the innovative human resource practices in the software firms in Tamil Nadu. The study reveals the importance of innovation HR practices (from functional activities to wide ranging strategic initiatives) and its effect on the entire social structure of an organization.

James (2011), in his doctoral thesis studies about the human resources management in the Business Process Outsourcing (BPO) industry of Tamil Nadu. The study reveals that the rate of attrition in the BPO industry is high which can be attributed to a variety of reasons such as job insecurity, high competitive nature, low compensation compared to the strenuous nature of the job etc.

Veerankutty (2010), for his research thesis, studies about the human resource practices in the software industry in Tamil Nadu. The study reveals that employees'motivation and retaining the talents in the organization are the major challenges faced by the software companies in Tamil Nadu. The study recognizes overall working conditions, a fair pay package, career growth, work life balance, participation in decision making process, motivational training etc as the important factors.

Thomas (2008) did a doctoral study on management leadership styles on selected public and private sector undertakings in Tamil Nadu and the study reveals that a majority of the organizations are following the autocratic style of leadership which is not found to be appreciated by the employees associated with the enterprises. The study suggests that a management leadership style combing the democratic and participative styles would be the most efficient for the industrial units in Tamil Nadu.

Rajasekar and Gurusamy (2011)in the study titled ―Analysis of cotton textile industry in karur district Tamilnadu analyzed the motivational factors and problem faced by exporters in karur district by using systematic sampling method. From the Kendal test it is found that the exporters of different age groups rank factors affecting motivation which include shortage of finance and workers, low quality yarn, and increased yarn price in different manner. This study concludes that proper training is needed to the workers for stitching to reduce the shortage of labours.

Ekramul Hogue and Mayenulislam (2003)made a study on ―contribution of some behavioral factors to absenteeism of manufacturing workers in Bangladeshǁ . The objective of the study is to measure the influence of such specific behavioral and social factors, demographic variables, job stress, mental health, pay inequity, personal and family life satisfaction on absenteeism of the workers by using simple random sampling. Tools like correlation analysis, multiple regression, and chi-square test were used. From the correlation analysis, it is found that absenteeism has significant positive correlation with job stress and negative correlation with job satisfaction and mental health. The study concludes that behavioral factors have high impact on absenteeism rather than demographic variables.

Ranjit (2010)made a study on influence of demographic factors on job satisfaction of textile mill workers. The objective of the study is to find the demographic factors and its influence on level of job satisfaction of respondents using stratified random sampling. Tools like mean, S.D, t-test, co-efficient of correlation, ANOVA were used. From percentage analysis, it is found that 67.1% of the respondents say welfare

facilities and working conditions are normal. The study concludes that demographic variables have the impact on job satisfaction.

Sabarirajan et al (2010)made a study titled ―A study on the various welfare measures and their impact on QWL provided by the textile mills with reference to Salem District, Tamilnadu, India. The objective of the study is to know employee opinion towards various welfare facilities offered by Textile mills. Samples were selected using stratified random sampling. Tools like Percentage analysis, correlation, chi-square test, Anova were used. From the correlation analysis a positive relationship between welfare measures and recreation facilities were found. This study suggests that companies provide good welfare facilities to the labors to improve the productivity and Quality of work life.

Sekar et al., (2012) studies the health and welfare measures in Tamilnadu spinning mills India. The objective of the study is to find the satisfaction level of employees and labors towards welfare facilities offered by spinning mills in Tamilnadu. The study used stratified random sampling procedure to select samples. From the Anova test it is understood that there is no significant difference between the respondents of different income and level of satisfaction towards the provisions of the company. The study suggests that medical facilities may be improved by the companies for the satisfaction of the workers.

III. MAINTENANCE MANAGEMENT

Maintenance means periodic checking of machine parts to find out worn – out parts, cleaning of machine parts and necessary lubrication. Since every machine during its operation is subjected to stress and strain resulting in fatigue, maintenance keeps the various parts of machines working in perfect condition.

1. IMPORTANCE OF MAINTENANCE

The importance of Maintenance in the Textile industry has now been recognized and that too, to a very large extent after the introduction of automatic machines in different Departments in textile mills. Maintenance not only contributes to high productivity but also considered to be at the heart of quality product because nowadays the customers are becoming very quality conscious and are demanding high value for their payment. Since textile industry is labour oriented, higher efficiency is achieved by regular and proper maintenance. Maintenance influences good and safe working condition inside the plant. Proper maintenance leads to reduction of accidents. Maintenance is of greater importance as the modern sophisticated machines perform well under very demanding conditions of surroundings with respect to temperature, humidity, dust etc.

2. TYPES OF MAINTENANCE

Maintenance operations have been categorized based on their frequency and their motivating factors. They are

1. Break down maintenance.
2. Planned Maintenance.

3. BREAK DOWN MAINTENANCE

Here maintenance is carried out when the machine breakdowns. This type of maintenance is an unplanned system with low direct cost. Breakdown maintenance suffers from two main drawbacks.

a. In case of breakdown maintenance, the machinery and equipment will wear out prematurely which leads to substandard quality.
b. Due to lack of regular servicing, the machines suffer frequent breakdowns which lead to proportional losses in productivity.

Because of the above reasons, nowadays this maintenance is highly unsatisfactory and should therefore be best avoided to prevent obsolescence in spinning mills.

4. PLANNED MAINTENANCE

In this type of system, maintenance is planned in advance. Since it is based upon scientific and technical principle, proper preservation of machinery and equipment and their rational, economical and technical usage is possible. The salient features of the system may be stated as

1. Various maintenance operations are carried out according to a previously fixed plan.
2. Attention is focused not on major repairs, but on minor as well as periodical and conservation repairs aimed at controlling the conditions of machines to prescribed standards.
3. Primary emphasis is given to the prevention and retardation of wear and tear.
4. Planned maintenance confers many benefits such as longer machine life, fewer breakdowns, improved quality and higher productivity.

IV. MAINTENANCE STRATEGIES OR OPTIONS

A Maintenance strategy or option means a scheme for maintenance, i.e.an elaborate and systematic plan of maintenance action. Following are the maintenance strategies that are commonly applied in the plants.

a. Break down Maintenance or Operate to Failure or Unplanned Maintenance
b. Preventive or scheduled Maintenance
c. Predictive or Condition Based Maintenance
d. Opportunity Maintenance &Design out Maintenance

The equipment under breakdown maintenance is allowed to run until it breaks down and then repairing it and putting back to operation. This strategy is suitable for equipments that are not critical and have spare capacity or redundancy available. In preventive or scheduled Maintenance, maintenance actions such as inspection, lubrication, cleaning, adjustment and replacement are undertaken at fixed intervals of number of hours or Kilometers, An effective PM program does help in avoidance of accidents. Condition monitoring (CM) detects and diagnoses faults and it helps in planned maintenance based on equipment condition. This condition based maintenance strategy or predictive maintenance is preferred for critical systems and for such systems breakdown maintenance is to be avoided. A number of CM techniques such as vibration, temperature, oil analysis, etc., have been developed, which guide the users in planned maintenance. In opportunity maintenance,

timing of maintenance is determined by the procedure adopted for some of the items in the same unit or plant. In design out maintenance, the aim is to minimize the effect of failures and in fact eliminates the cause of maintenance. Although it is an engineering design problem, yet it is often a responsibility of maintenance department. This is opted for items of high maintenance cost that are due to poor maintenance, poor design or poor design outside design specifications. It may be mentioned that a best maintenance strategy for each item should be selected by considering its maintenance characteristics, cost and safety.

In addition to the above, new strategies concepts such as Proactive Maintenance, Reliability Centered Maintenance (RCM), Total Productive Maintenance (TPM), etc. have recently been evolved to look it from different perspectives and this has helped in developing effective maintenance. In proactive maintenance, the aim is identify what can go wrong, i.e.by monitoring of parameters that can cause failures. In RCM, the type of maintenance is chosen with reliability of the system in consideration, i.e. system functions, failures relating to those functions and effects of the dominant functional system failures. This strategy in the beginning was applied to critical systems such as aircrafts, nuclear and space applications. At present, this is being extended to critical systems in the plant. TPM, Japanese concept, involves total participation of all concerned. The aim is to have overall effectiveness of the equipment with participation of all concerned using productive maintenance system.

V. CONCLUSION

Maintenance is a programme for the various parts of machines working in as perfect and order as possible with minimum wear and tear. As Prevention is better than cure‖ .it is always better to have a maintenance team to do the functions such as duly change and repair the machine parts, overhauling, settings, and timing of various motions. It is very important to maintain a routing record of maintenance schedule. This gives the life history of each machine and also guides the production in charge so as to the progress and condition of machinery under his care. The modern machineries necessitate every mill to have a good organized maintenance department with adequate infrastructure and it should carry the maintenance programme.Safety and health measures play an important role in any industry. It is essential that the workers be aware of the various occupational hazards in the industry. At the same time, it is necessary that the management take the necessary steps to protect the workers from potential hazardous situations.

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