

New Approach towards Quality Control in Spinning Mills



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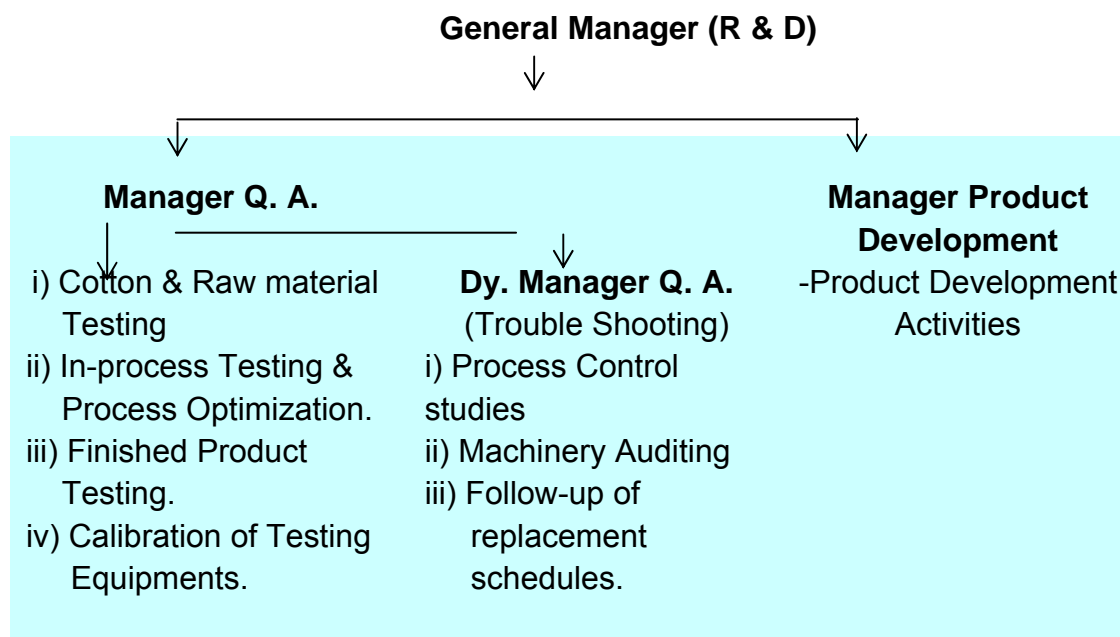
1. Introduction

Changes are taking place very fast all over the world in all fields like, technological developments, the living styles, social environment, and the perception of people. In this changing scenario, rising expectations of the customer and open market economics are forcing businesses to compete with each other. Therefore, basic quality of the product at competitive market price is a key factor. The same holds good for Textile industry also which is one of the oldest and has a number of players all over the world. When it comes to Textile, Spinning is the key process which has been given vital importance because many of the fabric properties, working of weaving machines and weaving preparatory machines are dependant on yarn quality.

The quality of yarn produced should conform to the quality norms specified by the customer. It is equally important that this should be achieved without making any compromise in productivity, which otherwise affects the yarn costing. Quality Control is concerned with sampling, specifications and testing as well as the organization, documentation and release procedures which ensure that the necessary and relevant tests are carried out, and that materials are not released for use, nor products released for sale or supply, until their quality has been judged satisfactory. Quality Control is not confined to laboratory operations, but must be involved in all decisions which may concern the quality of the product. The independence of Quality Control from Production is considered fundamental to the satisfactory operation of Quality Control. Generally, Quality Control or Quality Assurance department is isolated from production and maintenance; it is assumed that quality is responsibility of Quality Control department. The Quality Control Department as a whole will also have other duties, such as to establish, validate and implement all quality control procedures, keep the reference samples of materials and products, ensure the correct labeling of containers of materials and products, ensure the monitoring of the stability of the products, participate in the investigation of complaints related to the quality of the product, etc. All these operations should be carried out in accordance with written procedures and, where necessary, recorded. Here an attempt is made to design the structure of Research and Development for spinning mills. To survive in competitive market and work more effectively this new structure may help a lot.

Organizational Structure:

The lines of communication and authority within the company need to be defined, in particular any co-ordination between different activities and the specific quality responsibilities. The standard has to be put in place from the top down and it is considered necessary to have the person who is in overall charge of the quality programmed at a suitable level in the company management.



In many cases, it has been seen that, Quality Manager is working under Production Manager. Therefore, he is under the influence of Production Manager, and hence makes compromise on many aspects. A person having knowledge of all Quality Control activities, production, and maintenance and product development should be given a separate charge of R & D, who will be working independently without any influence.

General Manager R & D

General Manager R & D should be a highly qualified and knowledgeable person. He co-ordinates all Q.A. activities along with product development and market complaint department. Apart from these regular assignments, he keeps a close eye on cotton purchase, production planning and maintenance activities. Along with top management, he prepares quality norms and strives for the same along with his team to achieve the same.

Manager Q. A.

Manager Quality assurance is working directly under General Manager (R. & D.) His responsibilities are –

i) Cotton & Raw Material Testing (Bale Management)

Cotton samples received will be tested against mill norms and a decision regarding purchase of the lot or rejection will be taken by Q.A. Manager. Lots which fulfils the quality norms will be purchased, and 100% testing of the bales from the lot will be carried out Bale Management should be strictly followed.

ii) In-Process Testing & Process Optimization

In-process material at every process stage must be checked and wherever deviations are observed, the process must be optimized by conducting trials.

iii) Finished Product Testing

Before the final product is being dispatched to the customer, the same should be checked against the norms specified by customer. Non-conforming product must be packed separately and given separate lot/batch number.

iv) Calibration of Testing Equipment

To arrive at reliable results, the testing instruments must be calibrated (Internally or by service engineer as the case may be) as per the prescribed method and schedule.

Deputy Manager Quality Assurance:

Deputy Manager Q. A. is working as a trouble shooter. But, he should not wait for the trouble to arise in the department. Therefore, he has to plan the activities in such a way that there should not arise any problem in the department. His main areas of interest are -

i) Process Control Studies

Process control studies such as Hank checking, waste study, Breakage study, A%, stretch% etc. comes under process control studies. A plan should be prepared for these studies so that at a given interval of time all the machines are covered for all studies.

ii) Machinery Auditing

Generally maintenance gang will be doing auditing of the machine at the time of cleaning or during maintenance of particular machine. But while the machine is working, some of the things can be checked, which have influence on quality, for example stop motion, lap licking, web cut, abnormal noise from machine etc. A list of such points, machine wise is to be prepared and an auditing schedule is followed. Second part of auditing is while the machine is stopped for cleaning. At that time

along with maintenance person, machine should be audited for all settings, condition of gears etc. by quality control person. Some times, it may happen that two machines working with same count /mixing may be working with different settings, drafts etc.

iii) Follow-up of cleaning and preventive maintenance

Some times because of production planning, some of the machines get delayed for cleaning or preventive maintenance. External person must keep an eye on this and see that the machine is not skipped from cleaning or maintenance allowing a delay of one or two days.

iv) Follow-up of Replacement Schedules

A detailed schedule of all replaceable items for all machines should be prepared by maintenance Manager. The same should be circulated to production and Q.A. manager. Production Manager will make necessary arrangements so that during that period, the machine is made available for replacing the items. Q.A. will organize the studies to access the performance of machine before and after replacement in terms of quality improvement. A watch from Q.A. is also required to see that the replacement schedule is followed strictly as per the given plan.

Manager Product Development

Product development can be classified into two categories

- i) Development in existing product
- ii) New product development

Till now the concept of product development was not given sufficient importance. But in today's competitive market, unless you are different from others, you cannot survive. Therefore, product development department must work hard to give recognition to our product in market.

i) Development in existing product

Suppose a mill is spinning slub yarn. Number of trials can be conducted by varying slub length, slub frequency; slub diameter etc. and further improvement can be achieved.

ii) New Product Development

By studying the market requirements, new product development must be carried out for e.g. today there is a demand for stretch denim, a product with Lycra spun slub yarn is developed which has a great demand in market. A close eye in market changes is required for new product developments.

Good R & D Laboratory Practice

a. Documentation :

Following details should be readily available to the Quality Control Department:

- specifications;
- sampling procedures;
- testing procedures and records (including analytical worksheets and/or laboratory notebooks);
- analytical reports and/or certificates;
- data from environmental monitoring, where required;
- validation records of test methods, where applicable;
- procedures for and records of the calibration of instruments and maintenance of equipment.

b. Sampling

The sample taking should be done in accordance with approved written procedures that describe:

- method of sampling
- equipment to be used
- amount of the sample to be taken
- identification of containers sampled
- storage conditions

c. Testing

Analytical methods should be validated. All testing operations should be carried out according to the approved methods. The tests performed should be recorded and the records should include:

- name of the material or product
- batch number
- references to the relevant specifications and testing procedures
- dates of testing
- initials of the persons who performed the testing
- initials of the persons who verified the testing and the calculations
- status decision and the dated signature of the designated responsible person.

Conclusion

Management of quality begins with firm commitment and not just support from the senior management and with a well defined management policy. Management policy should be understood by the entire organization. Management must understand that producing quality product is everyone's responsibility within an organization. Having quality department does not absolve everyone else's responsibility for quality. The goal of the quality manager should be to be value adding, and thereby, not only improve quality but improve business. Quality assurance is the link between production and customers, by which the desired quality can be produced which meets the specification. Research and development can help for value addition through product development which can withstand in global market and satisfy the customers.

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