

# Total Quality Management (TQM) in Pulp & Paper Industry

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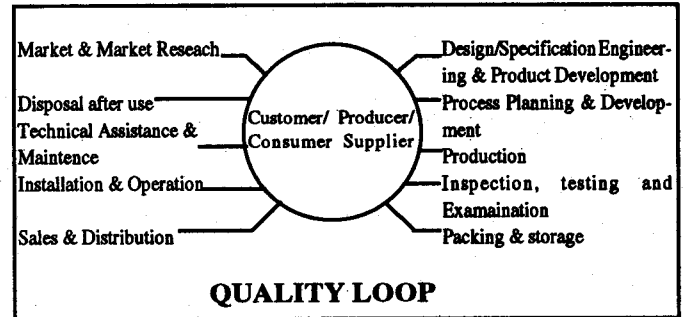
Total Quality Management (TQM), a customer oriented and quality focussed philosophy, represents a thought revolution in management. It is a strategic approach to provide the best products and services possible and practices of quality control and quality assurance. It is a strategy which is concerned with changing the fundamental beliefs, values and culture of Company, harnessing the enthusiasm and participation of everyone whether engaged in manufacturing, maintenance or service oriented jobs.

TQM has been defined as an integrated organisational approach in delighting customers (both external and internal) by meeting their expectations on a continuous basis through everyone involved with the organisation working on continuous improvements in all products / processes along with proper problem solving methodology.

TQM represents the complete way of managing an organisation with focus on customer and quality. Following elements/ features are present in TQM.

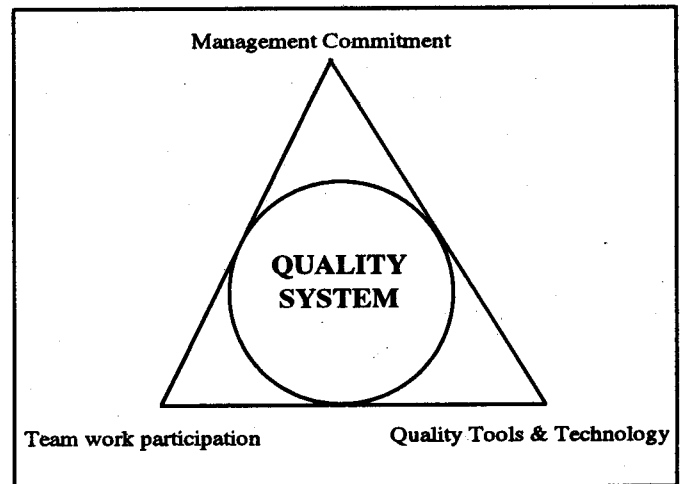
1. It is an integrated organisational approach in delighting customer - it essentially involves every activity, every single person at every level working together for meeting customers expectations. It covers all spheres of organisational activities starting from raw material, procurement stage to final customer satisfaction stage as reflected in quality loop.
2. Satisfaction of internal customer (those working within the organisation performing interdependent activities to produce goods and services) leads to external customer satisfaction.
3. Continuous innovation and improvement in all types of activities (i.e. product/ process).
4. Total employees involvement and team work/ participation.
5. Problem solving tools and techniques to ensure proper analysis and solutions of problems.
6. Design and implementation of quality system to

make quality as an inbuilt feature in the organisation.



## HOW TQM WORKS?

TQM model provides distinctly different way of looking at the management style.



Successful implementation and functioning of TQM is possible only when following conditions exist:

1. Team work and participation which builds positive attitude of employees towards quality in the organisation and respect for each other.

**J.K. Paper Mills,  
Jaykaypur - 765 017, District Rayagada, Orissa.**

2. Use of quality tools and techniques for problem solving - thus ensuring complete analysis and development of solutions.
3. Top management commitment to TQM philosophy and practices should be visible and demonstrative as TQM aims at the transformation of the complete organisation.
4. Quality system has to be designed and implemented. Quality system integrates the efforts of TQM by providing information on quality, costs and others.

## PROFILE OF PULP & PAPER INDUSTRY

Pulp & Paper Industries in India have following features:

1. Process industry featured by round the clock operation.
2. It is labour intensive and there is intensive use of scarce resources such as power and water.
3. Raw material constraints (i.e. bamboo and hard-wood).
4. Capacity utilisation and productivity need drastic improvement in majority of Pulp & Paper Industries.
5. Less automation and heavy dependence on manual operations.
6. Quality Control System and procedures are mostly manual based.
7. It generates great amount of water and air pollution, thus increasingly exposed to stringent rules and regulations framed by the Government.
8. Locational Disadvantages : Most paper industries are located in places away from big towns/ cities, thus lacking good communication facilities (by road, rail, air and sea). This has contributed to high inventory, timely non-availability of crucial inputs and spares, more downtime and delayed response to plant needs.
9. Constant threat of competition from "Multinationals" following liberalisation of economy.
10. High rate of material handling per tonne of finished products.

Sl.No.	Item	Consumption per tonne of finished Products	
1.	Rawmaterial - Bamboo & - Hardwood	3.0 T	(Gross)/ (6.0 T in case of Bagasse)
2.	Heavy chemicals	0.5 T	
3.	Talcum/ Finex	0.2 T	
4.	Coal	1.5 T	
	Total 1 to 4	5.2 T	
5.	Other miscellaneous chemicals	0.3 T	
6.	Solid wastages/ Removal: Lime sludge Coal ash etc.	0.8 T 0.4 T	
	Grand total (1 to 6)	6.7 T	(9.7 T in case of bagasse)

Besides paper handling in multiple operations in Paper Finising Plant, Finishing House, godown and despatching to customers accounts for 7-8 T.

### 11. High Cost of Non-conformities :

The Pulp and Paper Industry pays high cost of non conformities. Losses in material handling in the Mill, Yard, Alkali Losses, Fibre Losses, paper breakages and rejections, finishing losses at various stages etc., are the major costs of non-conformities.

As the Indian Pulp & Paper Industry is not yet fully automised, mechanised and computerised, the financial losses suffered by the mills on account of these non-conformities are phenominal.

## SCOPE AND OPPORTUNITIES FOR PAPER INDUSTRY

The scenario in Paper Industry is far from depressing as is being depicted in a circle. There exists vast opportunities for those industries who have tenacity to purpose to achieve excellence.

Great export potential

Ever increasing / expanding domestic market (growing literacy level and economic development).

More demand for value added and selected varieties of paper.

Comparatively easier access to advanced technology and technical know-how.

Change in tax structure i.e. reduction in custom

duties, MODVAT on capital equipments can help in modernisation, expansion of Mills.

Shift towards use of non - conventional raw materials and scope for social forestry / farm forestry.

### **IMPORTANCE OF TQM FOR PULP & PAPER INDUSTRY**

In the wake of competition in the market place, customer requirements have become more and more stringent with respect to (i) tolerance limit of technical specifications (ii) lead time to deliver the products and services (iii) consistency in quality (iv) competitive cost and flexibility in product range.

Thus, if the industry is to stay competitive then fulfillment of customer expectations have to be given top most priority. It is in this context that TQM concept which aims at customer satisfaction at optimum cost assumes great significance. This is very relevant in the case of Pulp and Paper Industries keeping in view the peculiar features associated with it. TQM would benefit the industry in following way :

TQM is an integrated effort towards improving performance at every level. This improved performance is directed towards satisfying cross functional goals as quality, cost, manpower development and quality of worklife etc. These activities ultimately lead to increased customer and employee satisfaction.

TQM with its emphasis on quality system/ procedure ensure:

- (a) Prevention of error resulting from manual operations.
- (b) Eliminate element of uncertainty associated with labour and intensive industry.
- (c) Optimum utilisation of resources through correct methods and procedures of working, thus optimising the cost.

TQM by laying emphasis on "Doing Right Things & Doing Things Right First Time" prevents cost of rework, waste and inspection in all type of activities. This is of great significance for complex paper industry which is labour, material intensive and over dependent on manual operations.

In an industry where human element plays the all important role, TQM takes care of this aspect by emphasising on participation and involvement of

all employees of the organisation.

TQM is a wholistic and strategic approach to business. It gives importance to sensitivity to environment and being proactive. This aspect is quite important for Pulp & Paper industry which is going through a period of uncertainty and transition. Interaction and influencing both internal and external environment holds key to the success, thus strategic decisions regarding many aspects such as marketing, finance, technology and business alliances etc., are important for the survival of the Industry.

### **TQM PRACTICES IN PULP & PAPER INDUSTRY - J.K. PAPER MILLS (JKPM) A CASE STUDY**

As described earlier TQM is strategic approach which aims at 'Customer Delight'. In a competitive environment TQM will go a long way in providing the Pulp & Paper Industries the much needed competitive edge.

Earlier concept of quality has been purely an inspection oriented one. Today's concept views quality as a building block at the end of each process. If quality goods and services are to be provided at optimum cost then 'Quality' must cease to be the concern of only shop-floor people and quality control inspectors. Quality management must be ensured right from vendor/ supplier stage to final customer satisfaction stage.

Following strategies/ practices are being followed at JKPM to implement TQM in the Company:

#### **Strategic Planning**

Business strategies have been formulated to achieve set goals. It involves taking strategic decisions with regard to technology, marketing, raw materials, product development, alliances, takeover and acquisitions etc. At JKPM, strategic planning is periodically reviewed to enable suitable steps in right directions.

#### **Leadership and vision building**

Management or leadership style of those driving TQM through the organisation will determine the rate at which TQM is accepted. Commitment to TQM philosophy is important in this respect.

Leadership in TQM is essentially about leading by example. Commitment is the foundation of effective TQM initiative. Without it even the most carefully designed programmes will never work. Leadership must build the vision and mission in the organisation.

Keeping the above in view, care is taken to ensure that the management practices at JKPM reflects its commitment to the TQM philosophy. Effort is made to make people know as to what is the organisational mission and goal and what is the role of the department/ section as well their own in it.

#### Internal Customer Concept

External customer satisfaction is not possible without internal customer satisfaction. All the activities performed in the organisation must be of quality. Since production of an item in an

organisation involving a series of processes, is like a relay race, the performance in the last lap alone cannot win the race. Every process from beginning to end has to be correct to produce quality product. Therefore, the people involved in each process have to treat those in next process as their customers. Thus in addition to the external customer, every activity in the factory has an internal customer.

At JKPM every department of the Mill plays three roles

1. A customer of products supplied by proceeding department.
2. A processor of those products
3. A supplier of its products to the next department.

Thus in the parlance of a Paper Mill, the Paper

## ANNEXURE-I

### INTERNAL SUPPLIER-CUSTOMER RELATIONSHIP

SL.NO.	SUPPLIER	CUSTOMER	PRODUCT/ SERVICE
1.	PULP MILL	STOCK PREPARATION	BLEACHED PULP
2.	PULP MILL	SODA RECOVERY PLANT	BLACK LIQUOR
3.	SODA RECOVERY PLANT	PULP MILL	WHITE LIQUOR
4.	STOCK PREPARATION	PAPER MACHINE	PULP STOCK
5.	PAPER MACHINE	PF PLANT	RECOVERED FIBER
6.	P F PLANT	FINISHING HOUSE	PAPER ROLL FOR CONVERSION
7.	FINISHING HOUSE	SALES/ MARKETING DEPARTMENT	REELS & SHEETS
8.	SALES DEPARTMENT	WHOLESALEERS & CONSUMERS IN MARKET	PACKED REELS/ PACKED REAMS
9.	MAINTENANCE DEPARTMENTS A) ELECTRICAL B) MECHANICAL C) INSTRUMENTATION D) CIVIL	ALL PRODUCER DEPARTMENTS OF THE MILLS	STITCHING, PACKING & DESPATCHING
10.	STORES DEPARTMENT	ALL PRODUCER AND MAINTENANCE DEPARTMENTS	MAINTENANCE OF PLANT & EQUIPMENTS AND SUPPORTIVE SERVICE
			MATERIAL HANDLING, STOCKING & STORING, ISSUES, CODING OF ITEMS (SPARES), INVENTORY CONTROL ETC.

Machine Manager is a 'Customer' of Pulp Mill, Stock Preparation, Boiler House, Power House and Water Supply etc., a processor of pulp into paper rolls and in turn is a 'Supplier' to the Paper Finishing Department. This process involves each internal customer's requirements with minimum waste as a processor and meet the needs of the final customer at minimum cost.

At J.K. Paper Mills, 'Internal Customer Concept' between various departments has been promoted through various forums, meetings etc., which ensure clarification of mutual expectations of departments from each other, collaboration in setting targets and support for overcoming problems etc.

A typical example of internal producer-customer relationship is depicted in the enclosed statement (Annexure-I) pertaining to JKPM.

## **QUALITY SYSTEM**

System and procedures are important in making quality a permanent feature in all aspects of organisational activities. It is here that ISO-9001 (1993 standard has come to play a very crucial role. ISO-9001 is a major quality phenomenon that has taken the world by storm. ISO-9001 attempts to standardise certain generic practices of quality management. ISO-9001 standard reflects and defines the most current state of the art of building TQM.

Following steps have been taken at JKPM to entrench quality system (i.e. ISO-9001)

Quality Policy and objectives of the organisation declaring its commitment to all employees through pamphlets, pocket-size cards and training etc.

Based on the organisational objectives, quantifiable objectives at the individual departmental level have been defined and documented.

Organisational structure has been outlined to ensure its support for the achievement of quality goals. Authority, responsibility and job description of employees have been defined.

Procedures and methods of work for each activity right from the vender / supplier stage to final

customer satisfaction stage has been defined and documented. Thus all departments have their documented manuals that describe the right method and procedure of performing the different activities.

An internal quality audit system has been established to verify and ensure effectiveness of the above quality system.

Progress is reviewed in monthly meetings and corrective actions taken wherever required.

## **Cost Reduction Through Employees Involvement**

Every month, Cost and Budget review meetings are held wherein the measures taken on each department in containing the cost within the budgeted norms and suggestions for reducing the cost below the budgeted norms are discussed and an action plan is prepared for quick implementation of the approved suggestions.

Non-conformance of products and services are the major cause for cost increase apart from the increase in the market prices of key inputs; whereas the rise in market prices of inputs can only be fought by reducing the consumption norms of those inputs without compromising the quality and eliminating the wastages at each stage of handling, the cost of non-conformances can only be tackled with total involvement of employees at all levels.

Each Departmental Head prepares the non-conformances in his work areas and the financial cost of these non-conformances. To say that in 'A' shift there was a fiber loss of 10 tonnes is one thing and to say that in that shift there was loss of fiber to the extent of 10 tonnes which costed the mill more than rupees one lakh is another thing. Converting the cost of non-conformance into mind boggling financial figure gives tremendous spurt to employee working in a particular area to have brainstorming sessions, analysing the cause and affect of non - conformances and come out with workable solution to reduce/ eliminate the non-conformances and thus helping the company in substantial cost reduction. The cost of missed opportunities i.e. losing prestigious orders on account of some non-conformances in the products or services gives a feeling among the employees that they should rise to the occasion, work hard to avoid non-conformances

and do not miss opportunities in these competitive environment and keep his Company's prestige high at the market place.

### **Problem Solving Methodology & Participative Management**

TQM emphasises in problem solving rather than problem focusing methodology. It implies that problems and their solutions is the responsibility of all concerned and not selected a few. Even an employee working at lowest hierarchy should contribute towards identification and solving of problems not merely focusing on problems. This can be achieved best when there is participation and involvement of employees at all levels in the organisational activities.

Following forums are functioning at JKPM to promote the spirit of team work :

#### **Quality Circle (QCs)**

QCs function in different departments where small group of employees solve their work related problems through scientific and innovative techniques with a participative approach. The QC movement is quite popular and successful with complete involvement and interest of workmen from grass root level and full support of Top Management. At present 38 QCs are working in different departments at Mills, including 4 QCs among the Contractor/ Casual labours.

#### **Suggestion Scheme**

With a view to promote employee involvement and make use their innovative and creative mind, employees are encouraged to give suggestions on various aspects (i.e. safety, productivity, and energy conservation etc.) under suggestion scheme. Accepted and implemented suggestions are duly rewarded.

#### **Quality Improvement teams**

Total Quality Control Groups have been formed covering major areas of the shop-floor. Those TQC groups have membership from amongst employees at all levels - - senior, middle and frontline officers, supervisors and workmen, encompassing different departments and disciplines. The line of approach

adapted is to identify and solve problems with the involvement of all concerned.

### **Information Sharing**

Emphasis is laid on sharing of information with employees at all levels on aspects such as production targets, cost of inputs, market scenario and other related aspects. There are display boards at various prominent places depicting production efficiency norms and production levels achieved on a particular day. Daily production meetings and monthly performance meeting involving departmental heads and sectional incharges apart from setting performance standards through discussions and consultation draw commitment of the Executives to the mutually set objectives.

Apart from the above forums, there are statutory forums in the field of safety and employee welfare.

### **Efficient Communication Network**

The need to improve communication in order to achieve widespread acceptance of the standards and values so vital in promoting TQM is felt today more than any time in the past.

#### **Communication Network in JKPM lay emphasis on**

- (a) Clear understanding of Company's mission, objectives, systems and procedures.
- (b) Customer-Seller interaction and direct interface with customer.
- (c) Sharing of information on production targets, achievements, cost of inputs, market scenario and organisational constraints/ problem etc. through various forums and meetings.
- (d) Formal and informal get together between employees and top brass of the company on various occasions.

Different forums and process of communication (i.e. scheduled meetings, committees, regular plant visits by top management and written media, company news-letter, circulars, posters/ leaflets, induction brochures and periodicals) help in achieving the desired objectives.

Optimum utilisation of human resources in meeting organisational goals is of great significance in a competitive environment.

**Thrust areas in HRD at JKPM are**

**Training and Development**

Needbased and result oriented training to employees to improve their knowledge, skill and attitude.

Succession planning and career planning.

Role clarity.

Counselling.

Job satisfaction through job enlargement and job enrichment.

Performance Appraisal and Self-Appraisal with emphasis on target setting and Action Plan aims to motivate the employees for achieving better performance.

Employee Welfare with emphasis on safety, education, recreation, entertainment and socio-cultural activities.

Pulp and Paper Industries must recognise the fundamental changes in market and customer's tastes. They must respond quickly to the changing environment in order to stay in competence. Pulp and Paper Industries must become pro-active, thus fighting obsolescence, anticipating change correctly and constantly meeting customer's expectations through employees involvement. TQM can be a very effective tool/ strategy in achieving all these objectives.

**TQM IS THE CALL OF THE DAY.  
TQM IS THE FUTURE.**

TQM will increase the productivity, will eliminate wastes, reduce non-conformances, optimise the costs, increase the customer's satisfaction, increase the volume of sales, increase the profitability of the organisation, will enrich the employees life and will help the industry to meet its societal obligations.

**LET US ALL BECOME COMMITTED TO TQM**