CHAPTER 4

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4.1 ELEMENTS OF TQM

Companies have been concerned with the quality of their products and their quality-management processes for years. However, only since the mid-1980s have organizations paid serious attention to the implementation of TQM. TQM has its origins in manufacturing, where statistical quality-control measures were first used to reduce product defects. However, TQM has spread to include applications in service industries and government.

TQM has evolved as an approach to quality that it is now characterized in terms of an integrated, systematic, organizationwide strategy for improving product and service quality (Dean & Evans, 1994; Tenner & DeToro, 1992). TQM is neither a program nor a specific tool or technique. Rather, TQM may be viewed as a shift in both thinking and organizational culture.

Taken together, the following elements appear to be key to TQM:

1. Upper management commitment to place quality as a top priority.
2. A broad definition of quality as meeting customers' expectations at the least cost, which encompasses all phases of the design, production, and delivery of a product/service.
3. The institution of leadership practices oriented toward TQM values and vision.
4. The development of quality culture.

5. Involvement and empowerment of all organizational members in cooperative efforts to achieve quality improvements.

6. An orientation toward managing-by-facts, including the prolific use of scientific and problem-solving techniques such as statistical process control.

7. The commitment continually to improve employees' capabilities and work processes through training and benchmarking, respectively.

8. Attempts to get external suppliers and customers involved in TQM efforts.

9. **4.2 THE TQM PERSPECTIVE OF WORK PERFORMANCE**

Among the TQM proponents, the work of Deming (1982, 1986) is perhaps most relevant to understanding connections between total quality and work performance and the management of such performance. Specifically, Deming built the case that the central problem of management is an incorrect understanding of variation in performance phenomena, including the performance of employees. His lament focused on the confusion between special causes and common causes of variation. Special causes are sporadic in nature; with regard to work performance, they can include factors unique to the individual worker. These causes were seen by Deming as being separate from the system in which the individual operates,
not commonly affecting other workers. An example might be that a worker shows truly extraordinary effort significantly beyond the efforts shown by other workers. Conversely, another worker might show virtually no effort, which places the performance of that individual significantly below the performance of the others.

However, the sporadic nature of special causes is evident in Deming's proposal that relatively little of the variance in work performance is due to such causes. In contrast, he proposed that the vast majority of variance is due to common causes which, according to Deming, are system based.

In NTPC following TQM initiatives are implemented

4.3 **PROFESSIONAL CIRCLES**

For organization wide sharing of learning NTPC has adopted professional circles policy

- Professional Circles act as an avenue for sharing of information knowledge. Current professional developments and problems/issues of general nature/topical interest for presenting to their colleagues during the time-bound meetings

- The Professional circles could be set up in different areas such as technical, engineering, material, finance. HRD etc

  Following are the activities envisaged of the Professional Circles-

- Presentation of papers by members
- Circulation of papers (original work as well as selected readings from professional literature)
- Screening new and original work
- Recommending/sponsoring executives to attend seminars/workshops/conventions etc of professional interest.
- Other activities for professional growth

In order to inculcate a spirit of competitiveness amongst the Professional Circles Competitions at Unit - level Regional-level & Company-level are being held every year.

The ultimate goal of this moment would be to create a net work of different professional t the Regional and finally at the organization level a company-wide professional network.

4.4 QUALITY CIRCLE

- Quality Circles is small group activity at the grass root level whereby the groups members have the freedom to discuss and give solutions to their work related problem.
- The group gets involved on a voluntary basis to analyze and solve problem in a systemic framwork.
- The concept of the Quality Circles can be called as Throught Revolution.
- Quality movement originates from Japan where the work force has lot of say in problem solving. In the NTPC context, where also the
workman display a high sense of dedication and sincerity in doing their Jobs, introduction of a new concept like Quality Circles has definitely a boosting factor for the moral.

- The target for the coverage of workforce is 80% in this movement.

- In order to have continuous involvement the Quality Circle movement is supported by a framework of steering Committee. Area Coordination and Facilitators.

- The activities of Quality Circles include identification of problems at workplace, suggesting various alternatives for possible solution making presentations documents etc.

- There are 3-tier system of sharing of gains amongst members of Quality Circle- project-level, Regional level & Company level during which the competitions are organized.

- There are attractive & special awards and recognition available for the members of the Quality Circle such as study tours of reputed organizations/power plants recognition in house journals etc.

- The QC Facilitators & Members are given adequate awareness and training.

**4.5 BENCHMARKING**

- Bench marketing is an on going measurement and analysis process that compares internal practices. Process or mythologies with those of best performing organizations.
• The purpose of these studies is to identify best practices that may be adapted to a wide range of organizations and provide them with Quantum process improvements. Which results in increased performance.

• The various types of benchmark are:
  - Internal Benchmarking: A comparison of internal operations
  - Competitive Benchmarking: Specific comparison to competitor for the production industry leaders.
  - Functional Benchmarking: Comparison to similar functions within the same broad industry on to industry leader.
  - Generic Benchmarking: Comparison of business functions or process that are the same regardless of industry.

• The process of benchmarking is plan, search, observe, analyze, and adopt.

• Bench marketing cells have been formed at each unit and they identify various organizations for the benchmarking study and undertake various benchmarking projects related to their deptt..

• Training programmes on benchmarking are also being organized with the organization like TISCO etc.

4.6 ORGANIZATIONAL TRANSFORMATION PROJECTION DISHA

• NTPC has conducted organizational transformation study through international consult M/s A.T. Kearney
• Following areas have been Covered during the study-
  o Business strategy
  o Business Process Re-engineering & IT strategy.
  o Restructuring
  o Human Resource Strategy
  o Implementation Strategy

• HR strategy design-
  o HR strategy for short and long term
  o Effective for enhancing Hygiene factors and raising employee morale.
  o Employee Relations for Effectiveness of HR effectiveness
  o Instruments for Culture and Values Assessment
  o Competency mapping and Assessment
  o Integration of HR function.

4.7 THINK THANK

Comprising of pool of Talented Executives preferably with M.Tech and M.B.A. backgrounds is formed at each NTPC Site, which meets at frequent intervals and provid alternatives for various problems by way of brain storming creative technique they focus both technical and non technical problem faced by the units

4.8 EMPLOYEES SUGGESTION SCHEME
• The Suggestion Scheme is intended to direct creative ideas of employees into useful channels and give them an opportunity to contribute for the company.

• The objective of this scheme is to recognize employee creativity providing opportunity to participate in the development and growth of the company and also to tap employees talent for the benefit of the company Award for worthy suggestion and also to taste better employee management relations and to improve overall productivity.

• All the employee up to E6 level are eligible for monetary Award for making suggestion.

• Suggestions can include saving in labour, material, supplies or expenses, preventions or reduction of waste improvement in maintenance methods format design safely matters economy in usage of stationary and other Quality etc. However the Suggestions on policy collective bargaining are outside the scope of this scheme.

• It is envisaged that at least one suggestion per employee is received every year.

• Monetary Awards are also given to the suggestors apart from other recognition.

4.9 5 'S'

• Initially this concept was propounded in Japan to improve the effectiveness of work place.
• The name 5 'S' was derived from the first letters of Japanese words SEIRI,
• SEITION,
• SEISO,
• SEIKETSU &
• SHITSUKE.
• These words briefly convey the following:
  SEIRI   Separate out all that is unnecessary & eliminate it.
  SEITON   Those things which are found to be necessary are put in order so that they are ready for use when needed.
  SEISO    Clean workplace equipment and prevent defects.
  SEIKETSU Follow standardized practices and procedures.
  SHITSUKE  Discipline and training-Adherence to set Procedures.

The above concept of 5 'S' is very effective and is being readily practiced by all sections/departments of all units of NTPC to maintain proper house keeping and cleanliness of the plant.

Proper housekeeping and orderliness of each and every thing is important, because otherwise it leads to

(a) Accidents in the plants.

(b) Delays in finding and locating tools/papers etc. whenever they are needed.
Motto of the 5 'S' system – Every thing has proper place & every thing at proper place.

4.10 TOTAL PRODUCTIVE MAINTENANCE

ntpc is adopting total productive maintenance philosophy in maintenance.

TPM is maintenance management model inspired by the following principles-

(a) Maximization of overall equipment effectiveness (OEE)

(b) Establishment of a comprehensive preventive maintenance (PM) system spanning the entire life of the equipment.

(c) Involvement of all departments that take part in the planning operation and maintenance of the equipments.

(d) Promotion of PM through innovation management, that is through autonomous small group activities.

Meaning of total is total effectiveness, total maintenance system and total participation of all employees.

By adopting this philosophy NTPC has been able to reduce breakdowns between two planned overhauls.

4.11 PERFORMANCE EVALUATION MATRIX

NTPC has adopted PEM comprising of about 30 parameters related to operation, maintenance and productivity aspect of units. Every month these
parameters are tabulated and evaluated after the completion of one year, best performing station is adjudged and awarded.

System of PEM evaluation has brought revolutionary change in GEM of the units.

4.12 ADAPTATION OF BUSINESS EXCELLENCE MODEL (MALCOMBRIDGE BEM)

At most of the NTPC units, business excellence model as depicted by Malcombridge (and popularized in India by CII-Exim collaboration) has been adopted.

This model contains nine criterions out of which five criterions are enablers and 4 criterions are results.

While applying these criterions in true spirit units of NTPC are getting effectiveness in performance with respect to both technical as well as managerial aspects of the organization.

For the first time, the model was implemented by NTPC-Dadri in the year 2003-04 and later on other projects have also stated adopting it.

4.13 ISO CERTIFICATIONS

All the stations of NTPC are ISO certified with respected to following systems.

(a) Quality Management Systems

(b) Environment Management Systems
(c) Occupational Health & Safety Systems

Even the sick plants of UPSEB i.e. Tanda Thermal Power plant which was handed over to NTPC at a mere PLF of 13% in the year 2000 is now showing PLF of 86% and that plant has also been certified with ISO 9001, ISO 14001 and OHSAS 18001 certifications.

At NTPC plants, these certificates are not kept for window dressing there are regular internal audit checks and management reviews and continuous improvement is brought into the systems at regular intervals. Further the training and awareness aspects are being taken care by Emp. Dev. Centres.

Further, presently system of Integrating all these three certificates are in process, to avoid multiplicity of audits and documentations.

4.14 KAIZEN & PDCA

NTPC adopted principles of Kaizen way back in 1996, where each departments and individual is asked to bring continuous incremental changes (whatever small they may be) in their day to day activities.

PDCA cycle of Plan, DO, check and ACT is being implemented in all spheres of working. Even members of quality circles and cross functional terms are utilizing principles of PDCA cycle while solving projects undertaken by them.
4.15 MISSION & CORPORATE PLAN

NTPC has adopted following mission which is in line with the vision of the company.

Develop and provide reliable power, related products and services at competitive prices, by integrating multiple energy sources with eco-friendly and innovative technologies and contributing to the society.

Above mentioned mission takes are of following aspects of the company-

(a) Reliable power provider as per the needs of customer.

(b) Related products and services in consultancy and fuel development area.

(c) Competitive prices- cost consciousness and efficiency in all operations.

(d) Integrating multiple sources.

(e) Integrating multiple energy sources - this phrase gives the diversification plans of the company and its future course of running hydro, nuclear and plans for non-conventional sources.

(f) Eco-friendly- prime commitment of NTPC w.r.t. environment.

(g) Innovative- also imbied in one of the core value.

(h) Corporate social responsibility- concern towards the society and people of nearly villages staying in proximity of NTPC plants.

NTPC is developing 15 year long term corporate plants after a stipulated period.
Presently 15 years corporate plan of 2002-17 is running. Corporate plans are developed by keeping following parameters.

4.16 INTERNALISATION OF MOU

MoU stands for Memorandum of Understand and the concept is based on the Principle of Management of Objectives. As a Public enterprise, NTPC enters into a MoU each year with the Government of India. NTPC is one of the first PSUs to enter into a MoU with the Government of India and has been rated excellent for its MoU performance for the last 18 years. MoU covers both financial and non-financial performance. For a growth-oriented organization like NTPC it was felt necessary to have a proper system of managerial accountability to have sustained growth. Also, with the changing economic scenario and competition round the corner, it becomes essential to work on true business lines by creating profit centers coupled with accountability and functional autonomy for all round performance enhancement of the company. It is towards achievement of this goal that the internal MoU concept and its implementation was adopted within NTPC from the financial year 1998-91.

Objectives & Benefits:
The internal MoU concept is introduced with the following objectives:

- To bring in role & functional clarity.
- To improve the quality of relationship between Management and the Managers.
- To define performance in totality and in a realistic manner.
- To adopt methodology for the evaluation of performance bringing in objectivity.
- To pave way for a healthy competition with the overall vies of growth enhancement.

The system has got distinct benefits like;

- Integration of departmental Goals/Objectives with organization goals and Objectives.
- Provides clear-cut direction for the growth of the enterprise.
- Improves work culture and attitude.
- Facilitates identification of the weaknesses and strengths down the line.
• Define the performance in clear terms and brings in enhanced accountability.

• Obtains tie-up/commitment of the inputs/support.

• Priorities multiple goals and objects.

• Brings in the objectivity in departmental/ functional performance evaluation methodology.

• Provides functional autonomy to departments.

• Enhances managerial/ competitive skill.

**Internalization of MoU**

The coverage of Internal MoU presently is:

1. Regional MoU covering the Plant/ Project and regional activities in respective Regions.

2. Corporate functional MoU covering important functional activities of al Corporate functions.

**4.17 SIX SIGMA**

*Six Sigma* has recently emerged as a popular management approach for improving processes to reach almost a zero defect
stage, if necessary. Introduced first in Motorola and then successfully implemented in Allied Signals, General Electric, Caterpillar, Six Sigma Quality initiatives are also being practised in Progressive Indian Companies like GE, ABB, Wipro, Samsung, Telco, Escotel etc. Six Sigma techniques are based on measurement, statistical analysis and improving process capabilities to reach higher and higher level to attain defect-free processes. In aircraft industry processes have capability of 9 sigma levels. Generally Companies get satisfied at 3 to 4 Sigma level of competence. NTPC has introduce Six Sigma in a limited way initially in some critical processes.

In partnership with GE, NTPC is organising training programs at five stations to start with. Of these five Dadri, Ramagundam, Talchar-Th, Kawas have already benefited from the six sigma champions training program. Singrauli is soon to follow. At the end of this, green belt training program shall be arranged at PMI for executives from these five stations who will be working on projects finalised by their respective regional Executive Director.