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Introduction

Rashtriya Chemicals & Fertilizers Ltd.(RCF) is one of the leading companies in the area of fertilizers and industrial chemicals in India. It has two production units- one at Trombay in Mumbai and another at Thal near Alibag in Raigad district of Maharashtra. Trombay Unit of RCF produces urea (brand name Ujjwala), complex fertilizers (under the brand name of Suphala 15:15:15 and Suphala 20:20:0) and variety of industrial chemicals such as ammonia, methanol, methyl amines, dilute nitric acid, concentrated nitric acid, sodium nitrite/ nitrate, Ammonium Bi-carbonate, sulphuric acid, ammonium nitrate melt. It also produces phosphoric acid for captive use. Thal Unit of RCF produces ammonia, urea, methyl amines, DMF, DMAc and formic acid.

RCF has been awarded “**Mini Ratna**” status by Government of India and its performance has been adjudged as “excellent” for last six years on the basis of MoUs signed between Government of India and RCF. RCF is one of the few public sector undertakings making profit almost every year since its inception

Both plants at Trombay and Thal are energy intensive. Trombay Unit requires about 1.90 MMSCMD of associated gas and about 950 MWH of power per day to run all its plants at rated capacity. Thal Unit requires 3.80 MMSCMD of associated gas and about 750 MWH of power (partly about 650 MWH met by captive generation) to operate at rated capacity.

However, during last ten years, the supply of associated gas from GAIL/ONGC has started dwindling. Thal Unit was the first one to be affected due to gas shortage. To survive under the circumstances, Thal Unit switched over to naphtha as fuel for its service boilers and auxiliary boilers and also supplemented the feed of the ammonia plant with naphtha which is almost three times costlier than naphtha. Trombay Unit started facing problems in gas supply during last five years and used fuel oil as supplementary fuel for its service boilers. However, as per policy of the GoI, the additional cost due to use of fuel oil was not considered in the calculation of Retention Price of urea produced at Trombay. Therefore, in order to optimize the product mix to operate within the available associated gas of about 1.10 MMSCMD, the production of urea along with production of ammonia of 350 MTPD had to be stopped.

About 15-20 years back, more emphasis was on production without much concern about energy consumption. However, due to reduced gas availability and increasing trend of its price and higher cost of other options like naphtha/ fuel oil and competition in the changed scenario of liberalization and globalisation, RCF started giving more close

attention towards energy conservation. It was soon realised that the fruits of energy conservation cannot be reaped through efforts of few individuals of the company alone unless all employees are involved actively. RCF management devised a multi-pronged strategy to involve employees at all levels to reduce energy consumption of its plants. This paper describes how RCF motivates its employees of Trombay Unit to reduce energy costs and what are the results of such efforts.

RCF's Philosophy in Motivating its Employees

“People become really quite remarkable when they start thinking that they can do things. When they believe in themselves they have the first secret of success.”

-----Norman Vincent Peale

The above quote illustrates the power of an individual when he starts believing in himself and start thinking to produce better results in the terms of productivity for himself and his company. RCF recognised that the improvement in the work related areas can be brought about by total participation of employees. It formed the root of two schemes being implemented successfully in RCF.

RCF put emphasis to develop its employees particularly at workers level to think and give suggestions to reduce energy costs. This was done at two levels

- Individual level where an employee can participate by giving his suggestion through **“Suggestion Scheme”**.
- Group level where a team of employees working in an area study a problem related to energy consumption in their area and give a suggestion to reduce energy cost. This movement is known as **“Quality Circle”**.

Following are the main objectives of the **Suggestion Scheme** and **Quality Circle** movement in RCF:

- To encourage employees to find out solutions to problems in their working areas for a better productivity.
- To reduce wastage of any kind- man-hours, materials, energy, money, raw materials etc.
- To involve employees and allow them to participate in the area of productivity improvement.
- To give opportunity to employees' ideas in creativity and fulfil their desire for recognition.
- To channelise the positive energy of employees thinking into constructive purpose.

Suggestion scheme

RCF recognised the idea of utilising individual's creativity through suggestions and started the scheme in 1965. After in operation for last about 38 years, it is still one of the most effective instrument for pooling in the most collective innovative ideas of the

employees and translating them into reality by implementation for better and all round productivity awareness.

Management Services department in each Unit of RCF is the coordinating agency of the scheme.

Flow description of the scheme is as follows:

1. Printed suggestion forms are made available to employees in their department.
2. Suggestor after duly filling the suggestion forms either submit it to the coordinator or deposit it in the Suggestion Boxes kept at suitable locations in the working premises.
3. Suggestion received by Coordinator is registered in the book as well as in the data base of the computer.
4. Suggestions along with evaluation forms are sent to Operations Manager/ HOD of the area in which suggestion falls.
5. After evaluation of suggestions it is reviewed and decided whether it is accepted or rejected and accordingly an entry is made in the register.
6. Rejected suggestions are filed and the suggestor is informed with reasons for rejection.
7. Accepted suggestions are further evaluated to decide the prize amount. The list of accepted suggestions with prize amount is approved by the competent authority of the Unit.
8. Prizes for suggestor are awarded in the special functions organised by the company.
9. Status of implementation is monitored and reminder is sent to the concerned Operations manager/ HOD for expediting implementation.
10. After implementation the actual benefits are evaluated and recorded.

Awards for Suggestions

The suggestions are classified in mainly two categories viz. Tangible and intangible benefits. An award for tangible benefits is calculated on the basis of saving potential of the suggestion, payback period of the investment required for implementation of suggestion, originality and technicality and complexity of the idea, ease of implementation etc. Prizes awarded to suggestions accepted are given in cash and the amount depends on expected savings through the suggestion to the company. A prize ranges from Rs. 100 to Rs. 5000. The **“Suggestion Supreme Award”** (Best Suggestion of the Year Award) is given out of the suggestions received and accepted during a year. The suggestor receives a rotating trophy, Rs. 2500 in cash and a replica of the trophy on 26th January every year. A record is kept of the number of suggestions given by an employee. When 5 suggestions of an employee are accepted, the employee gets a membership of **“Shreshtha Vichari Sangh”** (Top Suggestors Club). Every year top three best suggestions of unionised category are selected for sending nominations to **“Vishwakarma Rashtriya Puraskar”** instituted by Labour Ministry of Government of India. So far six number of employees have been awarded **“Vishwakarma Rashtriya Puraskar”**

In order to encourage employees of different plants/ departments, an award to the Best Operations Manager / HOD is given on 26th January every year during Republic day

function of the company for making outstanding contribution to the suggestion scheme on the basis of

- Receiving and processing maximum number of suggestions from his plant/ department
- Ratio of number of accepted suggestions to the number of suggestions received.
- Number of suggestions implemented during the year.

The award recipient gets a rotating trophy and books worth Rs. 1900/-.

Through suggestions received on energy conservation during last three years alone, a saving of about Rs. 85 lakhs per year has been achieved.

Quality Circles Movement

The Quality Circle movement in RCF started in 1988. The basic philosophy of the Quality Circle is that every human being is capable of thinking and contribute to improvements in his working area as he knows the best where the shoe pinches and therefore he can think of different solutions. Through application of different techniques of analysis, a group of individuals working in the same area will select the best solution to the problem. A group of individuals so formed in a particular plant / department is called a Quality Circle. The scheme started first in Japan and spreaded over all over the world. Through this movement, workers also get an opportunity to make decisions to improve working conditions.

Initially there were five Quality Circles in 1988. At present in Trombay Unit of RCF, there are 92 Quality Circles in different plants and service departments. A typical group of Quality Circle consists of about 10 to 12 members working in the same area. Each Quality Circle has its specific name of identification selected by its members. Each Quality Circle elects its Leader and Dy. Leader of the Circle. A facilitator is given from the side of Management. A Quality Circle normally conducts their meetings weekly during working hours. Quality Circle members themselves identify problems in their area and then select one problem to find out its solution. During a meeting each member is given freedom to speak and his opinion is respected. Members use different techniques/ tools like Perato diagram, data collection, cause and effect diagrams, brainstorming, reverse brain storming and then arrive at a conscious solution. Each Quality Circle maintains a register of their activities giving details of attendance, problems discussed, problem selected.

Implementation part of the solution is done by members of the Quality Circle themselves. If required, assistance of other departments is sought.

The coordination of all Quality Circles is done by the management Services department of the Unit.

RCF arranges training programmes for facilitators, leaders, deputy leaders and members. Each month there is a “**Top Management Presentation**” (TMP) giving opportunity to Quality Circles to make presentation on a problem they selected and their solutions arrived at. Normally about 5 to 6 presentations are made in each TMP. Each Quality Circle is given 15 minutes to make presentation and 3 minutes to answer questions. In each TMP judges give marks to each presentation and the Best Presentation of the Day is declared. Once a year, an Annual Convention of Quality Circle

is held in Trombay Unit. It is celebrated with a lot of gaity and enthusiasm. Trophies and awards are distributed based on the overall performance of Quality Circles throughout the year and also on that particular day of the convention. Quality Circle members are also given an opportunity to participate in the Annual Conventions of Quality Circle Forum of India (QCFI) or its other Chapters in different regions. Some Quality Circles have also participated in International QC Conventions held abroad.

So far Quality circles in Trombay have given 628 solutions to problems selected by them and 558 solutions have already been implemented. Following were estimated savings in energy consumption due to solutions given by Quality Circles in last three years.

Year	Estimated Savings, Rs. lakhs
2001-02	32
2002-03	80
2003-04	110

It can be concluded that the Quality Circle movement has benefitted to RCF as well as worker category employees immensely. It is seen that confidence level of workers has increased tremendously. They are able to speak fluently before audience, present their selected problem through aids like slides, models and Power Point presentation and reply to questions from audience. By making use of computers, the literacy levels of workers in the field of computers has increased. They got openings to their creativity in making models, transperancies. The workers participating in Quality Circles are getting opportunity to travel to to other parts of India and sometime abroad also to participate in different conventions and interact with people.

Other motivations

- RCF has instituted following two awards for its plants/ departments of Thal and Trombay Units:

1. **Dr. Babasaheb Ambedkar Award for Productivity and**
2. **Rajiv Gandhi Award for Environment**

In productivity award, energy cost reduction is one of criteria for evaluating the performance of a plant.

For this evaluation, a team of officers and workers representative from Trombay Unit visits Thal Unit four times in a year to check the performance and give markings and vice versa Thal team visits Trombay. The Best Plant/ department evaluated on the basis of visits gets the Dr. Babasaheb Ambedkar Trophy and Rs. 50,000 as an award. Employees getting the award feel proud of themselves and their plant/ department.

- In individual category, the **Best Worker** from unionised category is selected from the nominations received from the plants/ departments and a committee evaluates nominations. Contribution to energy cost reduction is one of the

criteria. The Best Worker gets a medal on 15th August every year during Independence day function of the company.

- RCF recently introduced a new format of performance appraisal for officers category. In this appraiser and appraisee fix five Key Performance Areas of the performance during the year. Energy cost reduction is one of the criteria of Key Performance. The actual performance is reviewed in October and April of the year.
- Also RCF organises special programmes like ‘Energy Conservation Week’, ‘Productivity Week’, ‘Bijalee Bachao Abhiyan’ (save power movement). During the week besides organising training programmes, presentations, quiz contests, essay contests, slogans, suggestions on energy conservation are invited. In the concluding session of programmes, the winners are given prizes.

A “Bijalee Bachao” programme was launched in April 2002 to bring awareness in the employees about wastage of electrical energy and how its consumption can be reduced. A good response was received to this programme. As a result of this programme a number of suggestions were received and implemented. In the year 2002-03 Trombay Unit saved about Rs. 16 crores in the electricity bills paid. A graph showing the trend of energy consumption since April 2002 is presented in Fig.-1

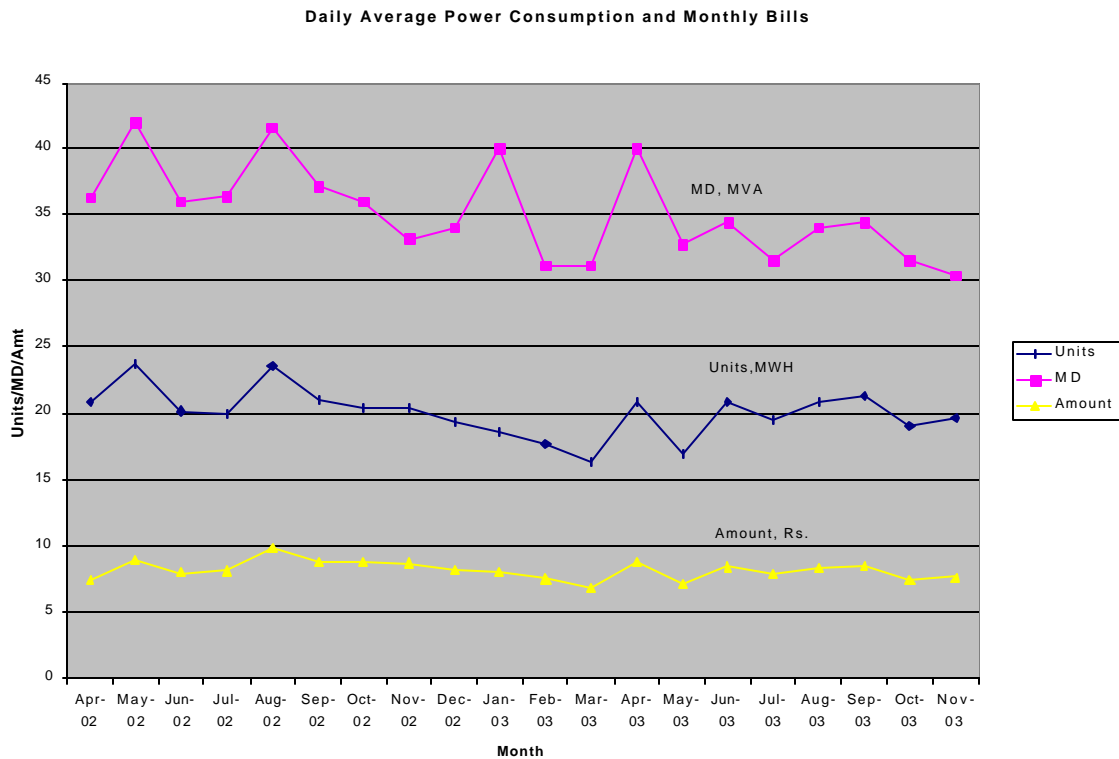


Fig.-1

- Being a MoU signed PSU, RCF is committed to achieve targetted specific energy consumption of ammonia, urea and methanol produced. Based on the targets set in the MoU, each plant of Unit is given its own target of energy consumption and it is monitored regularly in weekly and monthly review meetings.

- Daily in the Morning Review Meeting, previous day's power consumption, maximum demand is monitored and action to be taken is discussed by individual plants is decided.
- RCF, Trombay Unit has made two groups under "**Energy Manager**" of the Unit comprising of officers having a good experience and knowledge of energy conservation. One group is for gas based plants like ammonia, methanol, nitric acid and other group is for complex fertilizer plants. Both groups consist of process and electrical engineers in their areas. They make field visits and discuss with the plants about energy consumption and energy saving potential of different schemes and implementation in their areas and what actions are further needed to accomplish the results in energy conservation.

Conclusion

Trombay Unit of RCF is encouraging its employees to think and give suggestions/solutions for reducing energy cost in their working area. Through "Suggestion Scheme" an opportunity is given to those who can contribute in their individual capacity in energy saving and cost reduction through suggestions. Also there exists an opportunity in the form of Quality Circles to those who perform better in a team. The company's employees are given freedom to think, facilities to prosper themselves along with benefits to the company. Tangible benefits to the company and its employees are clearly visible through innovations brought by employees in their working area. But also important are the intangible benefits like better knowledge, learning tools and techniques of analysis in arriving at a solution, increased confidence and believing in themselves that they can also think and contribute to the energy cost reduction process which is continual. True that there is no limit to the man's thinking process and benefits he can derive for himself and his organisation.