

# Need of Research and Training in Paper Industry

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Paper Industry, or to be more precise the modern version of it, is of very recent origin. Basically, the main principles of paper manufacture have not changed over a century, but techniques have vastly improved. Of course, in this nuclear age it may be argued that the advances made may be considerable but not very spectacular. It is not the scope of this article to assess the nature of development but to point out the necessity of Research and Training in this Industry. I shall tackle these two aspects one by one.

## Research Needs

Research naturally aims at constant improvement of existing processes and production and at reduction in costs. On a national scale, the emphasis should be on Fundamental Research in which it is sought to give a better understanding of the raw material, the processes and the products in order to improve them and develop leads to wholly new and less costly production methods. While discussing the necessity of fundamental research, let there be no mistakes made about the importance of Applied Research in Paper Industry. The area of operation however is different though one may very often overlap the other.

In order to ascertain the need of research in Paper Industry, it is always desirable to find out the different aspects where improvements are needed. In my opinion, the following items may be considered useful :

1. To understand the nature of raw material required for paper manufacture,
2. To understand the structures of paper and the mechanism of its formation,
3. To improve quality control,
4. To develop new products for application.

Of the above items, the first two naturally come under the area of fundamental research while

the others are in the scope of applied research. Let us examine the subjects a bit more elaborately.

Problems to find suitable raw materials for paper manufacture are getting acute day by day. While research is being carried on to improve yields on our existing raw materials, vigorous work are carried out throughout the globe to find new raw materials for paper manufacture. If we judge this in the context of our country's position, the urgency of the situation will be very strongly felt. Our relatively young Paper Industry is already facing a crisis for the shortage of raw materials. Though efforts are being made to overcome these difficulties, yet there is much more desired to be done in this field. Paper Making has existed as a craft for centuries but very little is known about the mechanism of paper formation. Fundamental studies should be conducted to ascertain the properties of individual fibres, the way they react to the beating and refining process, the physical behaviour of stock during formation and the role of additives, the mechanical and thermal conditions imposed on the web after formation. Research in the above field comes under the scope of fundamental research and should be best tackled by the National Research Institutes. Intensive researches are carried on in Western countries in these directions and not only the National Institutes but also leading pulp and paper manufacturing concerns are participating effectively in this programme. The situation in our country however is far from satisfactory as neither the State nor the Industry is paying much attention to this side of the programme.

The facilities that are available in the Forest Research Institute in Dehra Dun have not been utilised by the Industry in a satisfactory manner. While the Institute itself will carry out its programme, the industry must press on to it all the time for solution of their problems. Unless this urgency is felt the Research Programme cannot attain the true dynamism.

Need of research to speed up or streamlining the process is most acutely felt subject in one

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whole area of Pulp and Paper making. As a matter of fact, research in this field has contributed to a very great extent to the modernisation of the plants and equipments. Industry has played a prominent role in this field as benefits due to Industrial Research will come to them at a much quicker pace than by any other means. Increased competition also has made it imperative for the industry to embark on this research programme. National Institutes and Machine builders have come with improvements. Many Mills have come out to help the programme by allowing to record information and also by carrying plant trials. The process investigation which is truly operational research cannot be conducted without the co-operation of the Industry. It is only natural that not much has been done in this line in our country, as this pre-supposes a certain amount of general technological development in the country, which we do not possess.

In order to improve quality checking procedure the individual mills assisted by the National Institutes can carry out important work. While in this particular area the best can be achieved by the technical control department of the Mills, where with proper co-ordination this may bring in valuable results.

### **Training Needs**

Training like research also aims at improving matters in the industry. While research aims at improving the processes, the plants and equipments, training aims at the improvements of human resources. To quote, Mr. T. E. G. Becker, Chairman of the Reeds Education Committee, "we in the Reeds groups can have the best machines for every job but unless we have the trained people to work them, they can become completely valueless." The necessity of training in Paper Industry is more felt as this has passed from the Craft stage towards an advanced technology. In good old days Paper Industry especially Paper Making was regarded more as a Craft than as a Technology. It was the man who had been performing this Craft was very important and the only way of getting the "Know-how" was by observing how things were done. This was a long and time-taking process and normally the skill was not transferred easily from Man to Man. With the modern development of Science and Technology and the progress that has been made due to its impact, Paper Manufacturing is no more

a craft, but a developed Engineering Technology. The 'know-how' of the job is not time-taking as very little personal skill is required in tackling problems. But along with it has developed another aspect—the necessity of organised knowledge. In craft stage though it was difficult to acquire the skill, the mistakes were not costly. Whereas in the case of modern equipments mis-handling may be very costly. So while the modern science has taken away the skill from the operator's hand, it has imposed much greater responsibility on the operator's shoulders. Training plays the very important role of grooming the operator to take the heavy responsibilities. Any dynamic organisation must have training scheme to train its operatives, its supervisory personnel, its technical personnel. Each organisation must find for itself the exact training needs for its own men. The need and programme may not be the same for two different countries. For the developed countries like the U. S. A., Canada, the training will definitely start at a much different level than the level we want to start at in our countries. The training may start at different levels but what does the management want the operatives to achieve? The answer to this problem will give a clue to the training needs.

In my opinion the following points are worthy of consideration :

1. Stabilisation— trying to keep the process running as steady as possible.
2. Optimisation— aiming at the highest production of good quality material.

In order to ensure the above needs an operative must be trained to achieve the following qualities :

- (a) Sensing— Detecting by signs and indications how the plant is running
- (b) Perceiving— Interpreting the sign and instrument readings correctly.
- (c) Prediction— Of what will ensure if the controls are untouched. Knowledge of how the controls affect the process.
- (d) Decision— Selecting the appropriate action to meet given circumstances.

A close study of the above features will show

that best developments of all these aspects can be done by on-the-job training. Here again, we should remember three golden rules of training and developments :

- (i) Development is really self-development.
- (ii) On-the-Job development is best.
- (iii) Off-the-job training only supplements day-to-day on-the-job training.

Now speaking about India, the training schemes for the operatives must have the emphasis on the technical know-how. The operatives here normally do not possess the minimum educational background required to receive the technical understanding of the process. Training classes must be organised by the individual Paper Mills to equip their operative with theoretical aspect of the paper manufacture. Many methods may be employed to teach them the control procedures; Slides, Models and other training equipments may be used to make the programme a real success. On top of this, training in the practical aspect must be flawless. A scheme of three/four years routine may be followed. The operative must know why he does one job and what will happen if things are not done in the right way. Any training scheme which will make an operative to learn this has achieved its object. Hence a trained operator will face any technical problem with a logical approach, and never by the intuition or the thumb rule "It worked last time"

While we can devise a way for training operators but what about the supervisory personnel? Supervisory personnel are the pivots in Paper Industry. Here also in India we have lack of technical abilities. There are of course a few men who have training abroad but most of our supervisory staff have not the chance of acquiring that experience. Training scheme will have to fill in the gaps here. This must include training in the most modern aspect of paper technology. While the technical abilities of a superior are taken care of, it is also important to develop him in his managerial functions. Normally, a supervisor has the following responsibilities to perform :—(1) Administrative, (2) Leadership, (3) Human Relations, (4) Technical. The aspect of Leadership and Human Relations should be developed in a proper way as Paper Industry unlike many other industries cannot thrive without a good teamwork.

Paper Industry in particular has a role which needs the development of specialists. But Paper Technology is a combination of more than one science. Hence a good specialist in this area must be a generalist too. Training is the best method by which this can be done.

In conclusion, it is wise to remember that Paper Industry to-day is moving more and more towards a trend than a point. The industry must have the benefits of modern technological development. This can only be achieved by conducting the Research in a pragmatic way by trained technical personnel.