

# Problems of small paper units : Consulting engineers' view point

RAY, SURAJIT, GUPTA, B. M.\*

---

## SUMMARY

A major portion of the rise in installed capacity in paper industry during last five years can be attributed to the sector of small to medium paper units. However, it has been noticed that the huge investment in capacity creation is tending to become a liability because of poor capacity utilization. A rough estimation reveals that most of the small units are facing problems on one account or the other. Though some are doing well, there are still others who are a marginal case of existence.

As an organisation of consulting engineers providing assistance to pulp and paper industry and also involving in study of sick mills, we have made an attempt to assess and analyse their problems.

In presenting this Paper opportunity has been taken to discuss the various problems that such units face and have tried to suggest possible remedies and improvements.

---

## SHORTAGE OF SKILLED MANPOWER

In spite of modern technology and all the automation coming into widespread use, MANPOWER remains the most important factor in manufacturing processes. No amount of sophistication in technology or in management can really be effective unless administered or carried out by competent persons. The problem of nonavailability of competent and skilled personnel, therefore, in our opinion is the most crucial one for small units and need immediate attention. The problem has arisen due to fast growth of small paper mills which has been completely out of tune with the growth of skilled manpower generation. As a result most of such units are facing acute problems in getting services of skilled personnel in all disciplines. In our opinion the problem has following dimensions :

- i) Economic structure of these units do not permit them to attract the best of the brains and skills of the paper industry.
- ii) People are reluctant to leave big units and join smaller units on the ground of inferior infrastructure, facilities, comparatively poorer working conditions etc.; and
- iii) Less job security in small units.

Due to above factors there has been a substantial transmigration of personnel among small units causing an impediment for the growth to many of them. Big mills normally have their in-house training programmes which help them keep a second line of operation to cope up with such type of problems. The same thing is not possible for smaller units.

The solution to this problem will essentially call for long term planning to develop human resources for paper industry. Availability of skilled manpower is further expected to improve since last one year no small paper unit has been financed by Financial Institutions. The problem of manpower, that can be attributed to mushroom growth of the small sector, therefore is expected to ease down considerably.

## IMPROPER OPERATIONS

This problem can be treated as a natural corollary of the one just discussed i.e. shortage of experienced and skilled manpower. Small paper units, due to their lack of instrumentation and

---

\* Chemprojects Design & Engineering Pvt. Ltd.,  
17, Panchshila Shopping Centre  
New Delhi-110 017.

other controls, calls for experienced staff to take care of the operations. In our opinion the problem can be further analysed under following categories :

1) Small units are often based on non conventional raw materials but persons are hired from big mills with experience in a different line of processing based on conventional raw material. Non-conventional raw materials generally behave in quite a different fashion and call for specific experience in utilisation of the raw materials. The operational areas which suffer most on this account are—

- a) Cleaning and cutting of raw materials,
- b) Cooking.
- c) Addition of chemicals in stock preparation.
- d) Use of machine white water and reuse of excess back water at different points.
- e) Water treatment and boiler house operations.

ii) Apart from the improper operations due to lack of experience there is another aspect of this problem. It has been often found during study of many troubled units that consultants' recommendations in vital areas like water reuse, material handling and processing remain overlooked at the cost of ultimate productivity and product quality. Few examples as given below will help understand the situation.

- a) Random storage of raw material in scattered and in unprotected conditions in order to save in terms of storage cost,
- b) Inadequate sorting of rags, waste hessian and waste paper.
- c) Inadequate use of cooking chemicals without allowing increased cooking time.
- d) Improper dosing of sizing and other chemicals in terms of quantity as well as sequence of addition.

Many such examples can be given but it will suffice to tell this forum that few small units which have taken adequate measures to counteract such problem have shown encouraging results.

#### **INADEQUATE PROVISION FOR EQUIPMENT AND THEIR STANDBY**

The problem can be seen in the light of overall economic structure of small paper units. Right from the stage of conception, the most irksome problem that is faced by the project is the capital cost in relation to its scale of operation. Often

unwarranted economising is insisted or attempted by entrepreneurs against the basic features of the project resulting into problems of operation and causing increased downtime of production. To reduce the cost of the project, even after the finalisation of the project cost, implementation is not done as per the requirements in the project for the reasons best known to the project management. This results in long term repercussions in term of operational efficiency, product quality and overall economics.

For instance few areas where indiscriminate economising is often done are:

- a) Digesters : Necessary number of digesters for cooking is not provided
- b) Breaker Beaters : Due consideration for downtime and overall cycle is not given,
- c) Boilers : Insufficient provision of boiler capacity keeping in view the peak load requirements.
- d) Sheet Cutter : Inadequate provision made results in machine stoppage and hence poor capacity utilisation.

However, there has grown a general awareness about these problems in recent past and steps have been taken to rectify the same. It is therefore of paramount importance to take care of adequate provision for equipment and their standby in the project cost and in implementation.

#### **INADEQUATE INVENTORY OF SPARES**

Apart from the provision of standby, it is quite important to keep necessary inventory of spares to match regular wear and tear and emergency situations. Economising is often attempted at in this area by many small units which results in increased down time and hence poor capacity utilisation.

#### **LOCATIONAL INCONVENIENCES**

More often site selection of a small paper unit, is guided by following factors:

- (a) Whether the site is in a backward district to be eligible for concessional financing; and
- (b) Cost of land.

Many important aspects like transportation costs of raw materials and their landed costs at site,

basic infrastructure like roads and public transport proximity to residential areas are often neglected at the time of site selection. A total approach, considering all influencing factors, is seldom taken and as a result some persistent bottlenecks are created.

In continuation to the above, locational inconveniences also have a human side. It has been seen in actual situations that many competent personnel are either not inclined to join such mills due to lack of basic facilities like transport, education for children, detachment from civilisation etc. or migrate to other places of work before making any substantial contribution. This is thus the picture in most of those units which are far away from residential areas.

Although a careful selection of site can go a long way in overcoming many such long standing problems we would take this opportunity to suggest the following. The small paper mills being highly dependent on agricultural residue, it would be more worth-while to revise the backward area concept, to be given to industry itself and not to specific areas.

#### **HIGH COST OF PRODUCTION IN ABSENCE OF CHEMICAL RECOVERY**

This problem, which is responsible for the big difference of production costs between large and small mills, has been discussed various times in various situations. We shall not dwell over this problem here in any great detail. It is felt that there is an urgent need to develop a more economical method to recover the precious alkali to suit the economics of small units in a joint effort of paper industry personnel and equipment suppliers.

#### **IMPROPER SELECTION OF EQUIPMENT AND POOR MAINTENANCE**

Following factors are normally recommended to be followed selecting equipment:

- (a) Initial cost after meeting desired specification:
- (b) Operating expenses:
- (c) Maintenance Costs:
- (d) Delivery Period; and
- (e) Reputation of the Supplier.

Unfortunately it has been observed that above guidelines are mostly not adhered to by small units while selecting the equipment. The main consideration has been the low cost alone irrespective of whether the specifications and designs are properly

met or not. More often an open approach is not taken and order is placed for equipments, which turn out to be liabilities on long run. Often the suppliers are selected by entrepreneurs on the basis best understood by them who often turn out to be poor not only in quality but also in after sales service.

It is therefore, suggested that equipment procurement should be done strictly as per specifications to meet the requirements of the project.

#### **FREQUENT POWER CUTS AND TRIPPIINGS**

For the small to medium units, this problem has been a constant source of irritation. Whereas most of the big units mostly suffer the worst. Their economy of scale does not always permit them to opt for partial power generation and as a result they find no alternative, but to suffer. Possibilities of captive power generation has been discussed later in this paper but the same is not possible for units below 30 TPD capacity.

It is therefore, quite essential to review the power situation and past records at the time of site selection and state electricity board be thoroughly briefed about the nature of operations in paper mills to minimise the downtime and loss due to the frequent power interruptions.

#### **LACK OF SOUND TECHNICAL CONSULTANCY**

Time and again different agencies have discussed the role of consultants in paper units. To serve small and medium size industry, consultants have to gear themselves up for providing inplant services and impart practical approach to problem solving and provide them the experience in paper mill planning. Big units can afford and often have their own cell of project personnel to develop the schemes for new installations or expansions. Contrary to this, small units are solely dependent on the consultants assistance at various stages like feasibility study, preparation of loan application, detailed engineering etc from an organised and well qualified agency concerning all aspects of the project engineering. The nature of a consultancy organisation should, therefore be such that it can give total engineering services to take care of all interrelative factors that affect the performance and economics of the project.

However in end-effect it is the managerial capabilities of the promoters which can deliver the best results and the support of consultancy would only help them perform their function more effectively.

Till now various problems were discussed that are affecting the small units. Apart from the factors that can be readily brought under control, there exists some long standing problems which need further investigation and can only be solved by continued effort over a long period. These factors are:

1. **Possibility of Captive Power Generation :** Possibilities of captive power generation has been discussed earlier in IPPTA Seminar for small units of 30 TPD and above have been found economical. The same is being implemented by a small mill to take care of 1500 KW load depending on the size of the mill and it's steam consumption.

2. **Possibility of Chemical Recovery :** Apart from the necessity of savings in terms of rising costs, recovery of caustic in small units has another utility in decreasing the load on effluent treatment plant due to lower B.O.D. and C.O.D. of mill effluent. Economics of a plant for soda recovery can therefore be seen for it's total end effect and an unit of even 60-65% efficiency of recovery using a smelter may be viable for mills having more than 20 TPD of straw pulping.

3. **Possibility of Low Cost effluent treatment :** It has been found that the cost of effluent treatment per ton of paper plants to meet the standards laid

down by I.S.I. and pollution control boards, is very high compared to big units. This is due to two factors :

(i) Absence of soda recovery resulting in high B.O.D. and C.O.D., and

(ii) Economy of Scale.

As a result most of the mills seldom realise the standard laid down and try to make compromises.

It is suggested that there should be two different standards of treated effluent i.e. one for mills with soda recovery and the other for small mills without soda recovery. Since the small mills are already losing heavily on account of having no soda recovery this relief could be useful for them. In case stringent standards about the treated effluent are found to be necessary for ecological reasons, some kind of relief may be provided to the mills of later category in lieu of high cost of such treatment.

#### ACKNOWLEDGEMENT

Authors express their gratitude to Dr. S. L. Keswani, Managing Director, Chemprojects Design and Engineering Pvt. Ltd. For his encouragement and valuable guidance throughout the preparation of this paper.