

## OUT LOOK

### PULP AND PAPER MACHINERY DESIGN AND MANUFACTURING PROBLEMS AND PROSPECTS

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Knowing fully well that the task of delivering the Key-note address to this distinguished and Knowledgeable audience is a formidable one, I had strong reservations about the wisdom of the IPPTA Executive Committee in selecting me to deliver the key-note address. Although I know too well my limitations in doing full justice to the poignant theme mentioned earlier. I had reluctantly agreed to accept the proposition because of relentless pressure from the IPPTA Executives.

The theme for this seminar, in all honesty, has a very special significance for me personally, I have been in the business of pulp and paper machinery design and manufacturing for the past four decades or more. I am also the Chairman of the Indian Paper Machinery Manufacturers Association—a body representing almost all the leading paper machinery manufacturers in the country. There is thus dual responsibility on my 'weak' shoulders. I am not at all exaggerating when I say with humility that during my long years in the business of pulp and paper machinery manufacture, I had to face hundreds of difficult and diverse problems and have experienced many ups and downs, faced numerous successes and failures, witnessed alternate periods of booms and depressions and seen uneasy ebbs and vigorous tides. You are well aware that the paper industry is cyclic in nature. At times deep depression is followed by unprecedented boom or vice versa. Unfortunately, for the manufacturers of paper and paper machinery alike, the bad times have out-stripped good times by a wide margin, with the result that the industry at present is far from being in the pink of health.

The paper machine manufacturing was not a new industry in Europe or Japan, but in India there was no manufacturer of paper machine till independence of the country. The Government of India realised the necessity of developing paper industry and so also the paper machine manufacturing industry and as such the paper

machine manufacturing industry was sponsored by D.G.T.D. in the year 1950. A number of manufacturers came forward in this new line of industry and many of them made foreign technical and financial collaboration for production of most modern machines in the country. The paper industry being a capital intensive industry, the machinery manufacturers faced enormous difficulties to sell their machines on cash basis against long term credit offered by foreign suppliers. The paper mill entrepreneurs explained that by importing machineries on credit they could solve the problem of capital intensified project. As a result, the expected demand in the country for pulp and paper machineries was lagging.

Although in the subsequent years, the Industrial Development Bank of India was created to make massive investments in pulp and paper machineries it could not create enough demand for paper machines in the country. Most of the machineries which came from abroad in the last ten year were either completely or partially imported on credit. Consequent to major policy decisions by the Govt. of India, since 1974 second-hand machines from abroad have completely captured the Indian market. In fact, India has become a dumping ground for vintage paper mill machineries.

The most acute problem faced by the paper machinery industry during the last few years, has been the import of over 100 (one hundred) second-hand paper machines of old vintage. This has resulted in the 'starvation' of the indigenous paper machinery. It is not surprising that a large majority of the units in the small and the medium sector today are 'sick' and/or fighting for their survival. The capacity utilisation in the industry has dropped from over 80% some years

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back to less than 60% in 1984-85. This is the direct result of the setting up of large number of paper mills in the medium/small scale sector based on imported second-hand machines of very old vintage.

### The Changing Face of the Industry

A sheet of pulp or paper may look essentially the same as it did, say, 30 years ago or more, But the technology has, meanwhile, undergone a sea change. For instance, in early 1950s, the maximum speed of a newsprint machine was 500 meters per minute; now it is 1250 meters per minute. During the same period, the pulping techniques have witnessed drastic changes. Stone-ground wood pulp has increasingly given way to thermo-mechanical, chemo-thermo mechanical or Pressure Ground wood pulping. Batch digesters have been replaced by continuous digesters and displacement bleaching is taking the place of towers and washers in new large projects. Twin wire technology has been introduced to cope with the high speed and production on the Fourdrinier machine. Revolutionary improvements and instrumentations in the approach flow, head box and press sections have taken place in recent years to save energy and to increase production and improve paper quality. Low pressure drop centrifuges and high consistency screening have been introduced in recent years for the purpose of energy conservation. Perhaps the most significant development has been the introduction of computerised micro processor system. The new system will help improve the quality of paper, ensure fibre economy, optimise energy and chemicals consumptions and indeed, improve the whole mill economy. Equally noteworthy have been the changes in the recovery arena and as well as in the paper finishing house equipments.

All the leading pulp and paper machinery manufacturers in India had entered into technical collaboration & know-how agreements with renowned machinery manufacturers abroad. They are, therefore, fully geared to offer 'state-of-art' technology in most areas with advanced design parameter. Moreover, indigenous machinery manufacturers have better appreciation of the Indian environment and local conditions than foreign manufacturers whose practices are, by the same token, attuned to the circumstances prevailing in their respective countries and are based essentially on the use of soft wood as fibrous raw materials. On the other

hand Indian machinery manufacturers have greater experience in the areas of the employment of short fibred agricultural residues/annuals as principal fibrous raw materials. It will perhaps be no exaggeration to say that India today has got the largest number of paper machines based on straw/bagasse as principal fibrous raw materials.

Research & Development (R&D) will continue to play a vital role in providing basic knowledge for future technical developments, to throw light on what is technically feasible and help mills avoid wrong investments in equipment and processes and to save energy.

This statement is true of applied as well as fundamental industry oriented research. It is in the interest of the indigenous pulp and paper machinery manufacturers to lay great stress on R&D activity in their respective units. They should also extend a helping hand to the existing research institutions for joint research, which would help them reduce their R&D costs. Cooperative research should be looked upon as an inexpensive way to get valuable results. Paper Industry and research institute should work closely with the paper machinery manufacturers to solve many of their common problems.

Clearly, the raw materials are the main area where the industry needs to innovate. They are the biggest cost element for most units in the country. Utilisation of short fibre raw materials (such as straw, bagasse, hard woods, jute sticks, etc) increased use of contaminated waste paper, high yield chemo-mechanical and thermo mechanical pulping, higher proportion of fillers in paper, should dominate research and development efforts in the industry. Paper Machines of the late 80s and early 90s should be designed as to use a higher proportion of short fibred pulps/waste paper pulps at higher machine speeds and with higher ash content and lower basis weight. We should jointly endeavour to achieve major breakthroughs in all these areas. While making fuller use of the forest resources is clearly a long term objective, making better use of the existing wood/bamboo supply is a goal which every pulp/paper mill should consider. New pulping techniques evolved in the last few years and still under development offer tremendous opportunities in the relatively near future. The CFM pulps seem to offer the best of both the worlds as far as many grades of printings/writings, tissues, are concerned. These pulps give yields of close

to 88-90% compared to 45-50% for chemical grades. At the same time their brightness can be above 80° (as high as 85° is a possibility) using hydrogen per-oxide bleaching technique. The new processes also help minimise the environmental problems.

The high yield bagasse pulping process both in the use of newspaper/writing and printing paper can be achieved in continuous/batch type digesters. The addition of moist and wet 'depithing plant has already been conceived and installed in the country. More such units are expected to be installed in the near future, as the same promises bright prospect, particularly for medium paper industry of 40 tonnes capacity and above.

New technology in the use of fillers can also provide a huge bonus within the next few years.

### **The Indian Pulp & Paper Machinery Manufacturing Industry**

It is with great agony that I have to refer to the unenviable status of the indigenous pulp and paper machinery manufacturers. Practically all the leading manufacturers in the country have on-going technical collaboration agreements with the leading machinery manufacturers abroad, for the manufacture of a broad range of equipment. Moreover, some of the indigenous machinery manufacturers have developed & acquired considerable knowledge and expertise over the last few decades and are now fully geared to take on orders for design and manufacture of integrated paper mills of any capacity upto 300 tpd. Unfortunately, however, the machinery manufacturers in India for some reasons or other, have not been able to earn the confidence and patronage of a fairly large section of the paper mill magnates, despite best efforts to the contrary. In this connection, it should be appreciated that only by making and supplying large paper mill units, the indigenous machine building industry will be able to gain the requisite expertise and experience and win the confidence and goodwill of the entrepreneurs. The most serious problem faced by the machinery manufacturers in India has been the lack of sufficient orders to keep them even moderately busy.

It is my honest feeling that certain paper companies in India have a fancy for imported machinery. It is high time that they developed a bit of 'swadeshi'

spirit. During the last 10 years orders have been placed for 10 or so new paper machines with unit capacity of 100 tpd and above. It is extremely sad to say that with a few exception, most of the orders were bagged by overseas manufacturers. To the best of my knowledge and belief the indigenously manufactured paper machine is performing as good as the imported machines which have gone into production in the last 10 years. Despite the splendid performance of the indigenously manufactured paper machine, the paper mill owners/promoters have shown inclination to imported machines & are unwilling to opt for locally made paper machines. This attitude on the promoters is impossible to justify and hard to understand.

I am constrained to raise this matter as the theme of this seminar is 'the problems and prospects' of the pulp and paper machinery manufacturing industry. I sincerely hope that my plea to the paper industry entrepreneurs will not fall on deaf ears and will be given due and sympathetic consideration by the Government of India and the promoters alike. Whereas the indigenous manufacturers of cement, sugar, boilers, textile, automobiles, electrical, etc. machineries have made strident progress and recorded impressive growth in recent years, the paper machinery manufacturers have stagnated because of various reasons. I am not saying that the indigenous machinery manufacturers are blameless. However, it is my honest belief that the Government of India and the paper industry should own the bulk of the responsibility for the present plight of the indigenous machinery manufacturers.

On behalf of my fellow machinery manufacturers, I can categorically state that we are determined to improve the quality of machinery being made and supplied by us. At the same time it will be our endeavour to ensure timely delivery of the equipments. As far as the price factor is concerned, I am convinced that we are fully competitive. It has always been our practice to import from reputed manufacturers abroad specialised and critical raw materials and components/items of equipment such as swimming/NIPCO rolls for the presses and calenders, suction rolls, M.G. + Chromium Cylinder process control equipment and critical components for deculators, sheet cutters, rewinders, suction former, coating heads, to name only a few. This has been our policy

and will continue to remain so in the foreseeable future. I can declare with all the emphasis at my command, and not for the sake of rhetoric, from this sacred platform that we shall never indigenise at the cost of the quality. While it has been our policy to encourage indigenous components suppliers, it has never been done at the cost of the quality or serviceability and certainly not for any saving in our cost of production. In his speech at the 88th Annual General Meeting of the Indian Paper Makers Association held at Hotel Maurya Sheraton, New Delhi, last May, the Chairman of the Association Dr. S. C. Bhattacharjee had pointedly and passionately stated that "Most of the existing paper units are extremely old and are in dire need of modernisation and technical upgradation. This requires substantial capital investment. On behalf of paper machinery manufacturers I would like to assure paper mill managements that we shall heartily welcome any specific enquiries in this respect from any large, medium or small paper mill and we would be only too happy to undertake the challenging task on a turnkey and time bound basis. The proposed investment will give a quick payback as not only there will be increased paper production but substantial benefit will be available in the form of significant cost reduction on the entire production. If I may be permitted to say so, the paper industry in India has not paid adequate attention to the indispensable need for modernisation, revamping and updating of technology. Some of the machines even in the large integrated units in the country are in a shockingly poor condition. Even now it is not too late to embark on a properly conceived and carefully formulated modernisation programmes. I earnestly plead with the Govt. and the industry that the time has finally come when a separate modernisation fund for the rehabilitation of the industry should be created I would like to point out to certain glaring inequities in the existing duty structure which places the indigenous machinery manufacturing industry at a serious disadvantages. Import duty on complete machines was only 45% under project imports while that on components needed by indigenous manufacturer was in excess of 85%. Besides, indigenous manufacturers had to bear 12% excise and 4% sales tax from which imported machinery was exempted.

#### CONCLUSION

Before I conclude, Ladies and Gentlemen, I would like to emphasise that :

- (a) The paper industry involves complex technology and therefore, precision and perfection with modern technology must be incorporated to make any new project a success.
- (b) The paper industry is a capital intensified industry and also power consuming industry. Ours being a developing country is in short of both power generation and capital for investment. Considering these points, adequate profitability in the scheme should be the prime consideration.
- (c) The conventional raw materials for paper making like coniferous wood/bamboo are diminishing rapidly. Our country is not fortunate of having suitable climatic condition for mass scale afforestation of such raw materials. Therefore, utilisation of the agricultural residues and annuals, by adopting latest technology and equipments, will be the future major raw materials for large, medium and small size paper mill.
- (d) The present trends of using imported raw materials in the paper industry appears to be a stop-gap arrangement. No country can afford to continue import of their raw materials specially for a country like India, where large quantity of agricultural residues are available as raw materials. The country has already demonstrated their capability to produce good quality of pulp from such raw materials. Therefore, in the near future, when the Government of India will restrict their import policy for pulp, it will be obligatory on all existing and future paper mills to use more and more indigenously available raw materials.
- (e) Modernisation and renovation should be a continuous process. A massive capital investment is called for to bring the capacity utilisation back to its earlier level of 90% plus. This will be far more economical than creating new capacity. It does not, however, mean that no new units should come up. All I wish to stress is that there should be a judicious balance between setting up new plants and the modernisation of old units
- (f) The paper industry's ability to earn profits and generate funds for undertaking massive expansion/modernisation programmes has been seriously eroded and impaired in recent years. As such the required funds for the execution of the expansion/renovation programmes will have to come from

the financial institutions and that too on concessional terms.

- (g) The paper machinery manufacturers are, by and large, well equipped to meet the present and future requirements of the paper mills both in the areas of modernisation and setting up of new units of large/medium/small sizes. Any unit based on agricultural residues/annual grasses as principal raw material with a capacity of 50 TPD has a very good profitability and future. Four such units can be installed every year. Besides one unit every year of 150/200 TPD capacity based on hard wood, bamboo and agricultural residues/annuals can also be installed economically with indigenous machinery and know-how.
- (h) It is my personal contention that paper machine building industry and paper making industry are

complementary to each other. Unless there is a close cooperation between the two segments of the industry, total development and fulfilment of objectives will be impossible. If there is no paper machinery manufacturer in the country and every bit of machine is to come from foreign country, then you can well imagine the plight of the paper industry. The machinery manufacturers require continued cooperation, patronage and support from the paper industry. On behalf of the Paper Machinery Manufacturers' Association, I once again assure you that all your cooperation and support will be reciprocated amply.

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