

# efforts at import substitution

R. N. JHAVAR \*  
N. S. RAMAN \*

*The role being played by Paper Machinery manufacturers in India is discussed and various difficulties found by them are enumerated. Stress is laid on the importance of co-operative efforts between Government, Industrialists and Technical People for reducing imports in paper trade.*

Import substitution is a present day vital question for every industry in India. Since manufacture of machinery for the Pulp & Paper Industry in any appreciable extent has been in existence only for the past 5 years not much headway has been made in the direction of import substitution, the main reasons being :

- (a) The Pulp and Paper Industry machinery itself is tailor made to the specific requirement of the client and the modern trend is to supply a very sophisticated machinery with as many labour saving devices as possible making the problem complicated.
- (b) For various reasons well known the indigenous machinery cost much more than the corresponding imported plant and therefore the buyer is always tempted to import.
- (c) The delivery offered for Indian made machinery is often protracted as compared with imported machinery for lack of facilities.
- (d) The Indian machinery makers are not easily in a position to offer deferred terms of payment often asked for by clients as are now available for imported machinery under foreign aids and credits.
- (e) The lack of costly machine tools at the machinery manufacturers for the sophisticated jobs required.
- (f) Lack of complete technical knowledge and know-how in regard to intricate manufactures.
- (g) The limited market potential in the country for such large scale repetitive manufacture to justify the heavy investment on machine tools.

The above is borne by the fact that out of 7 large scale and 8 small scale pulp and paper machinery manufacturers only machinery worth 149 lacs has been produced in 1965 as against a capacity of Rs. 605 lacs (vide Indian Pulp & Paper of July 1966—Page 29).

Being a capital intensive industry with its high cost of manufacture and the low earning profits mainly as a result of the ceiling in prices is not making the progress expected in the plan periods. The devaluation of the rupee has made the problem worse. As the demand for paper and paper boards is closely linked with the programme of enhancement of educational facilities and improvement in the rate of industrialisation and the living standards, what the demand for paper and paper boards would really be at the end of the Fourth Plan period is anybody's guess. At the existing very high cost of living and the lower earnings of the common man, the problem is really one of buying power.

In spite of such draw backs, looking at the annual increase in demand for the past three plan periods the target for the Fourth Plan has been fixed by the Development Council for Pulp & Paper at 1.2 million tons including newsprint of 30,000 tons. Since the total installed capacity is already approximately 6,50,000 tons there will be a gap of nearly 5,50,000 tons to be filled up to reach the Fourth Plan target. This would involve in a total machinery supply of approx. Rs. 160 crores of which imports alone at the present devalued rate would be approximately Rs. 65 crores. This is what we have to save now.

Under the present high manufacturing cost in our country particularly for the pulp & paper industry import substitution would not bring any relief in

---

\*M/s Utkal Machinery Limited, Kongsbahal, Orissa.

## EFFORTS AT IMPORT SUBSTITUTION

the cost of machinery to the buyer. This can only be achieved when the much needed non-ferrous metal abundantly used in the manufacture of pulp & paper machinery is available in our country at cheap price and the machinery itself are standardised.

The problem is worsened since the present market demands an ever increasing variety of papers which in turn necessitates an equally broad scope of manufacture on the same paper machine resulting in very special parts to be incorporated.

The Utkal Machinery Limited at Kansbahal with its partners and technical collaborators as Messrs. J. M. Voith G.m.b.H., the reputed pulp & paper machinery manufacturers in West Germany has been supplying the needs of the industry for the past 2 to 3 years. With the technical know-how and facilities available, Utkal is endeavouring their best to reduce the imported components in the following ways :

- (1) Alternative raw materials in place of non-ferrous, stainless steel and special alloy steel..
- (2) Indigenous substitutes for imported components.
- (3) Increasing the range of production.

### (1) *Reduction in import of Raw Materials :*

One of the main difficulties in achieving this target which is being faced by us, is the procurement of raw materials—such as non-ferrous, stainless steel and special alloy materials, etc. A file note on discussions from the Secretary, Ministry of Industry states that a tough and abrasion resistant type Nylon is being used by the pulp and paper industry in Shanghai, China as a substitute for non-ferrous metals—such as copper and brass. The note also further stated that the existing efforts to substitute use of non-ferrous metals by other materials was very inadequate and a drive should be lodged to step up the same especially in the above line.

Further it was indicated that phosphor bronze wires for the paper machine are being or can be replaced by plastic wire as in some European countries.

With the above information, we have since then contacted our collaborators, Messrs. J. M. Voith G.m.b.H., who in reply stated that there are indeed many efforts made in the paper industry to replace metals and conventional materials by plastics. A brief description of the probable use of various similar materials and their properties are furnished below which will be of much interest to all of us.

### *Polyamides :*

It should be mentioned that Nylon is by no means the only plastic material under consideration. Although Polyamides like Nylon and Perlon combine extremely high strength with excellent wear resistance, they have disadvantages which considerably restrict their application. Polyamide has a high rate of swelling in the order of 6% when wetted. Because of this swelling and of a tendency to some plastic flow under stress its dimensional stability is poor and therefore its use is restricted to applications where these large deformations can be tolerated. For instance a bearing bushing made of Nylon will swell when wetted and lock the shaft. Wire screens woven of Polyamides will stretch by 2—4% when wetted and another 2—3% when tensioned. This makes the application of Nylon screens for dandy and cylinder mould covers all but impossible.

### *Polyethylene :*

It is cheap and its physical properties are not as good as those of Polyamide and Polyester. Because of a low co-efficient of friction it has been successfully applied as suction box cover (Robalit etc.)

### *Polyurethane (Vulcollan).*

It is a soft rubber like compound of extremely high wear resistance. It is used for suction box covers and has a higher friction co-efficient than Polyethylene but much more wear resistance. This material has a tendency to decompose, especially when subjected to hot water or steam (above 70°C).

### *TFE-Fluorocarbon (Teflon)*

This material has limited strength and wear resistance but excellent chemical and heat stability, good self lubricating properties when sliding over metals and self cleaning repellant surfaces. It can not be bonded to other metals.

## EFFORTS AT IMPORT SUBSTITUTION

With the exception of Polyvinyl Chloride most plastics have a co-efficient of thermal expansion 5—10 times as high as metals, their dimensional stability is poorer, their hardness is lower, their thermal stability is low (except Teflon), their chemical resistance is better than that of most metals.

### *Comparison of prices (1961) :*

(raw material unfabricated)

Metal		Price US \$ per Kg	Price US \$ per dm <sup>3</sup>
Phosphor Bronze	...	1,65	14,7
Brass	...	1,10	9,3
Aluminium alloy	...	0,62	1,67
Steel	...	0,09	0,7
TFE—Fluorocarbon	...	7,1—11	15,3—23,6
Polyamide	...	2,15—5, 90	2,40—5, 50
Polyurethane	...	3,0	3,7
Polyester	...	0,57—0,86	9,73—1, 10
Polyethylene	...	0,63	0,62
Polyvinyl-Chloride	...	0,6	0,6

In our opinion low price plastics have a chance to replace metals where accurate dimensional stability is not necessary but chemical resistance is needed, especially for small parts or low pressure pipes. Where structural strength and high corrosion resistance is needed, plastic covered steel parts can be used (plastic lined tanks, plastic covered steel rolls etc.).

As we can see from the above the use of plastic wires is advancing. But they are twice or three times expensive as of bronze wires but on some applications can yield 4—6 times the operating life of metal wires.

Stainless steel particularly in Bleach washers and pumps can be substituted by proper rubberlined parts but we are unable still to locate suppliers who can take up the job to our given specification. Therefore, it is absolutely necessary that the rubber manufacturers and plastic industry should also have to extend their efforts in developing these new lines. Except to the extent of rubber

lining of vessels and ebonite covering of rolls etc., we are unable to get any proper specification in the newly developed field. Even for the rubber lining of felt rolls, press etc., the rubber lining manufacturers are not able to advise us the correct specifications with a guarantee of performance.

We have been constantly looking for a substitute for stainless steel and in our opinion, except in such cases where it is a must for stainless steel, we can easily go in for Ni-hard castings. Of course, the Ni-hard material is rather harder, considerably tough, and unmachinable but however, a specific composition like Ni-hard iron type 4 can suitably replace stainless steel, and has an improved corrosion resistance than stainless steel. A considerable quantity of chrome and nickel would be required for these castings but however not to the extent as of stainless steel. This we are slowly trying to adopt and are hopeful for better results.

For parts made of special steel though the necessary engineering skill and fabrication facilities exist in the country, the shortage of special alloy steels is holding up indigenous fabrication. In India, we have sufficient steel making capacity and facilities to produce wide variety of special steels required by the paper and chemical industries, and our Government is also making all its efforts to produce alloy steels. A good beginning has been made by putting up a plant at Durgapur/Bhadravati (Alloy Steel Project) and we hope, we shall overcome this difficulty in the very near future.

### *(2) Reduction in Imported Components/Equipment*

We are making every effort to reduce the total required components to be imported for the manufacture of various equipment, thus extending our own ability to produce more, finding out suitable substitutes. We have been able to achieve this in our stock programme of manufacture of the following :

Chipper  
Vibration Screen 500 N & 1000 N  
Vertical Screen size I  
Centrifugal Screen, IIC  
Centrifugal Pump, No 15/20

## EFFORTS AT IMPORT SUBSTITUTION

Pulper, V-4  
Refiner, R-1 and R-2  
Propellers, 850 M, 600, 700, 850 & 1050 P  
Sand Trap  
Tube Separator, Size II & III  
High consistency purifier Vacuum Pumps,  
Size 9  
Centricleaners and  
Deflakers

Further to the above, which are being manufactured under our stock programme, we have successfully executed various orders for the drying cylinders which can equally be compared with the imported cylinders for quality and finish; also Blow Tanks : Digesters, Thickeners, etc. for the major orders which are already under progress.

### *Boiler quality Plates—*

For the manufacture of Digesters, it is inevitable to have the required boiler quality plates. We have been facing much difficulty to procure this material in India and under circumstances, it is important that Government should help us to make available the boiler quality plates indigenously.

### *Valves & Fittings—*

When a complete project is to be executed from our end, we are unable to locate suppliers, who can supply suitable valves and fittings for steam liquor and other chemicals and particularly for Digesters, Liquor Pre-heaters, etc. which are still to be imported by us.

### *Instrumentation—*

Regarding instrumentation for the paper industry the future seems to be quite bright since many have come forward and have actually made an appreciable progress to meet the requirements.

### *Antifriction bearings—*

For the various equipment which are manufactured by us, the main difficulty which we face is the procurement of required antifriction bearings. For most of the equipment we are compelled to import the same, since they are not manufactured indigenously. Therefore, it is imperative that with the

Government's help the huge amount of foreign exchange now spent can be diverted to expand the bearing industries and thus help us to achieve our aim for indigenous supply and save foreign exchange.

### *(3) Increasing the range of production :*

It is also one of our major aims and also should be of others to increase their range of production so that when a complete pulp and paper project is undertaken, it could be easily met with indigenous sources. At present when a complete project is taken, the client has to depend on complete import of certain equipment under direct supply.

We have in our programme to expand our manufacturing capacity by about 30% which will be completed in the next 18 months.

### *Projects on Turn-key basis—*

One of the major problems that obstructs the growth of indigenous fabrication of machinery and equipment is the shortage of intermediate and developed designs in our machinery manufacturing industries. This has seriously influenced the country's capacity for accelerating industrial growth.

This problem, we feel can be overcome by entering into collaboration agreements with foreign machinery suppliers so that designs to suit Indian conditions and manufacturing capacity can be adopted.

It will not be out of place to mention that the progress of the indigenous manufacture has been painfully slow and will continue to be so unless the drain of foreign exchange by imports of machinery and equipment is strictly disallowed by Government authorities and all facilities afforded to the manufacturers.

Even where foreign know-how is a must on a given project, the requirements have to be carefully assessed and the project agreements closely scrutinized. This will ensure that there is a real transmission of know-how and the indigenous material/equipment are utilised to the maximum thus encouraging the local machine builders.

## EFFORTS AT IMPORT SUBSTITUTION

### *Present scope of manufacture—*

While we take an overall view of the present scope of manufacture available for the paper and board industry it will be seen that none could undertake the manufacture of big paper machines, such as—supplied by Messrs. Beloit to Messrs. Orient Paper Mills Limited, Amlai. This is due to the fact that the Government originally fixed the economic size of a mill at 50/60 t/d and accordingly the costly machine tools were installed. But now the economic size recommended is for 100 t/d and since for obvious reasons only 1 large paper machine would be preferred by the purchaser the manufacturers can not fabricate them because they are beyond the size of their machines.

We have also not made a good start for the manufacture of machineries for the subsidiary plants, such as coating plants, hard board plants, rayon grade pulp plants and finishing house equipments etc.

Therefore, it is stressed that the Government authorities should look into possibility to grant necessary licences for entering into these new fields so that we can achieve slowly our aims.

### *Export promotion—*

By entering into new fields mentioned above and by the encouragement to be given to the indigenous manufacture of machinery and equipment, Indian Engineering can very well enter into Afro-Asian markets. The immediate effect of this large scale import substitution continued with a sincere effort on the manufacturers with all their skill and experience would develop into an export-

able market for such machinery. Indian engineering will thus help the country's export programme by enlarging the scope of the export market for paper machineries and capital equipment. India is even today in a position to offer complete plants for textile, sugar and cement industries. Therefore, paper industry also can effectively support the export programme by providing process know-how and design to the extent that are available in the country.

Therefore it can be seen from all the views that the import substitution is rather a continuous process which demands help from the Government, our industrialists' initiative, adaptation and implementation of new devices.

In such a developing country like India, the aim of import substitution can not succeed unless there is active participation and maximum co-operation between Government, industry, engineers, process experts, who are the responsible partners in the country's economic progress. It is to be stressed that the Government has a major share of responsibility in this and should take vigorous steps in implementing the substitution measures before self-reliance can become a reality.

We now thank the President of our Association for having given us an opportunity to put before our aims and views in such an important gathering and we wish that all of us go hand in hand to achieve our targets without hurdles.

Pulp & Paper Division, Utkal Machinery Ltd.,  
Kansbahal