

# A profile of education and training programme for indian pulp and paper industry

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## ABSTRACT

With increased demand and varied uses of paper, development of technology and the growing number of Pulp and Paper Mills in India, there has not been corresponding education and training facility for Technical personnel. More number of training Institutions, courses by correspondence with patronage of IPPTA, introducing Pulp and Paper Science as one of subjects in B. Sc. and M. Sc. of Indian Universities and refresher courses according to the need of developing technology, the need of technical personnel in the industry can be met and more and more number of talented personnel will be attracted towards the profession.

Paper can be considered as one of the most essential commodity of the civilised world, a medium for expression, art, knowledge, communication, preservation of records of culture and history, besides hundreds of other utility products. There is no comparison of diversity of properties paper exhibits which any other commodity can. Just as the evolution of mankind has a long chain of anthropological development, evolution of paper has its own interesting and intricate nature covering plant evolution and scientific development through time.

The mystery of the development of plant fibre and its structure, the major base constituent of paper, is the one which man is almost unable to penetrate through. So also is the complex nature of various operations, processes and application of different branches of science, technology, engineering and skill in the manufacture of paper.

The above prologue in short is good enough to apprehend the intricacy, magnitude and complex nature of the subject topic. We shall designate all the branches of science and engineering by the word technology though various other disciplines like business management administration, legal aspects, public and political relations and other branches of humanities are not less important in the pulp & Paper venture.

Prior to 1960 there were very few institutions imparting education in Paper Technology like Forest Research Institute, Dehradun, Handmade Paper Research Institute, Poona and some universities partly covering the course in their post-graduate degrees M. Sc. or M. Tech. under the head cellulose

chemistry or Technology. There has been phenomenal growth in the paper industry in India after independence which can be visualised from the total production capacity increase from 1.4 lakh TPA in 1950 to the present level of about 28 lakh tonnes and the number of mills increased from mere a dozen to about 290 mills including small, medium and big mills with production range of 1500 to 100,000 Tonnes per annum. Consequently, there has been corresponding rise in the manpower employment. In order to generate the requirement of technical personnel, a few institutions devoted to Paper Technology came into existence. Major ones of these are :

1. The Institute of Paper Technology Saharanpur affiliated to Roorkee University : (i) Post-graduate Diploma in Pulp and Paper for science graduates and (ii) B. E. (Pulp & Paper) degree course.
2. Laxminarayan Institute of Technology affiliated to Nagpur University : B. Sc. (Tech). degree in Cellulose Technology.
3. Bangurnagar Degree College Dandeli affiliated to Karnatak University : B. A. Sc. (Pulp & Paper Science) a 3 1/2 years degree course including 6 months' training programme in a large pulp and paper mill. Recently, this course is upgraded to a 4 years' degree course like other professional, technical or engineering degrees.

The degree holders of the above institutions are generally absorbed in senior supervisor or shift-in-charge level in pulp and paper mills. debated

The paper engineering degree holders are sometimes taken in the planning, development or design departments.

There are also few polytechnic institutes like—

- (1) Jayprakash P. T. Inst., Yamunagar
- (2) Govt. P. T. Inst., Bhadravati
- (3) Seshasayee Institute of Technology Tiruchirapalli

Who offer 3 years' Diploma course with prequalification, S. S. C. or xth standard secondary school education. The P. T. Diploma holders are normally employed at operators of junior supervisory level.

There are also some external courses such as City and Guilds of London Institute for operators already in service to enhance their technical knowledge and utility. The examinations are conducted at certain centres overseas like V.J.T.I. Bombay. The city and Guild institute have abolished their earlier Technology courses which have now been converted to residential courses conducted in London. There are also some similar courses of Australia which have not gained much popularity in India.

The Technical Association of Pulp and Paper Industry, TAPPI, U.S.A., offers some home study courses in the form of cassettes covering full technology in 3 parts prepared by professionals of reputed institutes/universities. These serve as refresher courses with adequate background to the professionals.

With the new developments in the pulp and paper manufacture with regard to machinery, processes and diversified products India does not have adequate number of Training Institutes with required facilities and faculties. As a result, ambitious persons have to seek opportunities in foreign countries for their higher education, which few persons can afford on account of financial constraints.

For the present, we restrict our discussions to the needs of our country. There are only two institutions offering courses leading to degrees in Paper Technology, one at Saharanpur and the other at Dandeli. As far as the subjects in the syllabus are concerned, they are quite thorough and comparable to other universities abroad. However, the graduates and post-graduate diploma holders do not get adequate opportunities in terms of emoluments and

positions; or they take several years to reach middle management levels and very few can reach executive positions. Apparently, whatever the facilities and faculties available in the institutions, the candidates do not reach the standards desired by managements of large paper mills. The higher level technical positions are occupied mostly by Chemical Engineers of Indian or foreign universities or M.S. or Ph.D. in pulp and paper of foreign universities.

Probably the initial educational background of the students of the Indian institutions and the subject matter learnt are not adequate to the standards required. They also can not acquire higher education for which they have to go abroad or take up additional engineering courses like AMIE, AMIE (Chem) E, AMII (chem) E, etc. which take pretty long time, normally 3-5 years. In spite of acquiring such additional qualifications they are selected as alternatives to regular engineering graduates or foreign post-graduate degree holders. Hence, evidently there is some lacuna in the training opportunities in India. The Indian Pulp and Paper degree holders have no opportunity to get higher training like M. Tech, M.Sc., Ph.D. etc. in the Indian institutions of repute. Thus, we have to think of alternative training programmes to meet the increasing needs of the pulp and paper industry.

The following proposals can be considered :

#### A. B. TECH. OF B. E. PROGRAMME :

The facilities and faculties where required should be strengthened. The intake candidates should be strictly screened. The caliber of the graduates turned out should be upgraded so that they can be accepted by good managements for recruiting to higher positions. The nature of training class assessments, examination standards and evaluations should be more rigorous. The first year of the 4-year professional degree course should be a foundation course covering the desired science subjects and general apprehension of the industry, familiarizing processes and operations, and may also include an overall inplant training programme in a mill. The remaining 3-years may be designed to suit the technical requirements under India conditions as also latest developments in the processes. In the second or third year, a 3 weeks study tour of various mills can be included. The later two years of the course may cover thorough knowledge of engineering drawing, process calculations and design

aspects as also latest developments in the Technology. After the 4-years degree course, a six months industrial practice and projects option may be introduced to expose the students to the real industrial environment and problems to be faced. A professional expert of the institution may be placed in the location of an established mill to supervise, guide and assess the performance of the students, of course with the collaboration and co-operation of the mill management. After successful completion of the practice programme the degree of such candidates may incorporate an additional "Tag" B. Tech (IP)

Such a thorough education will eliminate the vicious circle of not attracting high calibre students to the institutions, and they-students-not getting better opportunities in good managements, even if absorbed with some sort of reservations. Under such circumstances, the preference for Chemical Engineers will be avoided.

The above Technical Institutions or Engineering branches of Universities should have provision for giving higher education such as M. Tech. or M.E. to the above degree holders so that the latter can have satisfaction of acquiring higher level technical education and reach top positions in large mills-pulp, paper, paper conversion, packaging, machine clothing machinery manufacturing etc, without long gestation.

#### B. SCIENCE DEGREE PROGRAMME:

Pulp and Paper Technology also falls in the range of science for processes, research and academics. The industry also requires different cadre of graduates with more slant to science than engineering. The present Paper Science degrees are also not recognised by Central Board of Technical Education. Hence providing M. Tech facilities in the colleges does not become feasible. Because of the lack of post-graduate degree facilities in the Indian Universities for Paper Science such candidates get frustrated due to their inability to acquire higher educational qualifications and eminence in the industrial, education or research fields.

If Pulp and Paper Science is introduced in B. Sc. in the universities of its branch colleges, as one of the three subjects, the aspirations of students can be satisfied. Pure Pulp and Paper science involves branches of science like chemistry, physics, botany; bioscience and mathematics. Hence, a Pulp & Paper

Science degree requires facilities and teaching faculty of all the above subjects, and it is very difficult to start a special degree course only for this science for an institution. These degree holders, in large industries find only secondary status compared to B. Tech. or B. Es and also take pretty long time to reach high positions.

The combination of subjects for B Sc.-with P.P Sc.-with other allied science subjects may be as follows :

- a) P.P Sc., Chemistry, Physics
- b) P.P Sc., Chemistry, Botany
- c) P.P Sc., Physics, Botany
- d) P.P.Sc., Chemistry, Bioscience (Biochemistry or Microbiology)
- e) P.P.Sc., Physics, Bioscience
- f) P.P Sc., Physics Mathematics
- g) P.P.Sc., Chemistry, Mathematics

The above combination of subjects is coherent and useful for application in Pulp and Papermaking processes. The students can be absorbed as supervisors and can rise to middle management level upto departmental heads. They can also be employed in Laboratory, Research, Quality and Process Control, Pollution Control Departments etc. Once such courses are started, Universities can introduce Pulp and Paper Science in M.Sc. in due course and such candidates can have quick rise in profession. Even without P.P.Sc they can also go for other branches of science in M.Sc. in the universities, such post graduates will have wider chances to be absorbed besides in industries, research division, academic line in colleges, P.P. Sc. institutes, Banks, Finance Corporation, Pollution Control Boards and Government advisory bodies after some experiences. Those who have get engineering slant can pursue A.M.I.E. etc. after their B.Sc. or M.Sc. degrees.

#### C. INSTITUTIONAL TRAINING/QUALIFICATIONS :

For purely Pulp and Paper Technology education the Technical Association IPPTA can arrange external examinations/correspondence courses like the ones for A.M.I.E., C.A., ICWA, etc. in stages. This can be helpful to ambitious persons working as operators and supervisors to acquire professional qualifications and fulfil their aspiration of reaching higher levels in the industry. They have the opportunity of process working knowledge and can derive guidance from their colleagues with good profession.

nal qualifications. In order to meet the expenses, government and industries can help IPPTA for their training and examining bodies, apart from the fees collected from the students.

#### D. IN-PLANT TRAINING :

The industries can also arrange inplant training programmes to various levels of personnel, since they have the facilities and training personnel in various faculties and this is for the company's own benefit. With adequate incentives-monetary terms and positions-working personnel will also come forward to acquire higher knowledge in their fields. Such training programmes can also be auxiliary to the IPPTA Technical Examinations which will give the candidates better employment opportunities.

The future days will witness more and more automation with better instrumentation and computer application. The personnel will have to be trained for such control methods. The instruments and computer manufacturing companies can arrange the required training programme on location.

In all the above training programmes there should be collateral co-operation by the Institutions Industries and Governmental Bodies like UGC, HRD, Ministry of Industries etc. Increasing the educational and training facilities will help in overall develop-

ment of the Nation in terms of industrial production, efficiency, national income and better calibre of manpower. With the fast advancing technology, it is empirical the men behind the machines are tuned to the need of time.

Education is a continuing phenomenon. There is no full stop to complete education, The changing circumstances, shortage of raw materials and other inputs, energy crisis, customers demand for sophisticated and diversified products, require fast adaptation to latest technologies. Hence there should be deep thinking in manpower development. Apart from the formal training programmes so far suggested, there should be periodical refresher courses, seminars and conferences, inter mill visits by various levels of personnel, publications in journals etc. These can be arranged by IPPTA and other various institutions of different disciplines and professional bodies like National Productivity Council, Institutions of Engineers, Pollution Control Boards, National Safety Council etc; Proceedings, journals and books are becoming exorbitantly costly and Governments and Industries should generously subsidise such publications. The knowledge gained by individuals will ultimately benefit the industries and the Nation.