



My Tryst with Destiny - 30 Years of Research Experience in the Pulp & Paper Industry.

HOW IT TURNED-UP IN MY LIFE:

“Every man has his own destiny, the only imperative is to follow it, accept it, no matter where it leads him”; was realized by me in 1990 when I was working at Delhi college of Engineering, Delhi as Senior Scientific Officer after completing M.Tech from IIT, Delhi and Ph.D from faculty of Technology, University of Delhi. While perusing a bright research career of six years in the field of Polymer Science and Technology, on insistence of my parents I applied unwillingly for the vacant position of Scientist in newly formed CPPRI at Saharanpur and got selected. Reluctantly, I joined the institute at Saharanpur and looked ahead to a change within very shortspan of time.

Since destiny has its own course, the working atmosphere and lively interaction with Industry changed my mind and I decided to use this opportunity to peruse research work in the area of Pulp & Paper in a serious note. In 1990, totally new to the area of Pulp & Paper, I resumed my duties as Scientist with lot of expectations to work & excel in this area. Initially I worked in the Chemical Recovery and energy management Division of the institute. The energy management division was newly formed to address the energy related issues in the Pulp & Paper Industry and offered a large number of challenges.

I had an opportunity to proceed on UNDP fellowship in 1992 at Paper Research Institute, Bratislava for computer simulation and process optimization. This fellowship opened up new avenues in my research activities and I started to work on process modeling for optimization.

Since 1998, I started to work independently and execute energy audit activities as a team leader. During this period I worked with Energy Management Centre, National Productivity Council and National Council of Cement & Building Material on various energy related projects and took up challenging jobs of Energy Management in large Paper Industries like units of BILT, JK, TNPL, Century, Sirpur, SPB etc. This opened-up a totally new horizon in front of me.

Later on, in 2003 with the formation of Bureau of Energy Efficiency (BEE), I had an opportunity to work with BEE officials and GTZ experts to formulate energy consumption norms for the Pulp & Paper Industry. This was herculin task and along with my team, I visited and explored almost all large and medium Pulp & Paper Industries in India and subsequently collected energy data on generation, distribution and consumption in the Pulp & Paper Sector. In 2004, I qualified the Energy Auditor Examination conducted by Ministry of Power and started taking up various assignments in the Pulp & Paper sector.

In 2009 BEE, Ministry of Power appointed me as Sector Expert and with the help of GTZ and BEE experts, we developed a protocol for implementation of "Perform, Achieve and Trade scheme (PAT) of Ministry of Power in Pulp & Paper Industries.

With promotions, I was assigned important tasks to look after the paper testing and quality control activities of the Institute. I started working with Bureau of Indian standard (BIS) as a member of CHD – 15 to formulate the quality standards for Pulp & Paper products. During this period, I had opportunities to visit various Industries in many countries and understanding their operation and working. The countries include Czechoslovakia, Hungry, Switzerland, Germany, France, Netherlands and Japan.

Further in 2017, I was selected as Director of the Institute and since then I am looking after all Research and Administrative affairs as Head of Institution.

ROLE OF IPPTA IN SHAPING THE CAREER:

Down the memory lane, I clearly visualize my early days in 1990 and remember my interaction with Late Sh. N.K. Naithani, the then Secretary General of IPPTA and Ex Principal, IPT, Saharanpur, on the day of my joining CPPRI. My meeting with Sh. Naithani symbolized the saying that "We do not meet people by accident, they are meant to cross our path for a reason". Sh. Naithani, at that

moment informed me about IPPTA and its activities and insisted me to join IPPTA as an active member in order totake interest in the activities of the association. Since then I have taken keen interest in all activities of IPPTA and it has benefitted me as my Alma Mater, in the pursuit of my research profession in pulp and paper industry.

I always wished IPPTA to score at greatest heights at par with International Technical Associations. Considering the vast number of articles published in IPPTA Journal and papers presented in IPPTA Conference, seminars and Workshops as valuable resources for the industry, academia and research professionals, in 2012-13 an initiative was taken-up to develop the electronic data base of all IPPTA publications on my persuasion with the Executive Committee. As a result, an electronic database of IPPTA articles and presentations was prepared by CPPRI under my supervision and IPPTA became digital by providing accession of the e-library and articles to the members on a click of mouse.

High defining moments of my career.

A scientist always aspires to work on challenging jobs in his career and to find out solutions to the problems in a Scientific & Technical manner. This is accomplished by working on various research projects during the life time and the results are produced and published in Journals, disseminated as presentation and reports highlighting the achievements and practical applications and awarded as patents. During my career, I worked on different problems related to Pulp Mill & Chemical Recovery operations, Papermaking & Conversion process, Quality Standardization, Energy & Environmental Management through various projects sponsored by Govt. of India, mills and other national and International agencies.

Apart from the conventional pulp and paper projects, I also worked on some frontier areas of technology such as Green Chemistry initiatives, Biotechnological interventions in Pulp & Paper, production of micro & nano fibrillated cellulose (MFC/NFC) and other Nano materials for application in Pulp & Paper Industry. The same is evident in my publications,

award of patents and Ph.Ds. Some of the notable achievements in my career are highlighted below.

- One of the motivational achievement out of my conventional activities in pulp and paper industries has been my contribution towards Energy Conservation through which, I could help Industry to save about 5-7% energy by adoption of measures in the mills, resulting in reduction of carbon foot print to the tune of 0.5 million tons/year as Carbon dioxide (CO₂) emissions.
- The other achievement which I count as important is the trouble shooting exercises carried out during my tenure as scientist in various industries, leading to productivity enhancements, without sacrificing the quality parameters of the products. This achievement of productivity enhancement upto 2-3 % could be possible by optimization practices, good housekeeping, optimal utilization of the resources, minimizing wastage at different levels etc. without much investments.
- I also count development of thermal and water pinch analysis software as one of the achievements during my research career. Software were developed for application of thermal and water

pinch in Pulp & Paper Industry. In the thermal pinch software, by in-putting the required process details and parameters, the software analysis could provide mill with various options for reduction of thermal energy by integrating the processes in a very effective manner. The water pinch software on the other hand could also reduce water consumption in the processes by offering proper recycling and reuse options for treated/ un-treated waste water, considering the process requirements. This exercise was carried out for the first time in the Indian Paper Industry under my supervision. I am hopeful that the time will come when Industry will adopt these solutions for process integration and optimal use of resources.

- A unique method for preparation of Micro and Nano fibrillated cellulose (MFC/NFC) has been developed which requires low energy inputs and produces higher yield. I am optimistic that in near future, pulp and paper mills would also produce the MFC and NFC as a product alongwith paper and paper board, for food and pharma industry. This would improve the balance sheet of the industry significantly.

TO CONCLUDE:

When I look back my association of 30 years with CPPRI and the industry I go down the memory lane and cherish several mile stones with 4 published books, 30 papers in International journal and 65 papers published in national journal, 125 papers presented in conferences, submission of > 200 technical reports, having received 1 patent and awaiting award of 4 more patents , I could have not asked anything more from my professional journey. I am also very happy that the job provided me opportunity to develop close contacts with the industry at various level and thankful for their faith imposed on me and affection showered through this journey.



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