

Cost Effective Measures At JK Paper Ltd- Unit: Central Pulp Mills

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ABSTRACT

GLOBAL COMPETITIVENESS OF INDIAN PAPER INDUSTRY

Market of today is buyer's market, so in today's world of globalization and market driven supply and demand scenario, reduction in manufacturing cost has become primary tool for survival. Prices of raw material and finished product are dictated by market and hence it has become mandatory for every mill to rethink its manufacturing strategy and cost. India has achieved rapid industrial and economic growth in the last 4-5 years. The growth momentum is likely to continue and there will be much faster growth if substantial infrastructural development takes place in our country.

As regards global competitiveness of Indian Paper Industry, growth in demand of Paper and Board can be met by capacity expansion. However, to achieve global competitiveness, we need to scale up our manufacturing capacities to meet global standards, invest in technological advancement, ensure continuous product innovation, make quality upgradation a way of life and make ourselves committed to customers by offering them the best value for their money.

With the development of Technology and Global competition, Paper and Board Mills are under pressure to improve bottom-line and are constantly striving for manufacturing better quality of product at lower cost.

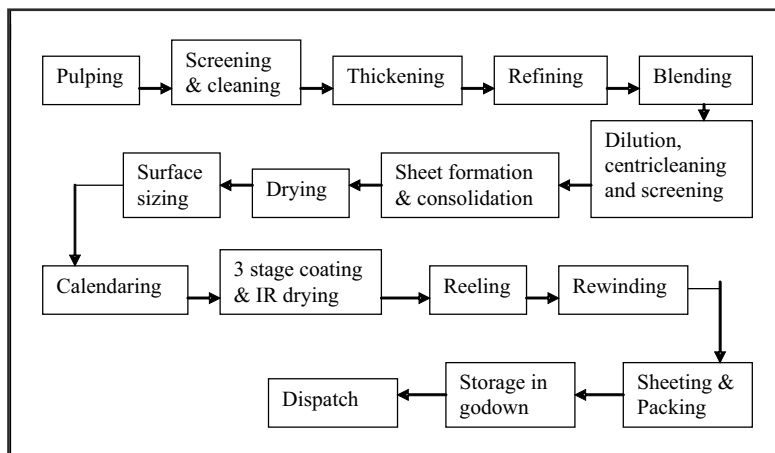
We, at JK Paper Unit CPM, have taken various steps in cost reduction and are continuously focusing on cost effective methods to stay vibrant in the turbulent Indian paper industry. Presently we would like to present 5 case studies (1) Replacing alum with PAC (2) Reduction in Water consumption (3) Reduction in OBA consumption at wet end (4) Reduction in coating chemicals consumption and (5) Size press logic change.

Introduction

JK Paper Ltd Unit: Central Pulp Mills, situated in Fort Songadh, Dist: Tapi of Gujarat state is a large integrated Pulp and Paper Mills having a capacity of 55,000 TPA of Writing, Printing and Specialty Papers and 60,000 TPA Coated Duplex Board. Bamboo and mixed hardwoods are the major raw material used. The Mill adopted Kraft pulping process and bleaches the pulp to a brightness level of $87 \pm 1\%$ ISO. All the products are of premium quality and well accepted in the market. The unit is ISO 9000, EMS 14001 and OHSAS 18001 certified. It is the first integrated pulp and Paper Mills in the country to have been awarded TPM Excellence First Category Award by Japan Institute of Plant Maintenance, Japan. In compliance with the Corporate Social Responsibility for Environment Protection, the Mill has taken several initiatives like upgradation of technology, water conservation, reduction in wastewater discharge etc. The Company has also installed new screening system, Oxygen Delignification Plant and White Liquor Oxidation Plant in the Pulp mill to reduce AOX generation.

JK Paper Ltd.: Unit- Central Pulp Mills, Fort Songadh, Dist: Tapi (Gujarat)

BRIEF MANUFACTURING PROCESS OF PACKAGING BOARD



The Company embarked on a venture of starting a new business and with extraordinary commitment and meticulous preparation, joining the best hands in the market together, set up a new state-of-the-art Packaging Board Plant of 60,000 TPA capacity in its premises at Songadh in record time and commenced the commercial production in October 2007. Our first roll from the packaging board plant went to the printing press ardently endorses the merit of our thorough and meticulous approach and quality consciousness. The entry of JK's value added premium board products has generated excitement in the packaging board

market and within a short span our products were well accepted by the printers across all segments, which speak of the incomparable printability and world-class quality of JK's board products. The excellent customer response to the launch of our premium board brands has resulted in rapid market penetration and full plant capacity utilization.

Case study 1: REPLACING ALUM WITH PAC

Earlier we were using Ferric Alum in wet end for sizing purpose. Using alum created heavy scaling problem and

deposits of calcium sulphate on wire tables, pipelines and head box manifolds. Also with the use of alum, there was variation in pH of back water from 4.0 to 6.0 resulting in higher alum consumption and variation in size demand. We took trial with PAC and results were found to be encouraging. After fine tuning and dosage optimization now PAC is stabilized at board machine of CPM unit. pH variation has come down to 5.5 - 6.0 and also consumption of PAC is low as compared to Alum. Alum consumption was 10 Kg/T and whereas PAC is 6 Kg/T. Hence we have saved **Rs.14.4 Lacs/year**.

After replacing alum with PAC, brightness of pulp and final product is consistent and problem of deposits / scaling and pH variation has been minimized.

Case study 2: REDUCTION IN

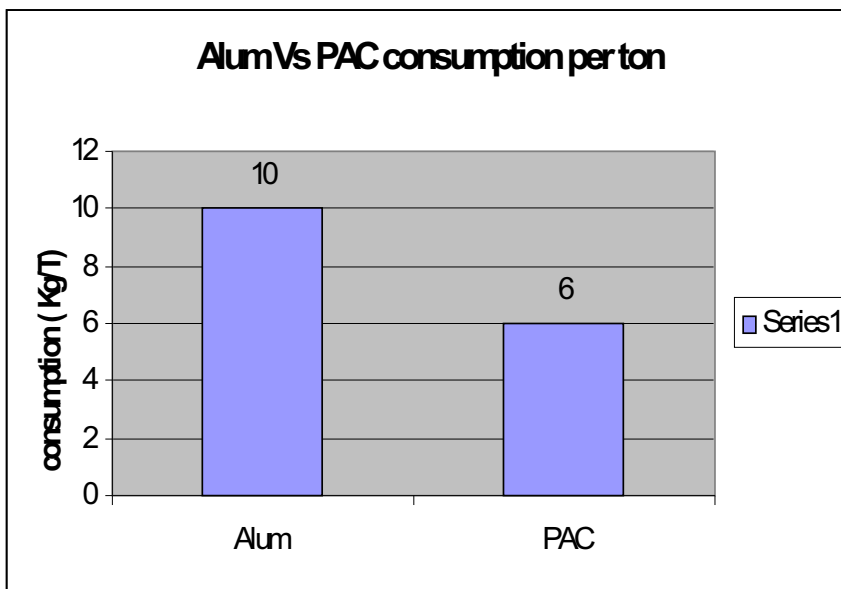
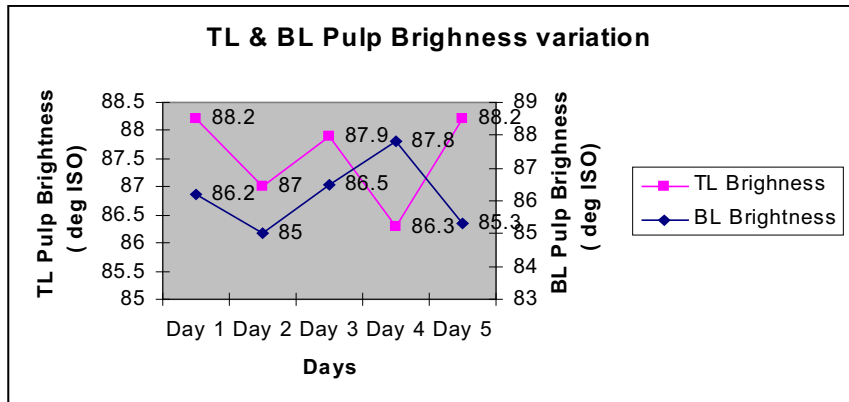
WATER CONSUMPTION

Water is a precious commodity. A scientific management of water usage is warranted not only to save resources but also to reduce the wastage of input chemicals. Fresh water is used in our board plant mainly in wire and press section showers, make-up in approach flow system, during machine start-up, make-up in SFT pulpers, toilets, for

drinking purpose, for pulpers gearbox cooling and cooling towers. Various Kaizens have been done to reduce fresh water consumption.

We have set the target against the benchmark

1. No floor cleaning with fresh water. All fresh water hoses replaced with clarified water.

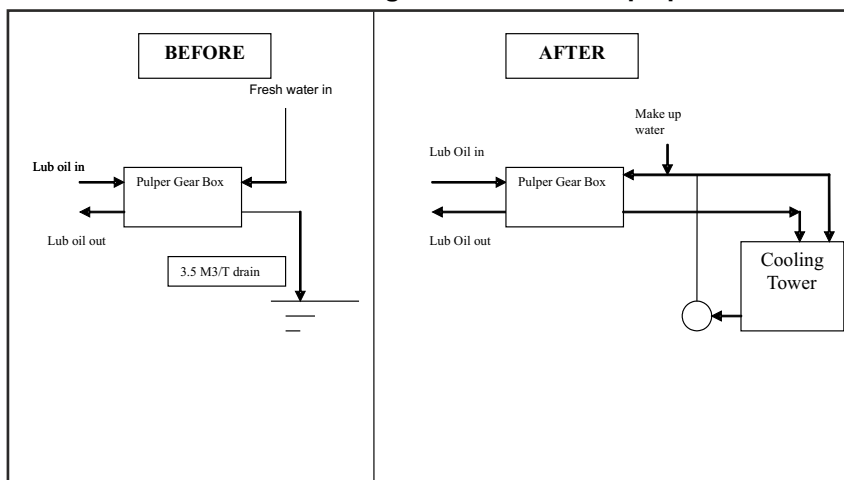


2. Fresh water is being used in our SFT Pulper gear box cooling. Discharge water from gear box was going to drain quantity ...3.5 m3/T.

We found that some amount of fresh water is available from our cooling water which can be used for gear box cooling. We took a trial by installing a separate pipe line connection and found the gear box temperature control is within the range and moreover the discharge water from gear box is again recycled through cooling tower. So the fresh water for Gear box as well as discharge after gear box, was completely stopped.

3. Replacement of fresh water make up in SFT pulper by clarified water.

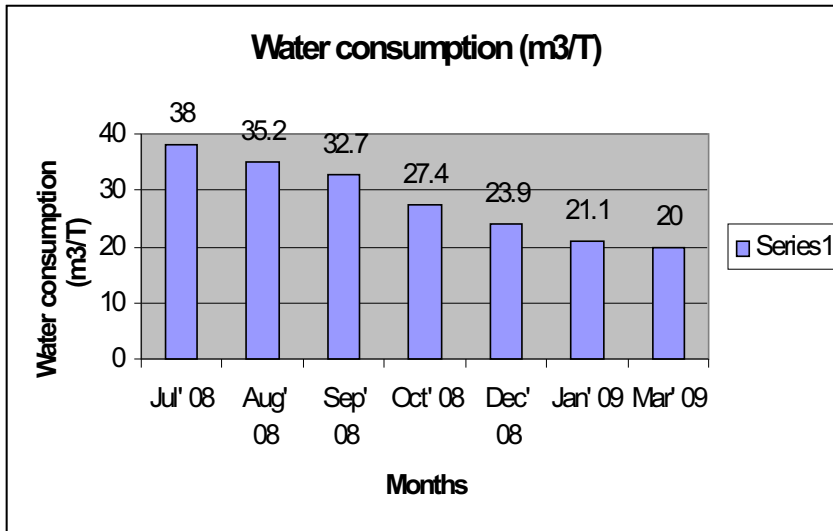
Water from Cooling tower diverted to pulper



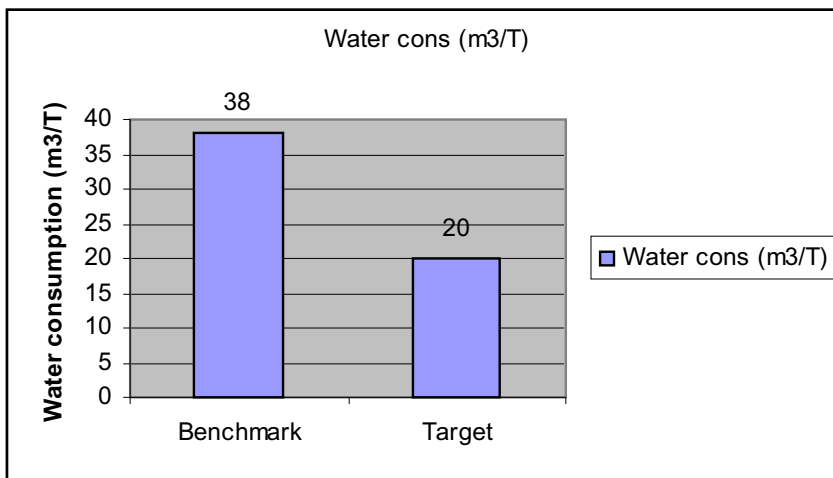
We have a clarified water tower having capacity of 1000 M3. Water from this tower is being used at different application in process & still there were some amount of excess water which was going to effluent clarifier. This water was not possible to use in top layer and bottom layer Street SFT pulper for virgin grade because this water was having pH variation 4 to 5.5. Brightness of pulp in TL and BL observed Varying.

After replacing the Alum by PAC we observed that pH of clarified water becomes steady 5.5 to 6.0 and different trial in lab was carried out. Ultimately it

Month wise reduction in water consumption:



Water consumption benchmark and target:

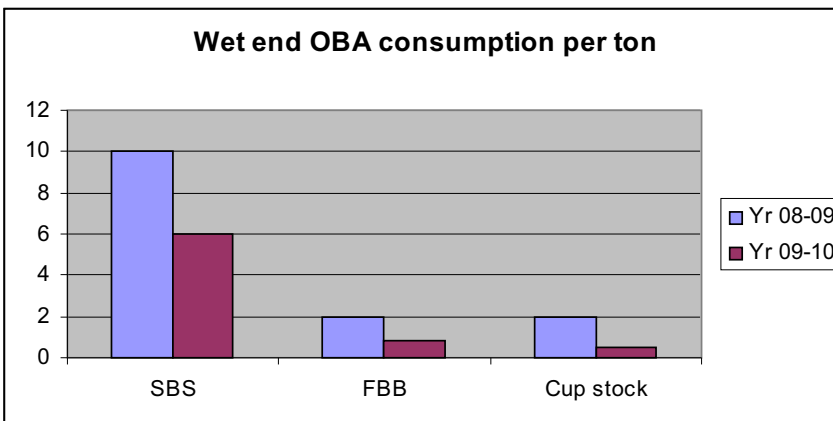


was possible to replace the fresh water is SFT pulper for T.L and B.L and saving of water 4.5 m3/T.

4. One more important application vacuum pump sealing water which was previously connected to fresh water line

is also replaced by clarified water in similar way. Saving of water ...4.5 m3/T

After implementation of above scheme water consumption came down gradually and we have **saved Rs. 21.6 Lacs/Yr**



Annual savings are to the tune of Rs. 76 lacs.

Case study 3: REDUCTION IN OBA CONSUMPTION AT WET END

We at board machine manufacture significant quantity of virgin grades of Packaging Boards. We were using 10 Kg/T of OBA in SBS grades, 2 Kg/T OBA in FBB and 2 Kg/T OBA in cup stock grades. Because of pH variation consumption of OBA was higher. Also there was no control on OBA flows and we used to measure the flow manually. Later we installed VFD's in OBA pumps and after minimizing the pH variation with the help of PAC and so many trials, discussions with overseas partners, fine tuning and optimization we could reduce the OBA consumption significantly. Now we are using 6 Kg/T OBA in SBS grades, 0.8 Kg/T in FBB and 0.5 Kg/T in cup stock grades.

Case study 4: REDUCTION IN COATING CHEMICALS CONSUMPTION

Coating is done on paper or board for making it suitable for printing. Main components of coating are carbonate, clay, binder, dispersant, thickener, insolubilizer, lubricant and antifoam etc.

Sometimes recession could be good as it forces to go for creative innovations. As we all know that market conditions are beyond our control and only thing which can be controlled is manufacturing cost. So keeping these things in mind we decided for optimization of coating color recipe. At first we attacked big volume chemicals like binder and pigment. We did lab study and trials on binders and pigments and also impact on printing properties like IGT, Print gloss, roughness etc and found that we could go for plant trial. We took plant trial in different phases for all other chemicals also and succeeded without affecting the quality of final product. **Savings after doing so are to the tune of Rs. 1.8 Cr/ Yr and the details are as follows.**

- Final Coating color properties checked and some solid adjustment was done with color for keeping same brook field and Hercules high shear viscosity and water retention.
- All the printing test was done in our business partner laboratory like K&N, IGT drypick, IGT

Sr. No	Ingredient	Reduction
1.	Binder 1	Reduced by 2 parts in Pre Coat
2.	Binder 2	Reduced by 2 parts in Top Coat
3.	CMC	Reduced by 0.05 parts in Top Coat
4.	Thickener	Reduced by 0.14 parts
5.	Lubricant	Reduced by 0.20 parts in Top Coat & Pre Coat
6.	Insolubliser	Reduced by 0.15 parts
7.	Antifoam	Made zero in Top Coat & Pre Coat

Wetpick , IGT Ink Gloss, Ink Set off, Wet rub, Blister, sheet gloss and smoothness are all found within the range.

In India almost every mill is having size press for surface sizing application. We all face the problem of starch splashing during break which is carried to the next section of dryers and screen and as a result dryer surface and dryer screen gets dirty. Both these leave starch sporadically and cause break in the next

Case study 5: MODIFICATION IN SIZE PRESS LOGIC

section or rejections due to starch spots. To get rid of this problem we thought of Teflon coating of dryer so that starch will not stick onto the dryer surface. But we realized that it is not the ultimate solution and went on finding the root cause. Later we thought why not stopping the size press starch splashing? And hence came to the idea of changing the size press logic. We modified the size press logic such a way that size press will not open immediately after the break rather will open after 40 sec and for 40 sec water will come in place of starch and there will not be any starch splashing at the time of break. **By doing so we have saved 10 breaks and 12 MT rejections per month which contributes to Rs. 5.0 lacs/ month.**

Acknowledgement

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