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SNIPPETS FOR THE PAPER INDUSTRY

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Out of the box thinking has become a necessary and useful management tool today. Young minds tend to work more comfortably with this. A perspective change can help bring out un-thought-of results because once you decide to see the same thing differently, the reaction and response also becomes different.

Mr Ved Krishna, shares with us a novel perspective of looking at cellulose not just as a resource for paper making but as a resource for new opportunities. Perhaps this is what we need for a fresh start to 2013.

Happy New Year.

Basantt Khaitan - Managing Director.

CEO SPEAK



THE MAGIC OF CELLULOSE

Ved Krishna Managing Director

YASH PAPERS LIMITED

FAIZABAD

UTTAR PRADESH

Realities are created twice, first in the mind space and then in the physical realm. Our thoughts influence our view of the world and I propose a similar shift in perspective for those of us in the paper world.

We are not in the business of manufacturing paper. We are actually enabling the creation of a better world by growing cellulose and utilizing the same for an economic benefit.

Cellulose is the most common organic compound on Earth. It is the structural component of all green plants and it is nothing more than a string of glucose cells that consist of hydrogen and oxygen (Hydroxyl compound) that make up the molecules. What makes the molecule interesting is that unlike starch it is a straight chain polymer, giving required stiffness to the plants. At the molecular level a cellulosic molecule has many times the strength of steel. We just have to find ways to utilize this inherent quality.

A cellulosic chain consists of cellulose, hemicelluloses and lignin. The ratio changes with different sources. A cotton fiber would contain over 90% cellulose whereas a typical hardwood would contain anywhere from 38 to 50%.

There are inherent benefits of investing in cellulose. Cellulose is renewable. All components are biodegradable and compostable. We can generate the same from annual crops or longer duration wood plantation. It is life generating. Plantations lead to lowering carbon levels and enriching the soil. They enable both flora and fauna.

The process of pulping enables us to separate cellulose from hemicelluloses and lignin. We need to begin looking at value generation from this process as all three components are of great

benefit to mankind and can lead to enormous economic benefits. As paper makers, we limit ourselves to cellulose and consider the other two components as necessary evils that need to be dealt with. This belief needs a shift in perspective.

Immense work is being carried out in the world of science that would eventually enable us to generate far reaching benefits from cellulose. We utilize cellulose in micro crystalline form widely in the pharmaceutical industry now. There is generation of nano crystalline forms that are being experimented with on a commercial level. The basis for both is Alfa Cellulose, which is nothing else but a pure form of cellulose. We get close to this form in our pulp mills and those generating rayon grade pulp are achieving the alfa stage. The Alfa pulp can be utilized not only in the textile industry as viscose fiber but also brings about products such as cellophane, food fiber enhancers, celluloid film, medicine fillers etc.

We are aware that our chemical recovery cycles are enabled by the presence of organics in the form of lignin and hemicelluloses. Burning of the same provides us with energy and helps us with separation from the inorganic that we recover.

So much for the general theory, let us get to how we can utilize the benefits at present in our plants:

Grow more and more plants: It is important that we participate in fiber generation. We need to promote fibers whether we use wood in our process or not. We need to look at not only pulpwood plantations but also annual crops for fiber. There is vast scope in promoting wonderful fibers like sunhemp, jute, kenaf, abaca and bamboo. They not only provide us with longer fibers but also act

INDUSTRY NEWS

APPM / International Paper have initiated a sapling plantation programme at Rajahmundry involving school children. Called 'Green Wave', it is an educational initiative to explain the importance of preserving the environment and reducing the impact of global warming through plantations. APPM plants 2 trees for every tree used in its paper production, as social forestry.

as nitrogen fixers for the soil. The entire chain is connected and more generation shall help all type of raw material users.

Generate biomass & biogas: Biomass wastes, bagasse pith, barks, leaves, branches, roots etc are all sources for renewable biomass, either for us or for another producer. Looking deeper, technology for gasification is fast evolving which means that the same biomass can be used twice, first for gas and then as a direct fuel such as charcoal. Biogas could be utilized in our process or sold.

Invest in pulping: Good pulping systems is the key to capitalize on the fiber. Treating the fiber source with care can maximize yield and also save organic solids in the form of lignin and hemicelluloses. In case it is possible to create the ability to venture into alfa cellulose pulping, then a whole new world can open up.

Generate lignin: Lignosulphonates today have many commercial applications either as dispersants or as binders. We can look at either completely or partially extracting lignin from our effluent depending upon whether we have a recovery cycle or not.

Utilise effluent water: We still have the luxury of water being cheap in our country. That is not going to be the case in times to come. There are various technologies that can, today, lead towards zero discharge. We need to keep getting closer to the same. The water that we actually discharge needs to be a soil enhancer. Our process of generating MLSS should add value to the discharge and farmers should benefit from its usage.

Add value from waste: Our sludge can be of great value either as a biomass fuel or fiber for board or can be used to generate manure. It only takes some effort on our part to make the same usable.

Ash from biomass can be used to either generate amorphous

silica or converted to binders. Its high pozzolana properties need to be utilized.

Plastic waste generated from cleaning waste paper can be recycled. Even lime sludge needs to find usage, either as a filler with cement or elsewhere.



Look into alternative usages for fibers: Fibers have multifarious usages. Today companies are looking at making ethanol utilizing the glucose chain. There are buyers in the market for utilizing fibers as dietary supplements.

We now hear of Dura pulp being used for creating furniture and other molded products. Medium Density Fiberboard is pretty much the norm in the furniture industry worldwide.

Add value to our products by providing solutions: We need to move away from the mindset of being product providers and have to evolve as solution seekers. There are needs in the market place that need to be addressed and we need to consistently strive towards finding answers. There are immense possibilities that we can delve into by looking into applying technology and ideas.

Look for niches: The only way to succeed in business is either to be the lowest cost producer or to find a niche where the customer is willing to pay us at a higher price point. India would not evolve to provide the lowest cost structures owing to our systemic inefficiencies which include fiber, fuel, transport, economies of scale, trained manpower, technology etc. We need to look into finding 'niches' that can be 'addressed'. We may need to find the right partners, seeking worldwide for the same.

My effort was to show that there are numerous opportunities awaiting us through *the magic of cellulose*. We are possibly sitting on gold. All we need to do is to start digging in our own backyards.

QUOTABLE QUOTE	<i>The oldest, shortest words 'yes' and 'no' are those which require the most thought</i> - Pythagoras	
SCRABBLE	What does A Z C stand for? (Hint : Coating of Paper) First correct answer will win a Parker Vector Roller Pen (Maximum two prizes for one person in a year). Post / Fax / Email your answers to EDITOR-W&F SNIPPETS by 20 th January, 2013.	
WINNER DEC'12	<u>Mr. Raman Chakravarty, Technical Officer-QC Dept., The Andhra Pradesh Paper Mills Ltd., Rajahmundry-533105</u> Answer : DADMAC : Di Allyl Di Methyl Ammonium Chloride	
?QUIZ	Check the right options : Functionally, 'Microparticles' used in the papermaking system are <u>always</u> 1) Inorganic particles 2) Anionically charged 3) Improve dewatering 4) Improve formation Post / Fax / Email your answers to EDITOR-W&F SNIPPETS by 20 th January, 2013.	
WINNER DEC'12	<u>Mr. Ajay V. Deshpande, Senior Executive-Paper Technical Services, Sudarshan Chemical Industries Ltd. R&D Center, Sr. No. 126/127/136, Amarlewadi Ambadvet Tal-Mulshi, Pune-412108</u> Quiz : Tick the right options : A Surface Sizing Chemical serves to a) Reduce Cobb of final paper b) Improves coating binder hold-out c) improves printability d) Improves paper brightness Answer : a) Reduce Cobb of final paper b) Improves coating binder hold-out c) improves printability	
 Prizes	1. Best / first correct answer received will win one-year subscription to IPPTA Journal (Maximum one prize for one person in a year). 2. Best of the 12 monthly winners in a year, will win one-year subscription to Paper 360° Magazine, USA.	
 Success	'Success' is a 'relative' term. It brings in so many relatives !	
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