Modification of Softwood Kraft Pulp is Better for Tissue Paper

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Paper Packaging is the Most Obvious Choice

The growing demand for environment friendly products has contributed to the growth of the global recycled paper packaging market.

The strict rules that have been laid down by governments across the globe in terms of environment security have led to many industries resorting to recycled paper packaging.

The awareness among people regarding the benefits of paper recycling is expected to have a positive impact on the progress of the global market for recycled paper packaging.

In the future, paper packaging is the most obvious choice for replacing polystyrene, according to the report, and many key players in the industry have already switched to or are experimenting with paper products.

Further improvements in paper recycling will also help to grow the market, as recent advances have made it possible to recycle coated paper packaging along with corrugated paper. This will reduce the cost of recycling significantly, driving up the demand for recycled paper.

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Modification of Softwood Kraft Pulp is Better for Tissue Paper

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Biography

Research, development and innovation on Pulp, Paper and Tissue are Hafizur Rahman’s the most important areas of interest. He has double MSC degrees with Thesis work; 1) Natural Product Chemistry (collaboration with Biochemistry department of Dhaka University, Bangladesh and Chemistry department of Glasgow University, Scotland, UK), 2) Ecotoxicology Oriented towards Chemistry (Collaboration with Chalmers Technology University, Sweden) and has worked during 15 years at Universities and in R&D organization in the Chemical Industry as well as in the Pulp Paper Industry. During spring 2018 he completed his Industrial PhD (Licentiate exam) in Chemical Engineering as an employee of SCA Forest Products, Sweden in collaboration with FORIC (Forest as a resource Research Industrial College), financed by the Swedish Knowledge Foundation and Mid Sweden University. His Industrial PhD work was focused on modifying the kraft pulp to produce better Tissue paper considering less refining energy and lower drying energy cost. He is recently employed as Researcher at department of Chemical Engineering, FSCN, Mid Sweden University to work with different Pulp Paper Industries in Sweden. Hafizur’s research interest to work with the pulp and paper research connection with multidisciplinary research to develop the new pulp product, improve process efficiency or finding solution of process in future Pulping and Tissue Industries. He adapted three strong skills: organizing, communication and sincerity. His aim is to create strong research and business network with South Asia, especially with Bangladesh to maximize the benefit of Swedish and Bangladesh Pulp Paper and Tissue Industries.

Tissue has been used for hygienic purposes since the 1940s and its manufacture is today a fast growing industry in the world due to increase hygiene concern. It is using all individuals in the western world come in contact with a daily basis. The demands of tissue as toilet paper, kitchen roll, facial tissue, handkerchiefs, hand towels, napkins and wipes at different forms are increased day by day. But the growth and penetration of forest products based tissue business in third world country did not rapid as much comparing the first world countries. Due to lack of hygiene knowledge and huge production cost did not make persuade them yet. Now most of the forest product company has added more focus on further development of pulp for tissue (1, 2 and 3). The production of tissue paper, the fibre suspension is to large extent dewatered by removing water at dewatering stage and it is important to reduce the cost of the final dewatering and the energy consumption in the final drying of the sheet (4, 7, and 8). Today bleached softwood kraft pulp is the highest single cost element for the final production of tissue paper.

Typically more than 50% of the total cost is the pulp. Second largest cost is related to the dewatering and for tissue dryness stage where most of the energy is utilised.

The recent Industrial PhD research by Hafizur Rahman ended with Licentiate exam was on modification of softwood (Spruce 70% and Pine 30%) kraft pulp for producing better tissue paper. It has been observed by the addition of either polysulfide (PS) or sodium borohydride (NaBH₄) increase the pulp yield due to a higher retention of glucomannan (3). The pulps with higher yield gave a paper with higher tensile index than reference pulp, especially at lower degrees of refining (3). The higher yield pulps also showed a greater porosity of the fibre wall, indicating an increase in the swelling potential of the fibres. This can lead to increased fibre flexibility and increased joint strength between the fibres and to the higher handsheet tensile index. However, the swelling increase associated with the higher hemicellulose content could also make dewatering more
challenging because of the higher water retention of the pulp (2). The results of this study showed however that the positive influence of the increase in yield (fewer fibres and a more open sheet structure) dominates over the negative influence of the higher hemicellulose content on the dewatering properties, especially at lower refining energy levels (1, 2). Studies simulating full-scale tissue machine dewatering conditions showed that pulps with a higher yield and higher hemicellulose content had a higher tensile index at the same dryness. Moreover, the same dryness level was achieved in a shorter dwell-time. A given tensile index was also achieved with less refining energy (1, 2). Therefore, it is important to gain more information on the role of hemicellulose and individual hemicellulosic monomers in fibre wall to better understand the fibre network phenomena at lower grammage hand sheet. It has been found previously that increasing the amount of hemicellulose in the fibre wall counteracts the aggregation of cellulose during the drying of the fibres (9, 10). A less aggregated fibre wall has a greater flexibility thus potentially leading to an increase in the fibre bonding strength (3) and thus very important for tissue paper production.

However, the research challenges related to the competitive markets of tissue products is continuous improvement of the quality of tissue paper combined with reduced environmental footprint and reduced operating costs. Another important need is making tissue papers more affordable for third world countries as well for wellbeing benefit of the consumers. So it is very important to focus first on developing the pulp fibre quality and to continue maintaining key tissue properties, as; softness, smoothness, liquid absorption and strength properties.

The importance of improved pulp properties can also be related to the following: use environmentally friendly chemicals, lower energy consumption, improved dryness and higher tensile strength. Tissue producer have use for the better quality that could be made possibly by producing kraft pulps at high yields enhancing higher tensile strength at lower refining energy (beating) at same dryness. Increased refining has a negative effect in dryness but does also increase softness, tensile strength and absorption capacity.

The research goal of Hafizur is now to improve the understanding of how pulp can be modified and optimized by means of increasing the yield by retaining more hemicellulose within the fibre walls. This in order to further improve the pulp fibres inherent bonding propensity in such a way that the need for refining to achieve key tissue properties is further reduced. In addition, it is also of great importance to consider the environmental impact of the chemicals used to enhance improved hemicellulose retention. The vision of the research is to create an eco-friendly improvement of the kraft pulping process enhancing better tissue paper properties at lower energy & drying costs. And also to perform a pre-study related to going from lab- to full-scale studies.

References:
1. Rahman, H. (2018): Modifying kraft pulping to produce a softwood pulp requiring less energy in tissue paper production, Licentiate Thesis (ISSN 1652-8948), Faculty of Science, Technology and Media, Department of Chemical Engineering, Mid Sweden University, Sundsvall, http://um.kb.se/resolve?urn=urn:nbn:se:miun:diva-32833
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Importance of Condensate & Flash Steam Recovery

Condensate is the result of steam transferring a portion of its heat energy, known as latent heat, to the product or equipment being heated. As steam loses heat and it turns back into water, it contains 20% energy of the total steam. This condensate water has temperature equal to that of steam and it is basically distilled water, which is ideal for use as boiler feed water.

Recovering condensate reduces the fuel bill
Returning condensate to boiler feed water tank raises the feed water temperature, improving the steam to fuel ratio. This cuts the fuel consumption thereby reducing the fuel bill. As a rule of thumb, every 60'C rise in feed water temperature saves 1% on the fuel bill.

Illustration:
Consider, 1 kg of feed water to be converted to steam at 5 bar g.

In paper industries there is an opportunity to recover the entire condensate water to the feed water tank, i.e. condensate recovery factor can be 100% where the makeup water requirement will be negligible.

Higher feed water temperature increases the boiler output
The capacity of a boiler is stated in ‘from & at’ rating which shows the amount of steam in kg/hr which the boiler can create ‘from & at 100 deg C’, at atmospheric pressure. Thus, the closer the feed water temperature to 100 deg C, the closer the output generated to rated capacity.

Across most of the plants the feed water temperature is rarely maintained 100 deg C. Mostly it is ambient or slightly higher than ambient. This leads to a poor steam to fuel ratio and lowers the boiler capacity.

The following formula helps to calculate the steam output from the boiler:

Steam output = Boiler rating (kg/hr x [ A / (B-C)])
Where,
A = Specific Enthalpy of Evaporation at atmospheric pressure = 540 kCal/kg
B = Specific Enthalpy of Steam at operating pressure
C = Specific Enthalpy of Feed Water

Illustration:
For a 10 ton/hr capacity boiler, at 9 bar g operating pressure

<table>
<thead>
<tr>
<th>Feed Water Temperature</th>
<th>40 deg C</th>
<th>90 deg C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. steam generation capacity</td>
<td>8,667 kg/hr</td>
<td>9,424 kg/hr</td>
</tr>
</tbody>
</table>

Here, 500'C rise in temperature in feed water increases the steam generation- 757 kg/hr.
Other benefits are, Condensate water is free from TDS (total dissolve solid) and it reduces the requirement of blowdown thereby curtailing blowdown losses. Since, the required quantity of makeup water will be negligible hence the blowdown required will be minimum.

> Condensate does not need to undergo water treatment and thus saving water treatment cost.

> Recovering condensate reduces the cost for oxygen scavenging chemicals, since the improved temperature reduces the amount of dissolve oxygen mostly.

Flash Steam Contains almost 50% energy
Flash steam is low-pressure steam created when hot condensate water is released from a high pressure to a lower pressure within a steam system. It can be released through steam trap or blow through.

Recovering flash steam is as important as recovering condensate water. Although flash steam is very less (8–10%) in mass but it contains about 40–50% energy of the total condensate.

The following formula helps to calculate the flash steam:

% of Flash Steam = ([Enthalpy of Fluid @ steam press. – Enthalpy of Fluid @ Flash Press.]) / ([Enthalpy of Vapor @ Steam Press. - Enthalpy of Fluid @ Flash Press.])

If Condensate load is 3000 kg/hr,
Steam Pressure is 6 bar g
Flash Pressure is 0.5 bar g
% Flash Steam = 10% = 300 kg/hr

Flash steam can be recovered to the feed water tank, or it can be used in the initial dryers or pulpers or in thermocompressor.

There are different ways of recovering condensate to the feed water tank. Using Pressure Powered Package Pumping Unit (PPPDU) is one of the most efficient way of recovering condensate. It does not need any storage and electrical pump. This is a system made by Forbes Marshall which is very popular.
বাংলাদেশের অর্থনৈতিক উন্নয়ন অবদান রাখতে অংশীদার হোন।

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The Problems of Boiler Feed Water Impurities

Water is one of the key components of a papermaking system and a part of water uses for steam production. A boiler is a closed device of vessel/drum in which water under pressure converts to steam by using heat energy materials in the furnace. The heating system of water evaporates into steam and generated steam uses in the process through header system.

**Types of Boiler:** There are two types of boiler are used for the industrial applications. One type is “Water Tube Boilers” and another type is “Fire Tube Boilers”. In Water Tube Boilers, water circulates within the tubes and the flame & hot combustion gases flow across the outside of the tubes. Combustion of the fuel occurs through burners in a furnace. Steam bubble forms on the heated side of the tube. This type of boiler can be built at any capacities and pressure and have high effectiveness than fire tube boilers. In Fire Tube Boilers, the flame and hot gases are confined within the tubes of water drum. Water circulates on the outside of the tubes & changes to steam. It rise to the top of the boiler drum and exist through a steam header from where steam distributes to the plant through outlets system. Fire tube boilers have a lower initial cost and high fuel efficient and easy to operate, but they have limited capacity and pressure.

**Problems of Boiler Water:** The raw water for producing steam carries several kinds of impurities such as dissolved solids, suspended solids, dissolved gases etc. Boiler feed water is required to ensure for the removal of Impurities for quality steam generation and efficient process. The major problems associated with boiler feed water impurities are a) deposits & scales formation, b) boiler corrosion, c) Carry-over d) Foaming and e) Priming.

**Deposits and Scales Formation:** Scales formation is the first main common problems in the boiler operation process. In boiler, water evaporates continuously and the concentration of dissolved salts increases continuously. When they reach in saturation point, they are precipitated on the inner walls of the boiler. The loose and slimy precipitate formation is known as sludge or deposits and the hard adhering contaminants gather into a crust on the surface walls of the boiler is called scales. Scales are deposited on the water side tubes surface. The most common components of boiler deposits and scales are calcium chloride, magnesium carbonate, magnesium chloride, magnesium sulfate, calcium phosphate, calcium carbonate, magnesium hydroxide, magnesium phosphate, iron & copper oxide and complex of silicate of magnesium, iron oxide, aluminum & sodium etc. Deposits & Scales acts as an insulator. Excessive deposits & scales formation reduces heat transfer, cause poor water circulation in pipe, plug-opening, gauge-glass connection, and decrease in boiler efficiency; localize overheating of tubes and boiler tubes failure. Scales also cause of deficient boiler safety and danger of explosion.

**Corrosion:** The second major water related boiler problem is corrosion. Corrosion inside the boiler occurs due to presence of dissolved oxygen, dissolved carbon dioxide and dissolved salts in feed water. Dissolved Oxygen attack is accelerated by high temperature and by low pH with electro-chemical reactions. When heating up dissolved oxygen reacts with the
internal materials of the tube water side to create corrosion on the surface of tubes. Corrosion causes damage of steam drums, mud drums, headers and condensate piping. Water reacts with iron in absence of oxygen to form magnetite layer on the boiler system metal at normal condition. The reaction is $3\text{Fe} + \text{4H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{4H}_2$ (gas).

The presence of oxygen enhances the formation of Iron oxide (hematite) which is non-protective. As a result, pitting corrosion is happened with oxygen and quickly leads to tube failure.

Caustic corrosion occurs by high concentration of caustic and dissolves the protective magnetite ($\text{Fe}_3\text{O}_4$) layer, causing a loss of base metal of boiler and ultimate failure of boiler tubes. This may occur in case of high pressure boiler under the reaction of $\text{Na}_2\text{CO}_3 + \text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{CO}_2$. Caustic embrittlement is caused by high concentration of sodium hydroxide attack the surrounding area, thereby dissolving iron of boiler as $2\text{Fe} + 2\text{NaOH} \rightarrow \text{Na}_2\text{Fe}_2\text{O}_4 + \text{H}_2$. If feed water treatment chemicals are not used properly which can corrode feed water piping, control valves and internal of boiler.

Acid corrosion is happened when the pH level of feed water and boiler water down below 8.5. The carbonate alkalinity of water is formed to carbon dioxide ($\text{CO}_2$) by heating under pressure of the boiler. The carbon dioxide is carried over in the steam. When the carbon dioxide gas of steam condensate dissolves in water to form carbonic acid ($\text{H}_2\text{CO}_3$) and reduces the pH of the returned condensate which feed to the boiler. Acid may also corrode the condensate return piping throughout the system.

Effects & Prevention of Corrosion: The major effects of corrosion are: a) Creates holes in the metal surface of boilers, b) causes pitting, c) loss in boiler steam generated efficiency due to reduce heat transfer, d) reduces boiler life and e) risk of life or may happen explosion of boilers. Prevention may take by proper water treatment, de-aeration of boiler feed water, proper maintain of pH level, control of deposits, dissolved oxygen and carbon dioxide present in boiler feed water.

Carry-over: The third main problem is a contaminants carry-over from the boiler water to the steam system. Carry-over may be a mechanical effect and may cause by volatile of some boiling water salts such as sodium compounds. Carry-over can be solids, liquids or vaporous which leaves with steam from boilers. This is mainly due to foaming and priming which happen together. Foaming is a thick layer of bubble. Bubbles or foams build up on the top surface of the boiler water which does not break easily, goes with the generated steam into the plant. This is caused by high concentrations any solids in the boiler water, insufficient amount of steam space, by a sudden rush of steam such as is produced and when steam-stop valve is suddenly opened. Foaming tendencies are increased with increase in alkalinity and solid content. Carry-over can be deposited in non-return valves, control valves, in super heater can promote failure due to overheating and on turbine which can erode turbine parts. Oil and other organic contaminant can also cause to react with boiler water alkalinity to cause foaming. Foaming is associates with priming. When steam is generated rapidly in the boiler some small droplets of the water are carried along with the steam and called 'Wet Steam'. The process of formation of wet steam is called Priming. Priming also starts when water level rises due to foaming. Priming causes lower the energy efficiency of steam and causes the deposits on salt crystal on the super heater & turbines. Priming is caused by excessive rating or sudden fluctuations in the steam demand.

The most common measure to prevent carryover is to maintain the concentration of solids in the boiler water at reasonably low levels. It is also need to avoid high water level; excessive boiler loads & sudden load changes. There are three basic steps for keeping the above major problems under control.

1. External Treatment: The External treatment of water needs for make-up water, condensate or both before it pumps into the boiler to reduce or eliminate several types of impurities.

2. Internal Treatment: The Internal treatment of the boiler feed water, boiler water; condensate with corrective chemicals is done to control deposits & scales, corrosion, fouling and carryover.

3. Blow-down: Blow down is the removal of impurities from a boiler. To reduce the suspended solids & total dissolved solids (TDS) to acceptable limits, a portion of water from the boiler is blown down by a manual procedure for a few seconds on interval of several hours. Manual blow-down practice needs to follow specific valve sequences. Insufficient blow-down may carryover the boiler water into steam. Generally blow-down range from 4% to 8% of boiler feed water flow rate. The higher the blow-down and higher is the loss of water and energy. Too little blow-down is
dangerous and excessive blow down is costly in the form of waste water, heat, fuel & chemicals.

**Boiler Feed Water Control:** There are many parameter to control in boiler feed water and boiler water. The most important parameter to control in a boiler is pH and conductivity. Measurement can be done in boiler feed water, boiler water and condensate return. The maintaining of pH is closely related to alkalinity of water. It will help to maintain a passivation layer which protects the boiler from corrosion. Conductivity parameter saves energy. The higher the condensate recovery in a boiler cost of operation of boiler will be less. Any lack of conductivity control leads to operational problems like scales inside the boiler tubes. Mainly conductivity measurement is required to control the mineral levels in boiler through blow-down and condensate return.

**Role of Boiler Feed Tank:** The boiler feed tank plays an important role in the efficient and credible operation of any industrial services steam production. The feed tank acts as a reservoir of water for the boiler. The feed tank should be sized to provide at least one hour emergency boiler operation (low pressure) to cover the interruption of the boiler depending on the critically plant operation and condensate return by balancing the feed water requirement. Hot condensate heat the boiler feed water which leads less fuel to generate steam than cold water. Every 6 O°C rise in feed water temperature saves approximately one percent fuel energy. Sometimes operators are bound to pass raw water through feed water to boiler to meet the requirement in case of under capacity feed tank and less condensate return. Implementation of an effective feed water system helps to avoid corrosion damage in the boiler and condensate return system.

**Conclusions:** Many problems arises from the untreated water that cause boiler scales, deposits, corrosion, fouling and steam tubes failure, This leads to lower heat transfer, overheating, damage and frequent boiler cleaning with high cost of fuel consumption. A qualified water treatment specialist is invaluable to determine the best method of water quality in such a plant and site for water requirement of boiler. So, never use untreated water in any boiler in your plant.

**References:**
1. All you need to know about Boiler Water Treatment, e-book, a publication of Samco Technologies, SAMCO.
2. Experienced on water, feed water treatment and acid cleaning of high pressure boilers, KPMIL.
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In order to establish a production based factory profit motive, various factors are considerable to monitor systemic way to develop sustainability.

If Paper industry is taken into account, then it is to be defined that proper monitoring of factory different selective parameter are important and related to this, following steps should be taken:

1. Selection & purchase of Raw materials.
2. To monitor Availability of raw materials.
3. Schedule of paper grade production.
4. Unnecessary Electricity control.
5. Control on consumption of steam.
6. Control on maintenance.
7. Selection of the consumable item.
8. Control on paper machine break.
9. Control on fiber & Chemical loss.
10. Maximum use of ETP water.
11. To analyze Costing of the Product before Production.

Some of the points discussed below is in short as:

**SELECTION OF RAW MATERIALS**
The right selection of raw materials is a crucial issue in order to meet the desired properties requirement. Selection criteria for the raw materials chosen for a particular product should include features that are important in determining both its process performance and the properties of the finished goods. Raw materials (Ingredients, processing aids, and packaging materials) are the foundation of finished products. As such they must meet the specification.

**THE RIGHT PAPER WORK**
Certificate of analyses (COA) the certificate of analyses (COA) is the supplier’s test results on the specific lot being provided. Before requiring a COA, determining the key characteristics that can fluctuate, past concerns and the compliance to the specification is essential to the product or process. Meeting documentation should capture date, participants, the scope of the discussion, conclusions and potential action plans. A clear understanding of the material being purchased is vital for suppliers and customers alike. Materials that do not meet expectations can significantly reduce productivity, increase costs due to additional testing, rework or destruction and place product, company, customer at risk.

**SELECTION OF MATERIALS FOR ENGINEERING PURPOSE**
In manufacturing process selection of materials is an essential step to accomplish the reliable functionality of the machine. The selected material should satisfy both the availability as well as the function and many other factors. The most important factor is that the availability of the material sources. From the economical point of view, the material should be ready available in nature. So it is necessary to consider this factor as the major one in the selection of the materials for the engineering purpose. Regular preventive maintenance, scheduled work is needed to keep the supportive equipment operating efficiently and extending their useful life.

**Industrial Advantages:**
Operational availability
Break down & set up reduction
High safety
Cost reduction
Energy efficiency
High monitoring quality

**MACHINE CONTROL & PRODUCTION**
Digitization in the productive sector, is a radical change that is modifying the way of working in companies. The collection and analysis of data has the purpose of making the production process faster, with high level of quality of goods at a lower price.
PRODUCT PROFILE

Range of Products

- Afranil - Defoamer & Deaerator
- Tinopal- OBA
- Polymin SK- Retention Aid
- Basplast 8903- Surface sizing
- Percol-Retention & Drainage
- Catiofast- Fixing agent & Charge controller.
- Luredur- Dry Strength Resin
- Irgalite- Non-Ionic Pigment prepn.

NUR CHEMICALS AND ACCESSORIES

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In modern age the paper machine digitization brings lowering of cost of production and in brief are as:

**STOCK PREP CONTROL**
The pulp level in the chest is automatically control and an homogenous consistency, refining is attained which after wards gives a quality paper.

**CHEMICALS ADDITION**
The proper dosage controlled by synchronization of the speed of the machine and proper addition of chemicals by the computerized dosing pump. This favors the productivity by less loss due to undue paper break. This brings cost effectiveness.

**HEAD BOX CONTROL**
The most important control of the suspension of fiber in the head box having high velocity matches with the wire speed to bring a good formation of the paper is complex job. Various factor depend on which chemical addition before head box is vital. All over the fine tune control by the computerized technology for high speed machine is possible. The paper break is controlled which gives good cost effectiveness.

**WIRE PART RETENTION**
It is better to introduce online equipment's on wire to note the proper retention aid works, which gives good result and directly related to cost effectiveness.

**PRESS PART, DRYER PART, STEAM CONTROL & MOISTURE CONTROL**
All this part is controlled by the QCS where paper GSM, Moisture, Filler, color, caliper are well arranged. All the controls after all reduces the paper break and maintained uniform quality of the paper. This gives a potential reduction of cost of production.

**CONSUMPTION OF PERFORMANCE PAPER CHEMICALS**
The uses of some of the paper chemicals is not well understood and it is taken as an extra expenditure, few says not necessary. But in fact the R&D based on paper quality and machine run ability examines it that the chemicals brings quality paper and over all lowers cost of production.

If analysis be done then it will be noted the cost of the chemicals is recovered, in brief:

**ROLE OF FIXING AGENT**
Dyes & Color added in the chest is bonded with the fiber through the fixative and further much quantity of dyes is saved, other chemicals such as AKD consumption. Individual study shows that the cost of the chemical fixing agent brings more profit, if well stirred.

**CONSTANT SOLID CONTENT OF AKD**
Purchasing different standard quality of AKD happens deviation of paper sizing bringing undue loss, can be recovered maintaining quality control section to test, thus cost of the production can be minimized.

**RETENTION AID**
Most of the mill keep away using retention aid due to paper break, but if it is use with proper dosing then cost effectiveness comes from having retention of filler, fine fiber and drainage. All these factor if studied will give an idea of its benefits.

**DEFOAMER & ANTI FOAM DEARATOR AGENT**
These are the chemicals used for foam control & not to allow foam to be create. This chemicals are also related to cost of production such as, due to air present in the pulp causes more impact on power factor, secondly the pinholes hampered the formation, leads to paper break in high speed machine particularly when GSM is low. Counting the phenomenon it is well understood that it badly affects the cost of production.

**DRY STRENGTH RESIN**
Quality of the paper is to satisfy the ultimate consumer. For example If the strength of the paper falls beyond the specification that the printing machine causes break, Carton manufacturing suffers a lot by the buyer to satisfy and lots of other. This complains causes reduction in selling price of the product and can be control by adding Dry Strength Resin. Other chemicals such as OBA, Surface sizing, Starches, Filler, De-inking chemicals etc are very much closer to the need of the paper production. Over all if mathematics be done on chemicals expenditure the management will find that uses of the chemicals lowers the cost of paper production.

**PRACTICES IN SPARE PARTS MANAGEMENT**
Practical spare parts management is the foundation of reliable plant operation success. It reduces the cost while maintaining performance and efficiency of plant operation. Operating strategy, inventory control, leads lines are few of the factors consider when developing or reviewing spare parts management:-

Minimized production down time.
Cost reduction.
Reduce unnecessary buying.

In the light of above discussion which is still lightly touched to bring awareness among the Paper Machine Engineers to take the responsibility of Machine run by calculating loss & profit. This concept is to be focused, as is the right way to PROFIT.
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In Nov -2018, I have visited Henan, Shandong, Jiangxi, Guangdong province of China in a 14 days business visit. During this trip I have visited 10 big companies for paper machineries, Chemicals and spare parts. My agenda was to find leading, potential and proven manufacturer for promote in Bangladesh paper industry.

As this trip was my 3rd Time china visit, so I got visa easily. When I arrived Zhengzhou Airport, one supplier receive me from the Airport and brought me to the Hotel. In Henan I have seen Huafeng paper clothing factory. Their all 6 Texo machines are from Sweden, I have visited their lab for cloth testing as well Perlon (Germany) monofilament Raw material in the factory. Have seen the production process especially endless making, heating treatment of the dryer screen impressed me much.

In Shandong, I have seen making of the AKD Emulsion project from AKD Wax in the Greatland Factory and other raw materials. They show making of OBA, WSR, DSR, and Retention Aid in their well-equipped Factory. The factory has good production process and rich Laboratory for the quality test of the chemicals.

In Shanghai, I have seen the weld free slot type / bar type screen basket making in Yucheng Factory. They have very well taught technical person from ex Valmet as well as high tech CNC machines impress me much. I have seen some drilling factory / conventional hole type basket making factory in Shandong, but Yucheng is really advanced in making screen basket technology.

In Guangdong, I have seen the Haida testing machine making process by Big CNC machine. The laboratory for calibration of Brightness Tester, Tensile Tester, RCT, Burst Factor Testing machine etc. They have 100s of employee for overseas market from technical to commercial. Their performance is really impressive.

At last, I have visited Hangzhou for meeting with Huazhang technology, the Top rank EPC Company in China for paper making complete new project. They have Headbox Factory, Automation, and Stock preparation unit in different location of China.

During this trip, I have learned a lot about paper making technology and so much impressed with Chinese hospitality, culture and friendship.
# Feature Products

- Forming Fabrics / Wire
- Dryer Screen, Felt
- SS Wire / Thickener Net
- LDC Cone – Ceramic, SS
- Screen Basket
- Brightness Tester, BF Tester
- Refiner Disc – TDR / DDR
- Gearbox, Carrier Rope
- Chemical - DSR, WSR, OBA, Retention Aid, Defoamer.

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This new family of products is made with high modulus yarns resulting in a new base fabric providing significantly enhanced dimensional stability, and more resilience and durability over the width. Positions with a history of chronic width issues, due to operational constraints and/or roll dynamics, are ideal candidates for ProSeam technology.

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Nataša Iršič Bedenik finds that Valmet IQ provides the mill with a real competitive advantage.

Jože Rošker says that the systems are working well with no maintenance problems so far.

“With Valmet IQ, the biggest improvement was with the profiles,” says Janez Kocbek.
Quality in real time at Paloma tissue mill

December 2016 saw the successful start-up of a Valmet IQ quality management system (QMS) at the Paloma tissue mill in Slovenia. Replacing an aging quality control system on PM 6, this repeat QMS delivery followed the earlier start-up of a similar system on Paloma’s PM 5 in June 2016. The Valmet delivery included a traversing scanner, Valmet IQ measurements for basis weight and moisture, as well as machine direction controls.

TEXT Nigel Farrand

Located in Sladki Vrh, a rural settlement on banks of the Mura River in northeastern Slovenia, the Paloma tissue mill has a history of more than 140 years in the manufacture and marketing of paper products in Europe, and is now the market leader in tissue in South-East Europe. As part of a major modernization investment in 2016, the mill purchased a Valmet IQ quality information system with traversing scanner and machine direction controls for its 2.5-meter-wide PM 5.

According to Janez Kocbek, Senior Technology Engineer, operators earlier ran the machine blind with only laboratory measurements to guide them. “This was part of a bigger investment, including a new hood, heat recovery system, approach flow changes, new fan pump, and pressure screen. We achieved big savings in energy and increased production speed. With Valmet IQ, the biggest improvement was with the profiles, especially moisture, but the continuous basis weight profile is also essential for the operators to adjust the headbox slice screws.”

Easy decision for a second system

Facing end-of-life with an aging quality information system on PM 6, the mill put its experience with Valmet to good use.
“The biggest advantage is that we now see the quality in real time. This gives us the opportunity to optimize to improve productivity.”

“When we were buying for PM 5, we had proposals from four suppliers, and Valmet was the best. Aside from performance, the key concerns were the amount of space for the scanner, where none had been before, and of course money. Our experience with Valmet was very good; the installation went without problems, on schedule, and as planned. So the decision when we were replacing the system on PM 6 was a very easy and quick one. The Measurex system was 27 years old, and maintenance was getting expensive. Additionally, the radioactive source for the basis weight had already decayed to such an extent that measurement accuracy had suffered,” says Kocbek.

**Valmet IQ**
The latest delivery included moisture and basis weight measurements with multi-predictive machine direction controls, together with hood temperature and crepe ratio controls. Both machines have zone-controlled hoods for moisture profile control, with basis weight profile adjustments made manually at the headbox slice. The accurate scan averages and high-resolution profiles from Valmet IQ are supported with intuitive operator displays and reporting functions, together with on-line analysis tools for operators to identify the root causes of any process disturbances. Scanning speed, acceleration and deceleration rates can be adjusted and controlled to suit both CD and MD measurement requirements, with edge-to-edge scanning controlled by precise sheet edge detectors. For upsets including start-ups, paper web breaks, or grade changes, scan speed and scan width can be automatically adjusted to suit the situation.

**Excellent Valmet support**
Jože Rošker, Maintenance Manager, comments that, “With no earlier quality control system on PM 5, it was a steep learning curve. Training for PM 5 was extensive, and we made a special effort. Automation is a tool for us, and we need to use it properly. For PM 6, it was easier for the operators as they were used to the old system, and so the learning curve was shorter. We have never had any complaints about the operation of the system.”

Installation and start-up on the 5.2-meter-wide PM 6 were completed in December 2016, and both Kocbek and Rošker have nothing but praise for the support they got from Valmet: “The cooperation was optimal, and so far the systems are working well,” says Kocbek. “Its early days, but we haven’t had any maintenance problems so far,” adds Rošker with a smile.

**Quality in real time**
For Natasa Irič Bedenik, Head of Supply Chain at the mill, Valmet IQ provides the mill with a real competitive advantage. “The biggest advantage is that we now see the quality in real time. This gives us the opportunity to optimize to improve productivity. We have belief in the measurements, and with a lot more information, we are still learning. We have seen improvements, and I think there is room for more. Our quality is more stable, and we have less downtime in converting and no complaints. Valmet’s technology is impressive, both with the machines and automation.”

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**Paloma in a nutshell**
Paloma, higieniski papirji, d.d. is a public limited company with a more than 140-year history in the manufacture of paper products in Europe, and is the market leader for hygienic paper in South-East Europe. The company has four divisions and is predominantly export-focused. The annual capacity of 72,000 tonnes of hygienic paper is processed into toilet paper, kitchen towels, napkins, tissues, universal towels, industrial towels, medical towels, folded toilet paper packs, and toilet paper packaged in maxi rolls. The product range also includes parent reels and paper dispensers.
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11. Coating chemicals.

The Division’s R&D is approved by the Department of Science & Technology and collaborates with many scientific and academic institutes.

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Krofta India was started in 1983 as a joint venture collaboration with Dr Milos Krofta. He was the founder of Krofta globally and developer of the Dissolved Air Flotation Technology. We offer proven designs by incorporating DAF (Dissolved Air Flotation Technology) to handle waste water treatment systems for industrial as well as municipal applications.

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ANDRITZ successfully starts up turnkey tissue production line at Bashundhara Paper Mills

ANDRITZ has successfully started up the PrimeLineCOMPACT VI tissue production line – including stock preparation and automation system – delivered to Bashundhara Paper Mills Limited in Bangladesh.

Successful start-up of the ANDRITZ PrimeLineCOMPACT VI tissue production line at Bashundhara Paper Mills Limited in Bangladesh.

The ANDRITZ tissue machine – with a design speed of 2,100 m/min and a paper width of 2.85 m – produces tissue for high-quality facial wipes, toilet paper, and napkins. The 16 ft. PrimeDry Steel Yankee is made entirely of steel, thus enabling high and efficient drying performance, and was manufactured at the ANDRITZ Steel Yankee Business Center in Foshan, China, which offers customers in Asia state-of-the-art manufacturing, local field service, and comprehensive quality management. For ANDRITZ, it is the first high-speed tissue machine to be installed in Bangladesh.

The tissue production line is equipped with the ANDRITZ PrimeControl automation system for a high-performance production process. For the very first time, ANDRITZ has supplied a multi-motor drive (MMD) system with active line modules (ALM).

The ALMs are designed for feeding energy back into the grid as a renewable energy solution, they offer low line harmonics that meet the demands of IEEE 519, and they enable stable operation of the motor, even with irregular power supply systems. All the tissue machine MMDs are powered from a common DC-busbar as are the approach flow and the air ventilation systems at times. The ANDRITZ LV motors are installed from fiber preparation to the tissue machine auxiliary system.

The scope of supply also included the complete stock preparation plant with approach flow system, fiber recovery and broke handling. The system features the ANDRITZ ShortFlow concept, an overall and compact process design that significantly reduces the number of single machines and storage volumes. Market bales are dissolved in a fibre Solve FSV pulper, which enables efficient slushing without damaging the fibers. TwinFlo refiners ensure balanced and efficient operation as well as superior fiber properties. Fiber recovery is mainly handled by a RotoWash, which achieves low solids content in the effluent water. Two further pulpers from the FibreSolve product family are part of the broke system.

The successful start-up confirms ANDRITZ’s strong position as one of the global market leaders for supply of complete tissue production lines, key components, and services.
Neenah announces strategic distribution partnership with Sona Commercial LLC

(Alpharetta, Georgia – December 11, 2018)
Continuing its mission to be a leading global manufacturer of fine paper and packaging, Neenah, Inc. announces a new strategic distribution partnership with Sona Commercial LLC to distribute its products in the Middle East, Africa and Indian subcontinent.

Based in Dubai, Sona Commercial LLC is a decade old organization engaged in the marketing and distribution of fine papers. Sona Commercial LLC has always been the leader for bringing fine quality creative papers to the Middle East, Africa and Indian subcontinent, from the best paper mills across the globe.

“We are very pleased to announce Neenah’s partnership with Sona Commercial LLC,” said Robert DeLeon, Vice President, International Sales, Neenah, Inc. “Customers in these markets will now be able to access Neenah’s market leading brands through this highly regarded merchant.”

“Differentiation and innovation are key components for driving further growth in premium paper segments,” said DeLeon. “We chose Sona Commercial LLC because of their market knowledge and distribution capabilities as well as the consultative role they take with clients.”

With the rapid economic growth of these areas, the demand for fine papers in the Middle East, Africa and Indian subcontinent is also growing. “We took this opportunity to enhance our portfolio and capture a new arena that is complementary to what is currently available in the marketplace. We are excited about this partnership and believe that our customers will be excited as well,” said Vikrant Chhabra, Director, Sona Commercial LLC.

About Neenah, Inc.
For more than 100 years, Neenah, Inc. (NYSE: NP) has been the market leader in the creation and manufacturing of papers for premium writing, text, cover, digital, packaging and label applications. The Neenah signature portfolio includes market leading brands such as CLASSIC®, ENVIRONMENT®, and ROYAL SUNDANCE® Papers. The company also offers envelopes in thousands of unique colors, finishes and styles. Neenah Packaging provides unique and sustainable packaging papers, boards and labels as well as custom solutions for premium and luxury packaging. With multiple manufacturing facilities, prime importance is also placed on recycled and alternative fiber products through the Neenah Green initiative. For more information on Neenah call (800) 558-5061. Follow Neenah on Twitter: @ geenahpaper; subscribe to the Neenah Facebook page; or visit Against the Grain, Neenah’s blog for designers, printers and paper-lovers.

About Sona Commercial LLC
The desire and passion to provide premium range of fine papers to meet diverse creative needs, led to the inception of Sona Commercial LLC. With decades of experience in marketing and distribution of fine papers, Sona Commercial LLC has always been the leader for bringing fine quality creative paper from the best paper mills across the globe.

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Astron Paper & Board Mill Limited Commissions New Plant at Halvad, Morbi

The Company commenced commercial production of kraft paper on PM-2, located at Halvad (Morbi), Gujarat, and having installed capacity of 33000 tonnes/year.

Astron Paper & Board Mill Limited is currently operating at almost 90% capacity utilization of its PM-1, located at Halvad, Gujarat with installed capacity of 96,000 tonnes per annum. With the commencement of commercial production for the new line PM-2, the installed capacity has increased by 33,000 tonnes/Year.

In the last one year, the company has acquired two plants. The acquired plants include plant located at Bhuj, have capacity of 24,000 tonnes/Year, which was acquired by auction from Union Bank of India in December, 2017 and commenced commercial production in February, 2018. The company also acquired Balaram Papers Pvt Ltd, located at Mehsana, having installed capacity of 21,600 tonnes/year. As on date, the company is having installed capacity of 174,600 tonnes/year.

Astrom reported strong sales in the first 3 months of FY 19 at Rs. 81 Cr, up 60% YoY. For the full year FY 18, the company reported Rs. 254 Cr, up 37% over FY 17. EBITDA for first 3 months of FY 19 has been Rs. 11 Cr, 61% YoY on the back of better efficiencies and higher volumes.

Mondi to Invest EUR 340 Million in New 300,000 Tonne Kraft Top White Machine in Slovakia

The start-up is expected towards the end of 2020. The machine will produce a new and unique environmentally sound containerboard grade, kraft top white.

Having recently obtained the necessary permitting, Mondi is proceeding with the investment in a new 300,000 tonne per annum Kraft top white machine at Ruzomberok (Slovakia), with start-up expected towards the end of 2020.

Commenting on the project, Mondi Group CEO Peter Oswald said, “This investment provides an exciting opportunity for Mondi to leverage our cost advantaged mill in Slovakia to complement our portfolio and serve a growing market with innovative and sustainable containerboard solutions.”

The machine will produce a new and unique environmentally sound containerboard grade, kraft top white, which combines the strength, printability and appearance benefits of a white virgin fibre top layer with the economic advantages of a recycled fibre bottom layer. Its access to integrated bleached hardwood pulp production, scale and location benefits due to its brownfield nature will provide this machine a cost advantage difficult to replicate.

The total project cost has been revised to EUR 340 Million (up from EUR 310 million), as result of refinements to the machine’s technical concept and higher construction costs since the project was initially scoped.

Kraft top white will target the growing white top liner markets for applications such as shelfready packaging, point of sale displays, customised packaging, e-commerce, consumer durables and other specialised applications.
The related pulp mill upgrade at the same site is progressing according to plan with start-up expected in late 2019. This upgrade will debottleneck pulp production by 100,000 tonnes per annum, which will be integrated into the containerboard production once the new machine ramps up.

The total project cost has been revised to EUR 340 million (up from EUR 310 million), as a result of refinements to the machine’s technical concept and higher construction costs since the project was initially scoped. Group capital expenditure continues to be in line with our previous estimate of EUR 700-800 million per annum in 2018 and 2019.

Rubber Trees, a Potential Source of Raw Material for Pulp and Paper Industry?

*Fibre length is an important criterion for pulp and paper production. This necessitates different breeding approach if the objective is pulp and paper production from the rubber tree.*

More than seven lakh hectares is under rubber tree plantation in India. Currently, rubber growers are facing difficult times with decline in rubber prices, reduced returns and high labour costs. New developments in rubber science can help farmers overcome these problems to a certain extent.

Recently, scientists from the rubber research institute of India, Kottayam have taken initial steps towards breeding dual purpose rubber clones. They have studied wood properties variation and heritability of 11 progenies obtained from crossing superior latex yielding rubber clones which are cultivated on a large scale.

The wood characteristics like fibre length, fibre diameter, lumen diameter and thickness of fibre wall determine structural, physical and chemical properties of wood. So information on their genetic control and heritability becomes vital in planning tree improvement programmes.

Based on the results of this study, scientists have concluded that there is a positive genetic relationship between rubber tree growth traits and fibre diameter as well as fibre wall thickness.

Therefore, Selection for good growth vigour could lead to improved fibre traits. However, they also state that fibre length was negatively correlated to tree growth. Hence, it may not be possible to simultaneously attain vigorous growth and longer fibres, researchers have reported in the study published in journal tree Genetics & Genomes.

Fibre length, however, is an important criterion for pulp and paper production. This necessitates different breeding approach if the objective is pulp and paper production from the rubber tree. “If not as a sole source, fast growing rubber clones can be a potential source for pulp and paper industry, which has not been exploited so far,” explained Dr Narayanan.

Chaendaekattu, who led the research study. In order to use rubber wood for paper and pulp, there is a need to sort out latex depositing issue on the pulp. This might need an interdisciplinary research.

Based on this study and other existing information, scientists are confident they can manipulate wood traits suited to for pulp and paper production. “As factors like flexibility coefficient and the Runkel ratio in rubber wood have good heritable nature, we can definitely work on it. This would require a dedicated long-term breeding programme, which we have already initiated at our institute,” he added.

In addition, the conventional method of developing clones through hybridization and selection in rubber trees is a long-term programme. “We expect stable and consistent results in the long run and there is no short-cut,” said Dr Chaendaekattu. This research highlights the significance of tree breeding programmes for improving productivity and it also necessitates the need for understanding the basics before initiating tree breeding projects aimed at increasing productivity. (Excerpts from an article ‘Breeding dual purpose rubber trees’ in the Hindu Business Line).
Paper Board Packaging Market Size Likely to Surpass USD 240 Billion by 2024: Report

The segment will grow at an exponential CAGR of over 8.5 percent from 2017 to 2024.

Considering products, the paperboard packaging market is bifurcated into containerboard and boxboard. The manufacturing process of containerboard is done on modified paper machines as they have the ability to handle superior grammages.

Boxboard segment is additionally bifurcated as white lined chipboards solid bleached boards, solid unbleached boards and folding boxboards. The white lined chipboard segment will surpass USD 30 billion by 2024.

Considering application, paperboard packaging market is segmented into medical, no-durable goods, durable goods, food & beverages and others. The others segment includes machineries and industriala goods. Development in food & beverage industry, and increasing packed food consumption will positively influence the paperboard packaging market. It is one of the fastest growing segment and will exhibit growth with CAGR of over 8 percent in the forecast spell.

Paperboard packaging market is classified on the basis of region where Asia Pacific held a significant share in 2016 and is set to surpass USD 175 billion by the end of the forecast period. Rising industrial activities and developing cosmetic, electronic paperboarded packaging market demand. Europe market will exhibit growth at a decent rate in the predicted period due to the developed market in this region paired with the supportive governmental norms.

China is one of the leading packaged food manufacturer with huge bakery, processed food, sauces, dressings, and baby food production. In 2016, China packaged food market was valued over USD 275 billion and is poised to grow at a significant rate in the forecast period. Increasing consumption of such packaged food & beverages by consumers in the emerging countries due to rapidky changing lifestyles will positively influence the paperboard packaging industry in coming years.

Nippon Paper to Sell Its Interests in Daishowa-Marubeni International

Nippon and DNAC have agreed to sell their 50% interest in Daishowa-Marubeni International Ltd. ("DMI"), to Mercer International Inc.

Nippon Paper Industries Co., Ltd. and Daishowa North America Corporation ("DNAC"), a wholly owned subsidiary of the company, announced that they have agreed to sell their 50% interest in Daishowa-Marubeni International Ltd. ("DMI"), to Mercer International Inc.

In 1969, Nippon Paper Industries and Marubeni Corporation established DMI as a joint venture in British Columbia, Canada, in order to produce and sell market pulp, which is used globally as raw material for paper products. DMI operates through two mills in British Columbia and Alberta and sells pulp globally. Since the fifth medium-term business plan (2015-2017), Nippon Paper Industries has been conducting a strategic review of its assets and as a result, Nippon paper Industries has decided to sell its interests in DMI.

Nippon Paper Industries Co., Ltd. is one of the top 10 pulp and paper companies in the world. Founded in 1949, the company owns more than 160 group companies and 180 thousand hectares of private forestlands.
Ahlstrom-Munksjo Acquires Caieiras Specialty Paper Mill in Brazil

EUR 98 million acquisition significantly strengthens Ahlstrom-Munksjo’s offering in South America and provides further growth opportunities.

Ahlstrom-Munksjo has completed the acquisition of MD Papéis Caieiras Specialty paper mill in Brazil for a debt free purchase price of about EUR 98 million. The acquisition significantly strengthens Ahlstrom-Munksjo offering in South America and provides further growth opportunities.

The acquired business had net sales of about EUR 76 million and comparable EBITDA of EUR 12 million in 2017. Annual synergy benefits of up to EUR 6 million are estimated, mainly arising from optimization of overlapping businesses. The agreement was announced on April 24, 2018.

The Caieiras product offering is an excellent match for Ahlstrom-Munksjo with 80% of sales being in line with the company’s current portfolio. The plant gives access to local production of decor paper, thus strengthening Ahlstrom-Munksjo’s offering and partnership with existing customers, who have so far relied on imports.

Ahlstrom-Munksjo is already a global leader in tape materials, serving both local and global customers and this position is further strengthened through the acquisition. In addition, production and delivery capabilities as well as competitiveness are improved by combining Caieiras with the company’s operation in nearby Jacarei.

Daniele Borlatto, EVP of Industrial Solutions Business Area, comments: “The Caieiras business is an excellent addition to our global platform, and drives our ambition to maintain a leading position in selected niches of the global fiber-based solutions market that offers growth. Our existing as well as new specialty paper customers will benefit from a stronger offering coupled with our well-established excellent customer service.

“This transaction is another significant milestone in the execution of our strategy. I welcome the Caieiras employees to Ahlstrom-Munksjo.”

Ahlstrom-Munksjo operates three plants near Sao Paolo, employing over 700 people with revenues of approximately of EUR 200 million following the acquisition.

ND Paper Plans an Investment of USD 300 Million US operations

The company plans to build two Greenfield recycled pulp plants to support global fibre strategy.

ND paper plans to build two Greenfield recycled pulp plants to support global fibre strategy. The company will invest USD 300m into its newly acquired US mills in Biron, Wisconsin and Rumford, Maine in the next two years. ND Paper, the newly formed U.S based subsidiary of Nine Dragons Paper Holding Ltd. that has mills in Rumford and Biron, Wisconsin, is the largest containerboard producer in Asia.

In June 2018, Nine Dragons acquired Catalyst's US mills Biron and Rumford for a total transaction price of USD 175m. Immediately after completing the purchase, ND Paper launched a strategic review of investment options and developed an investment strategy that diversifies the US mills’ product mix and increases their overall production capacity.

In June 2018 Nine Dragons acquired Catalyst's US mills Biron and Rumford for a total transaction price of USD 175m. Immediately after completing the purchase, ND paper launched a strategic review of investment options.
The Rumford Division will receive an injection of USD 111m to finance two significant projects: 1) construction of a greenfield recycled pulp facility with a capacity of 1,200 air dried metric tonnes per day (admtpd), and 2) installation of a shoe press on the R15 paper machine to increase the machine’s production capacity by approximately 20 percent.

The mill currently has a capacity to manufacture 550,000tpy of coated mechanical and woodfree paper on 3 PMs. Furthermore, the facility can produce 120,000 tpy of hard-and softwood pulp. As a result of the investments announced, the number of staff at the mill will go up from currently 650 to 700 in the next two years.

At the Biron Division, ND Paper will invest USD 189m in several projects such as conversion of the B25 paper machine form LWC to containerboard; construction of a two-line greenfield recycled pulp facility with a capacity of 1,900 air dried metric tonnes per day (admtpd); and construction of water treatment and fibre recovery plant, a package boiler to provide energy, storage facilities for raw materials and a finished good warehouse.

These measures will create 27 new jobs, bringing the total staff number at the site to 377. The Biron mill currently has a capacity to produce 340,000 tonnes a year of LWC on two PMs.

Smurfit Kappa Breaks Ground for New Recovery Boiler at Nettingsdorf Paper Mill

As part of EUR 134 million investment plan, the new recovery boiler will increase the profitability and sustainability of the mill.

Global packaging company Smurfit Kappa has marked the beginning of the rebuild of recovery boiler with a ground-breaking ceremony, which was the latest milestone in Smurfit Kappa's Future Energy Plant project, was presided over by the Governor of Upper Austria and Mayor of Ansfelden.

The new recovery boiler will increase the profitability and sustainability of the mill and is part of a EUR 134 million investment in Nettingsdorf. The boiler will enable the plant to further boost energy optimisation at the mill, which has already seen a 34 percent increase in productivity since becoming part of Smurfit Kappa in 1995. By recovering energy from the biomass contained in black liquor from pulp production, the new boiler is set to cut CO2 emissions by 40,000 tonnes, which equates to about two-thirds of the current emissions at the site, and 1.5 percent of those form the whole Smurfit Kappa Group.

Over the next to years, the Future Energy Plant project will also involve developing a new steam turbine, as well as several extensions and adjustments to upstream and downstream plants.

Honeywell To Transform Austrian Sappi Plant Into One of the World’s Most Modern Paper Mills

Honeywell will implement a range of upgrades that include server virtualization, process visualization and cybersecurity solutions.

Honeywell technology will be used to transform one of Europe’s oldest paper mills into one of the world's most modern under a EUR 30 million project being implemented by Sappi Austria Produktions-GmbH & Co., KG, to upgrade its paper mill in Gratkorn, Austria.

The mill where paper has been made for more than four centuries makes 980,000 tons of high-quality, multicoated
paper per year for publications around the world. Honeywell will implement a range of upgrades that include server virtualization, process visualization and cybersecurity solutions. These new systems will increase product quality while cutting production costs.

In 2015, Honeywell upgraded the site’s flagship PM 11 paper machine to its Experion PMD automation system, creating one of the most advanced coated fine paper production lines in the world.

The new project will include integrating an Experion Virtualized Solution platform to allow centralized, remote monitoring of the mill’s operations; four Experion PMD automation systems to control processes, machinery and drives; and four Experion MX Quality Control Systems for use with quality sensors. Additional solutions include two ProCoat CD actuator systems that will help reduce the paper web’s cross-direction variation as it is being made, and

Start-up of Voith’s Two XcelLine Packaging Paper Machines for Sun Paper Set Record

Two XcelLine paper machines PM 36 PM 37 successfully started up in record time at Zoucheng site of Sun Paper.

In the past months, two XcelLine paper machines PM 36 and PM 37 successfully started up at Zoucheng site of Honghe Paper, subsidiary of China’s leading paper making group Sun Paper. The Start-up of PM 37 has set up a new record: it only took two hours from Stock on Wire to paper on Reel.

The two paper machines PM 36 and PM37 started up in the past two months and both machines are fully meeting Sun Paper’s expectations. PM 36 produces low-grammage high grade testliner and PM 37 produces high-quality corrugating medium. Both machines have an annual production capacity of 400,000 metric tons. Together with the already running Voith XcelLine packaging paper machines PM 31 and PM 32, Honghe Paper will achieve an overall annual production capacity of 1.6 million tons.

It is of great challenge to complete the installation and commissioning of two paper machines in such a tight time period. However, with the professionalism and high level of commitment, the project team has ensured the success of the project. Voith has carried its extensive competence and expertise in paper machines to achieve excellent machine performance.

The long-term partnership with Sun Paper also laid a strong foundation for mutual trust and cooperation. By now, Sun Paper has contracted with Voith for in total nine paper machines. The repeat purchase of this high amount set up a new milestone in paper machinery sales.
Stora Enso and Gasum to Make Renewable Energy From Wastewater in Sweden

The plant, built and operated by Gasum, will turn the mill’s wastewater effluent into renewable energy.

Stora Enso and energy company Gasum have signed a contract to build a biogas plant at Stora Enso’s Nymolla Paper mill in Sweden. The plant, built and operated by Gasum, will turn the mill’s wastewater effluent into renewable energy.

Gasum plans to upgrade the Biogas into Liquefied Biogas (LBG) and sell it as fuel for cars, buses, trucks, and ferries. The expected LBG production of the plant is 75-90 GWh per year, equivalent to the amount of fuel needed annually for more than 200 average long haul lorries in Sweden. Production is expected to start during 2020.

The total investment of the project for Gasum is around EUR 27 million and for Stora Enso around EUR 5 million. Gasum has been granted an investment subsidy of SEK 121.5 million (EUR 12.7 million) by the Swedish Environmental protection agency under the Climate Leap (‘klimatkvit’) programme.

Oceanwood Takes Over Norwegian Press Paper Maker Norske Skog

The adjusted net purchase price for 100 percent of the shares in Norske Skog AS amounts to approximately EUR 236m.

Oceanwood Capital Management Limited has completed the acquisition of 100 percent of Norske Skog AS. The acquisition of the Norwegian press paper manufacturer is carried out by the Norwegian press paper manufacturer is carried out by Oceanwood Special Situations Malta Limited, a wholly owned subsidiary of Oceanwood Opportunities Master Fund, and its 100 percent owned special purpose vehicle NS Norway Holding AS.

The adjusted net purchase price for 100 percent of the shares in Norske Skog AS amounts to approximately EUR 236m of which EUR 231m is expected to be distributed to the holders of the EUR 290m senior secured notes due 2019 (SSNs) and the lenders under the EUR 16m liquidity facility (Liquidity Facility) shortly after closing, the company announced.

Norske Skog is a leading producer of publication paper with strong market positions in Europe and Australasia. Europe and the only manufacturer in Australia and New Zealand.

Norske Skog owns seven profitable paper mills, strategically located near attractive markets. Total paper production capacity is 2.7 million tons, of which 1.8 million tons are newsprint and 0.9 million tons are magazine paper (super calandered lightweight coated).
Catalyst Paper to Sell Its Mills to Paper Excellence

*Paper Excellence has close to two million tonnes of pulp production capacity at five Canadian mills and two in France.*

British Columbia-based Catalyst Paper Corp. has reached an agreement to sell its operations to Paper Excellence Canada of Richmond, B.C. Catalyst CEO Ned Dwyer says when the transaction is complete it will benefit customers, employees, suppliers, communities where it operates and B.C.’s pulp, paper and forest products industries.

Details of the transaction have not been released, but it will need the approval of the B.C. Supreme Court and at least two-thirds of Catalyst shareholders in a vote at a special meeting.

The B.C. government says the purchase secures the livelihoods of about 1,500 provincial forest workers at Catalyst paper facilities in Crofton, Port Alberni and Powell River.

Paper Excellence has close to two million tonnes of pulp production capacity at five Canadian mills and two in France. In August, the United States issued a final decision on antidumping and countervailing duties totalling 20.26 per cent on Catalyst’s printing and writing grade paper exports, and Dwyer says those duties were punitive and without merit.

---

Mondi to Discontinue Production of Industrial Bags in Zeltweg

*According to Mondi, this possible restructuring affects only industrial bags production and has no impact on the other two business segments at the site.*

Around 100 jobs might be cut at Mondi’s Austrian site in Zeltweg. The company is examining the possibility to close industrial bags production and focus only on coatings and films.

The Mondi Group intends to focus on the production of coatings and films at its site in Zeltweg, Austria. The company reported that talk had been started with the local works council to discuss the proposal to discontinue the production of industrial bags in Zeltweg at the end of 2018. According to Mondi, around 100 of the 400 employees at the site might be affected by the measure.

According to Mondi, this possible restructuring affects only industrial bags production and has no impact on the other two business segments at the site.
Valmet Supplied Pulp Line Successfully Starts Up at SCA’s Ostrand Mill in Sweden

The expansion project doubled the Ostrand mill’s production capacity from 430,000 tonnes to 900,000 tonnes per year of bleached softwood kraft pulp.

Valmet announced that a new pulp production line it supplied to SCA’s Ostrand mill in Timra, Sweden successfully started up at the end of June. SCA invested SEK 7.8 billion in the pulp mill expansion project making it one of the largest industrial investments in Sweden to date.

The expansion project doubled the Ostrand mill’s production capacity from 430,000 tonnes to 900,000 tonnes per year of bleached softwood Kraft Pulp.

“The expansion and expansion of Ostrand pulp mill is one of the greatest industrial investments in northern Sweden ever. In spite of complexities such as building a twice as big pulp mill in a running mill, we started up the plant on schedule and budget.” said Ingela Ekebro, Project Director, SCA.

The project was implemented in phases, and the new evaporation plant was started up some months before the cooking and fiber line. Very soon after the start-up, pulp was produced with high strength, purity and brightness.

In the next phase, production will be ramped up gradually towards the new nominal production capacity.


Today’s high quality papers require a highly technical and accurate manufacturing process. New pulp however, is an integral part of the paper making process: paper cannot be recycled indefinitely because the fibres lose their paper making qualities.

The infographic below details the paper making process and illustrates the extensive use of paper for recycling.

Paper as we know it traces its roots back to China at the beginning of the first millennium AD. Traditional Chinese records give the credit for its development to one Tsai Lun (about 105AD). He was subsequently deified as the god of papermakers! The craft of papermaking spread throughout the world and remained a relatively small-scale, artisan activity until paper production became industrialised during the 19th century. Originally intended purely for writing and printing purposes, a dazzling array of paper products are available to today’s consumer.

Information by: Confederation of European Paper Industries
SICER Enter into Bangladesh Market

SICER, a famous Ceramic Dewatering elements and LDC Cone manufacturer (Since 1958) expand its business in Bangladesh through Paptech. SICER is the largest production factory in China. SICER has complete product quality control from German raw material to the finish products with modern high tech equipment. SICER has tied up with PAPTECH for their local support in Bangladesh paper industry.

PAPTECH and HUAFENG FABRICS has done Long term Cooperation Contract for Bangladesh Market

Henan Huafeng Fabrics Ltd, a leading and reputed paper machine forming fabrics and Dryer Screen manufacturer from Henan, China (Since 1996) has signed an agreement with PAPTECH for expand their market in Bangladesh. Huafeng will provide all necessary technical support to the paper mills while keeping best quality assurance.

Paptech will promote Huafeng brand and give local techno commercial support.

Bangladesh Pulp & Paper Directory 2019

will be published during 4th Papertech Expo 2019

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শিল্প উদ্যোক্তাদের জন্য সুখবর
আপনি কি শিল্প স্থাপন করার কথা ভাবছেন? আমরা আপনাকে সম্পূর্ণ সহযোগীতা দিতে প্রস্তুত

প্রোজেক্টসমূহ:
1. আন্তর্জাতিক মানের পেপার মিল।
2. এক্সপোর্ট স্ট্যান্ডার্ড প্যাকেজিং ইন্ডাস্ট্রি।
3. পরিবেশ বান্ধব নন-ওভেন ফেলিক্স ইন্ডাস্ট্রি।
4. ইন্ডাস্ট্রিয়াল ETP প্ল্যাং।

শিল্প উদ্যোক্তাদের জন্য সুখবর
আমাদের সার্ভিসসমূহ:
* দেশী বিদেশী ইন্ডিয়ানর সহযোগীতায় মেশিন স্থাপন ও পরীক্ষা মূলক উৎপাদন।
* প্রোজেক্ট প্রোফাইল প্রণয়নে সহায়তা।
* বিশ্লেষ্ট সার্বিক সেবা।
* প্রোজেক্ট বাণিজ্যের কনসালটিং।
* প্রোজেক্ট স্থাপনের পূর্বে মেশিনারী পরিদর্শনে পূর্ন সহযোগীতা প্রদান।

ফরিদ প্রোডাক্টস
মাহাত্মা সেন্টার (১৬ তলা), ১৭৭, শহীদ সৈয়দ নজরুল ইসলাম স্মৃতি, বিজয়নগর ঢাকা-১০০০। ফোনঃ ৯৪৫৩৩০, ১৭১৫২৫৪৬৩৪, ০১৭১০৮৬৮৫৯৫, ০১৬৭৯৭০৭৪৩০ ৭৭/১, পুরানা পল্টন লাইন, ঢাকা-১০০০। ফোনঃ ০১৬১১০০০১১২
Email: faridproducts@yahoo.com, Web: www.faridproducts.com
Nano science in Pulp and Paper

Nanocellulose is the world’s most abundant natural polymer and has crystalline properties that allow colored films to be produced without pigments. Nanocellulose also have a very high elastic modulus which makes it extremely stiff 10 times the high tensile strength of a steel and a thermal expansion 100 times lower than steel.

A number of applications based on nanotechnology have been around for several years. The implications of nanotechnology for the paper industry range from wet-end chemistry, fabrics, and roll cover materials to adhesives as well as pigments. Advanced membrane technology has applications in raw and wastewater treatment. Other techniques are under way to provide better means of improving air quality. Nanotechnology can also assist in small scale designing and tailoring sensors for process control as well as product development and quality. Furthermore, non-destructive product testing could benefit from nanotechnology.

The concept of zero-effluent discharge mills appears to become a possibility because of innovative nanofiltration and membrane technologies. Paper Machinery manufacturers have started producing paper machine rolls and fabrics with a micro and a nano base. Online quality measurements using micro sensors are becoming almost common now for production of paper with consistent quality. Nanocoating process has already been adopted by many paper mills, producing paper of very high quality. The latest concept of pulp mill as a biorefinery has opened up new avenues for the pulp and paper mills to become a profitable industry.

The benefits of nanotechnology are potentially revolutionary in nature. At the very least, a leap in the evolution of today’s products as well as manufacturing fundamentals can be expected. With funding from both governments and venture capitalists, the innovation process will accelerate.

Currently, the paper industry is the largest user of nanotechnology of all industries. As nanotechnology is very multidisciplinary, there is a need to share knowledge, tools, techniques, as well as expertise on atomic and molecular interactions. Materials scientists, mechanical and electrical engineers, and medical researchers work together with biologists, physicists and chemists.
4th PaperTech Expo 2019

11 12 13 April 2019

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<tr>
<th>Product</th>
<th>Brand Name</th>
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<tbody>
<tr>
<td>AKD</td>
<td>Trinax ~S /LP</td>
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<tr>
<td>Retention Aid</td>
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<tr>
<td>Fixing Agent</td>
<td>RIL Fix /LP</td>
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<td>De-inking</td>
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<td>Surface Sizing</td>
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<td>WSR</td>
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<td>DSR</td>
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<td>Felt Cleaner</td>
<td>RIL 302</td>
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<tr>
<td>Stickies Control</td>
<td>RIL 500 &amp; ST</td>
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www.adhesionbd.com
Air Supply & Hoods in a Modern High Speed Paper Machine

Installation of an efficient hood has become utmost necessary in modern high speed paper machines in order to get a quality product & also for reduction of cost of production by reducing steam consumption.

Ventilation:
In a Paper Machine, the sheet enters the Dryer section at 65-72% moisture level at a temperature of 15 to 35 degree celcius & leaves the Dryer section at a moisture level of 5-8% at a temperature of 80 -85 degree celcius. As a thumb rule, 2 Tons of water is evaporated for each Ton of paper produced in the Dryer section. The above process will obviously make the paper brittle & of poor quality & hence not advisable. To solve this problem, vapours taken out in dryer section must be removed immediately & to make the same possible, adequate amount of warm fresh air must be supplied to replace the moisture laden air that was removed from paper.

For removing the above stated 2 tons of water evaporated from 1 ton of finished paper, about 50 – 60 tons of warm air is required.

The necessity of hood or the canopy equipped with facility for supply of warm air & an exhaust fan has thus become so important for a modern paper machine.

Essential features of Hood
These are closed chambers covering the dryers from top & sides.

Quantity of warm air pumped in the hood should be optimum. Too less air will result in slow drying, while too much air will have loss of heat & contribute to non-uniform drying.

Moisture laden air is collected & taken out from the top portion of the hood where the exhaust fan is provided.

Design should ensure that some amount of air keeps circulating in top portion, otherwise there will be condensation which will at some point of time drop on paper web.

Hood should have:
  a. adequate size to collect the water vapour.  
  b. Sufficient exhaust outlets at proper locations, 
  c. minimum interference with operating team, 
  d. easy access for servicing team, 
  e. material of construction should be moisture proof, fire proof & rot proof, 
  f. adequately strong & of decent appearance.

Types of Hoods:
1. Open type: Built of aluminium panels on a steel structure supported from machine frame & located about 6 ft out from the end of the dryers & bottom edges end 7 ft above from the floor. 
2. Closed type: Sides extend to the floor of the house & there are sliding shutters, which can be lifted up.

Exhaust requirements:
Depend on the type of hood.

Good open type hood
  a. Exhaust based on about 17 grain pick-up by 1 cu ft of air.
Feature

b. Water is evaporated at the wet end i.e. at the wire, pits, headbox, presses etc – picked up by the room air & exhausted through hood fans. Allowance is approx 15 % of dryer evaporation.

c. Improved moisture profile
In open type hood, room air over dries edges of the sheet with a wet centre. This phenomenon can be avoided in case of closed hood configuration.

d. Improved machine efficiency
Fewer breaks of paper in the dryer section due to more stable air flow conditions inside the hood & over the dryers.

e. Improved working conditions
Hot & humid air spreading in the room is eliminated.

f. Wet end ventilation
Approx. 10% of the water evaporated comes from the wet end, especially from the wire & wire-pit. Much of this vapour can be exhausted if panels are placed around the wire table enclosing the wire pit.
Returning wire will set up an air current in the enclosure towards the headbox.
Closed headboxes & closed screens of selectifier type also eliminate evaporation.

Advantages of Closed Type Hoods

a. Much reduced exhaust & supply volumes of air – in open air, approx 27 kg of dry air is exhausted for each kg of water evaporated. While in closed hood, only 14 kg of dry air is exhausted for each kg of water evaporated. Thus, exhaust & supply both reduce to about 50 % & hence smaller fans, smaller ducts & less H.P. is required.

b. Reduced steam consumption & pressure
0.2 Kg. of steam per kg of water evaporated is reduced.
<table>
<thead>
<tr>
<th>EVENT</th>
<th>MONTH/DATE</th>
<th>LOCATION</th>
<th>ORGANISERS/CONTACT</th>
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<tr>
<td>Paperworld 2019</td>
<td>26th - 29th</td>
<td>Frankfurt, Germany</td>
<td>Messe Frankfurt GmbH Tel: +49 69 75 75-0 Fax: +49 69 75 75-64 33 E-mail: <a href="mailto:paperworld@messefrankfurt.com">paperworld@messefrankfurt.com</a> Web: paperworld.messefrankfurt.com</td>
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<td>January 2019</td>
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<td>Paper One Show 2019</td>
<td>28th - 30th</td>
<td>Biel Centre</td>
<td>Barbaros Blvd. Cihanunuma Mah. Yildiz Apt. No.8-4 Besiktas – Istanbul / TURKEY Phone: +90 212 227 5174 Fax: +90 212 227 5174 Email: <a href="mailto:info@paperoneshow.net">info@paperoneshow.net</a></td>
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<td>Beirut, LEBANON</td>
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<td>Printing South China</td>
<td>4th - 6th</td>
<td>China Import and Export Fair, Pazhou, Guangzhou, China</td>
<td>Ms. Ivy Chui / Ms. Belinda Leung (852) 2516 3383 / 3523 (852) 2516 5024 E-mail: <a href="mailto:printpack.hk@adsale.com.hk">printpack.hk@adsale.com.hk</a> <a href="http://www.printingsouthchina.com">www.printingsouthchina.com</a></td>
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<td>Tissue World Milan 2019</td>
<td>25th - 27th</td>
<td>Fieramilano City Hall 3 Milan, Italy</td>
<td>UBM Exhibition Singapore Pte Ltd. Address: 10 Kallang Avenue, #09-16 Aperia Tower 2 Singapore 339510 Tel: +65 6233 6688 E-mail: <a href="mailto:info@tissueworld.com">info@tissueworld.com</a> <a href="http://www.tissueworld.com/milan">www.tissueworld.com/milan</a></td>
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<td>Papertech Expo 2019</td>
<td>11th - 13th</td>
<td>International Convention City Bashundhara (ICCB) Dhaka, Bangladesh</td>
<td>House #1, Flat # 5B, Road # 21, Nikunja-02 Khilkhet, Dhaka-1229, Bangladesh Mobile: +88 01711997820 Email: <a href="mailto:papertechexpo@gmail.com">papertechexpo@gmail.com</a> Web: <a href="http://www.papertech-expo.com">www.papertech-expo.com</a></td>
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<td>Paperex 2019</td>
<td>3rd - 6th</td>
<td>Pragati Maidan New Delhi, India</td>
<td>International Trade and Exhibitions India Pvt. Ltd. (CIN no. U24090DL2004PTC124343) Delhi Office B1001- 1014, 10th Floor, Statesman House Building 29, Barakhamba Road, New Delhi 110 001, INDIA Tel: +91-11-66295700, Fax No: +91-11-66295780 Email: <a href="mailto:ed@ite.in">ed@ite.in</a> Web: <a href="http://www.ite.in">www.ite.in</a>, <a href="http://www.ite-exhibitions.com">www.ite-exhibitions.com</a></td>
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<td>December 2019</td>
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For Paper
- Cationic Modified Tapioca Starch (for wet-end apply)
- Oxidized Modified Tapioca Starch (for sizepress apply)
- Dual Modified Tapioca Starch (for spraying between paper web layer)
- Dry Strength Agent (for internal fiber bonding)
- Ply Bonding Agent (for spraying between paper web layer)
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The Valmet IQ quality management solution for the pulp and paper industry is a comprehensive product family that helps you to reach your process and end product quality goals. Our products, applications and services cover all your needs, from replacement of individual equipment to building a full quality management solution. Each Valmet IQ solution is always based on our extensive industry knowhow and designed to move your performance forward. Read more: valmet.com/iq

For details, please contact: Pravin Tripathi, pravin.tripathi@valmet.com
With the best compliments of the following brands and products belonging to us

**Products Name**

1. Art Card
2. Art Paper
3. Folding Box Board (FBB) / Swedish Board
4. Brief Card / Solid Card
5. Duplex Board Grey Back/White Back
6. Virgin Kraft Liner, Semi Virgin Liner, White Top Kraft Liner
7. Medium Paper
8. Self Adhesive Sticker Paper
9. Tissue Paper
10. Writing & Printing Paper
11. PVC Rigid Sheet, A-PET Sheet
12. BOPP Film
13. PET Film
14. M-PET
15. MCPP
16. Thinner
17. PULP (a) Soft Wood (b) Hard Wood
18. Petrochemical
   - a. HDPE resin
   - b. LDPE resin
   - c. LLDPE resin
   - d. PP resin
   - e. PVC resin
   - f. HIPS
   - g. GPPS

"Your Trusted Indenting House"

[Logos and company names of various brands]
Actual example of a state of the art roll grinder which meets all requirements of today’s modern paper mills

**Technical data**
- Machine bed length: 16.000mm
- Maximum length of roll: 11.000mm
- Maximum barrel length: 9.000mm
- Maximum roll diameter: 2.000mm
- Maximum roll weight: 50 to
- Measurement device: stationary
- Type: CP Calliper
- Measuring range: 200 - 2.000mm
- Head stock motor: 63kW

**Accuracies (roll)**
- Roundness (TIR): 2μm
- Crowning Profile: ± 0,002mm
- Cylindricity: 0,002mm/m
- Surface Roughness [Ra]: 0,02μm

sba maintains close contact to leading paper machine producers as well as roll cover producers to keep up with improvements. sba’s strategy always keepsend users requirement in mind and all our effort focusses on understanding and meeting actual requirements by providing customized solutions.

The operational highlights of our machine design are:

<table>
<thead>
<tr>
<th>Easy handling</th>
<th>Low maintenance effort</th>
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<tbody>
<tr>
<td>Self-explaining Software with intuitive GUI</td>
<td>Minimum of risky points</td>
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<tr>
<td>Open System for independent maintenance handling in automation</td>
<td>safety concept design according actual European Standards</td>
</tr>
<tr>
<td>Reliable measuring procedure “in-process”</td>
<td>Flexible machine design</td>
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<tr>
<td></td>
<td>- head stock adjustable in Z- and X-direction</td>
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<td></td>
<td>- adjustable base plates for grinding rolls in own bearings</td>
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<tr>
<td></td>
<td>- easy use of accessories (e.g. cc-roll drive)</td>
</tr>
<tr>
<td></td>
<td>Easy implementation of additional equipment</td>
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