
Paperbase Alerting Service Sample

Stock preparation

00001

PI: 20200549 JA: 0201

TI: An examination of low consistency refiner recirculation systems

AU: Josephson W; Albert K; Shelomis D

CI: Fundamentals and numerical modeling of unit operations in the forest products industries. 1999 AIChE forest products symposium, edited by Brogdon B N, Severtson S J, Walker C C, pp 88-93 <AIChE Symposium Series vol. 96, no. 324, New York, NY, USA: American Institute of Chemical Engineers, 2000, 105pp, FIM774.00 (ISBN 0816908273)> (K, S)

CT: CONFERENCE/ LOW CONSISTENCY/ RECYCLING/ REFINER/ REFINING/
SIMULATION MODEL/ STOCK PREPARATION/

CN: American Institute of Chemical Engineers

AB: Most paper mills use low consistency refiners in their stock preparation system and the proper operation of these refiners is critical. Many of these low consistency refiner systems include a recirculation pipeline which helps to disconnect the refiner operation from variations in paper machine demand, making for more stable processing conditions. In this work, several aspects of refiner recirculation systems were modelled using a dynamic simulator (SIMULINK 3 running in the MATLAB 5.3 environment) and field data. The case studies presented include a comparison of refining systems with and without recirculation during startup and shutdown. Analysis was also performed of incorrectly applied recirculation operations. The benefits of a properly designed recirculation system are shown and quantified, including easier startups and shutdowns resulting in minimisation of off-specification product. (14 fig, 3 ref)

SO: B

00002

PI: 20200550 JA: 0201

TI: Modeling particle size separation in centrifugal cleaners with Aspen Plus

AU: Vough A E; Parker P E

CI: Fundamentals and numerical modeling of unit operations in the forest products industries. 1999 AIChE forest products symposium, edited by Brogdon B N, Severtson S J, Walker C C, pp 94-99 <AIChE Symposium Series vol. 96, no. 324, New York, NY, USA: American Institute of Chemical Engineers, 2000, 105pp, FIM774.00 (ISBN 0816908273)> (K, S)

CT: CENTRIFUGAL CLEANING/ CONFERENCE/ HYDROCYCLONE/ MODELLING/ PARTICLE SIZE/ SEPARATION/

CN: American Institute of Chemical Engineers

AB: Aspen Plus simulation software was used as a predictive tool in order to determine the particle size distributions of cleaner system flows. The software has many existing models, including a hydrocyclone model, which can be used to rate of size hydrocyclones, as well as being capable of predicting the particle size distribution of the solids in the accept and reject streams. The simulation, or rating, mode of the hydrocyclone model was used, which utilises equipment specifications to determine output flows given the input streams. The trial was divided into two phases; the first of which was operation of the hydrocyclone with a sand and water mixture. The second phase was operated with 100% hardwood market pulp. Simulated results were verified with pilot plant data. (8 fig, 6 tab, 10 ref)

SO: B

00003

PI: 20200551 JA: 0201

TI: Simulation of flocculation in flowing fiber suspensions

AU: Schmid C F; Switzer L H; Klingenberg D J

CI: Fundamentals and numerical modeling of unit operations in the forest products industries. 1999 AIChE forest products symposium, edited by Brogdon B N, Severtson S J, Walker C C, pp 100-104 <AIChE Symposium Series vol. 96, no. 324, New York, NY, USA: American Institute of Chemical Engineers, 2000, 105pp, FIM774.00 (ISBN 0816908273)> (K, S)

CT: CONFERENCE/ FIBRE SUSPENSION/ FLOC/ FLOCCULATION/ SIMULATION MODEL/

CN: American Institute of Chemical Engineers

AB: A particle-level simulation technique was developed to probe flocculation. Fibres were modelled as chains of rigid rods connected by hinges, which can interact in various ways. Equations governing the motion of a model fibre were derived from force and torque balances on each rod in a chain, with the constraint that the chain contour length is constant and additional constraints imposed on the motion of contacting fibres interacting through static friction. Simulations revealed that flocculation can be induced solely by mechanical fibre features and that attractive forces between particles are not necessary. Floc cohesiveness was linked to elastic energy storage in the fibres, while flocs formed by attractive forces do not exhibit strong elastic energy storage and behave qualitatively differently than flocs formed by interfibre friction. The simulations presented demonstrate that friction is the driving force for flocculation for certain types of flexible fibres. (9 fig, 19 ref)

SO: B

00004

PI: 20200945 JA: 0201

TI: Mainline refiner control boosts quality, energy efficiency at Abitibi-Consolidated

AU: Strand B C; Fralic G; Quinn H

JN: Pulp Pap. \$IS=0033-4081

CI: vol. 75, no. 6, June 2001, pp 51-53 (C, K, P, S)

CT: COMPANY INFORMATION/ CONTROL SYSTEM/ CROSS DIRECTION/ INFORMATION TECHNOLOGY/ PICEA ABIES/ REFINING/

CN: Abitibi-Consolidated

AB: The introduction of advanced information technology (IT) by Abitibi-Consolidated Inc, US, at its pulp mill in Stephenville, Newfoundland, Canada, has played an important role in maintaining the company's already high reputation for high quality newsprint. The IT forms the basis for an advanced process monitoring and control system designed to control the major pulp mill unit operations of mainline refiners, reject refiners, and screens, to achieve and maintain the desired freeness and fibre length targets, and to continuously analyse the resulting paper quality to determine the optimum freeness and fibre length targets. Graphical data shows the success with which the control system and underlying predictive model have coordinated all mainline refiners using a single model predictive controller (MPC) significantly reducing shutdowns due to excessive power usage, allowed the mill to use an additional 2MW of its purchased power while reducing refiner trips, demonstrated significant improvement in the sheet uniformity as measured by porosity, and shown a significant reduction in shive levels. (5 fig)

SO: B

00005

PI: 20201345 JA: 0201

TI: OptiFiner: approach to the conical dispersion and refining of recycled fiber

AU: Kankaanpaa V; Soini P

JN: Fiber Pap. \$IS=1457-1234

CI: vol. 3, no. 3, 2001, pp 42-45 (C, K, P, S)

CT: DISPERSING/ PULP PROPERTIES/ PULP QUALITY/ RECLAIMED FIBRE/ REFINING/ STOCK PREPARATION/

AB: The OptiFiner concept from Metso Paper is aimed at developing key fibre properties. The focus is on deflaking, refining and dispersion sub processes of stock preparation. A study has examined results from the treatment of old corrugated containers (OCC) and old newspaper/magazine grades (ONP/OMG). The OptiFiner concept incorporates conical dispersion and low consistency (LC) refining in the same line. Investment costs of the dispersion process are considerably higher than that of the refining process, however, significantly improved recycled fibre qualities are obtained by combining conical dispersion and LC refining stages in same line. Conical dispersion offers a large processing area and low energy intensity followed by gentle fibre treatment. Large amounts of water in LC refining act as lubricants in processing and the entire treatment is conducted in fluidised phase. Freeness reduction with LC refiner is higher than with the high consistency disperser. The tensile index of OCC pulp also developed better with the low consistency refiner with regard to refining energy. Combining dispersion and refining stages in the same line means all fibre potential can be utilised to best end product quality. (9 fig, 1 tab)

SO: B

00006

PI: 20201481 JA: 0201

TI: Alternatives to improve eucalypt kraft pulp refining

AU: Demuner B J

CI: 7th Brazilian symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, oral presentations, pp 311-312 <Vicosa, Brazil: Federal University of Vicosa, 2001, 2 vols, 870pp> (K)

CT: CONFERENCE/ EUCALYPTUS/ KRAFT PULP/ REFINING/ UPGRADING/

CN: Federal University of Vicosa; Society for Forestry Investigation

AB: The primary objective of pulp refining is increased paper strength with minimum energy consumption. Generally a gentle impact is associated with swelling of the cell wall and a fibrillation of the external surface of the fibre. More severe impacts are thought to produce splitting of the wall. Research studies have shown that pulps respond much better to a larger number of gentle impacts, rather than a reduced amount of high intensity ones and this is much more evident for eucalypt pulps. To improve eucalypt pulp refining, alternatives need to be developed to reach reduced values of specific edge load and specific energy per impact. Among these alternatives are: fine plate patterns to increase cutting length, reducing specific edge load; refiner with multi zones, allowing higher cutting length, lower no-load and lower net energy consumption with lesser capital investment; disk refiner with a dispersing unit to allow the refining of individual fibres with very fine plate pattern and narrow gap; adequate cutting angles to increase cutting length and fibre fibrillation; stock consistency as high as possible; active diameter reduction to reduce no-load; and, separate refining system for the eucalypt pulps and softwood components. (1 tab, 10 ref)

SO: B

00007

PI: 20201803 JA: 0201

TI: Stock preparation: the key to ensure the productivity of newsprint and SC paper machines

AU: Selder H

JN: Twogether \$IS=

CI: no. 12, July 2001, pp 7-11 (C, K, P, S)

CT: NEWSPRINT/ OLD NEWSPAPER/ ONP/ SC PAPER/ SCREEN/ STICKIES/ STOCK PREPARATION/ SUPERCALENDERED PAPER/ WASTE PAPER/

AB: The rate of utilisation of recovered paper in the Federal Republic of Germany is presently 62% and is expected to increase, leading to a further reduction in virgin fibre usage. To ensure the runnability and availability of high-speed newsprint and supercalendered (SC) paper machines, the level of detrimental substances must be controlled. These substances are combated most efficiently in the stock preparation systems. Changes in the deinking furnish composition have an influence on the deinkability and the DIP quality. These include inserts on SC or lightweight coated (LWC) papers printed with heat set drying, changes in the paper grades used for magazines, increasing proportions of magazines in the furnish, increased ash content in papers, and increasing amounts of hotmelts and glues in the furnish. Macrostickies are best removed by screening whilst control of microstickies is effected by flotation and microflotation. The carry over of detrimental substances to the paper machine must be kept as low as possible, so that high concentrations of detrimental substances in paper machine cir-

cuits can be avoided and consequently, deposits and contaminations of felts and screens can be eliminated. (12 fig)
SO: B

00008

PI: 20201804 JA: 0201

TI: EcoMizer: a new cleaner concept establishes itself

AU: Mannes W

JN: Twogether \$IS=

CI: no. 12, July 2001, pp 12-15 (C, K, P, S)

CT: CLEANER/ DESIGN/ NEW EQUIPMENT/ NEW TECHNOLOGY/

CN: Voith Paper

AB: EcoMizer is a new cleaner concept from Voith, derived from the fact that the basic flow pattern in the hydrocyclone cannot be influenced. The decisive idea was to replace the thickened reject stock in the central return flow in the lower cone by a clean filtrate or white water added from the outside. Dirt is therefore prevented from being sucked upwards once again, and the injected filtrate will mix in the cone with the surrounding suspension, so that the stock consistency of the surrounding suspension will also be decreased. With the EcoMizer concept, addition of the filtrate is distributed over a comparatively large volume, therefore it can be dosed better than precious concepts. Also, addition of filtrate is started in the centre of the cleaner and from there continuous outwards. The energy demand for adding the filtrate is considerably lower than when it is carried out via the cone wall. The EcoMizer concept can decrease the stock consistencies in the reject outlet area without any negative effect on separation efficiency. (5 fig)

SO: B

00009

PI: 20201863 JA: 0201

TI: An effective method to produce high quality fiber fines

AU: Peterson D

JN: Prog. Pap. Recycling \$IS=1061-1452

CI: vol. 10, no. 3, May 2001, pp 18-24 (C, K, P, S)

CT: COMPARISON/ FINES/ KRAFT PULP/ MECHANICAL PROPERTIES/ OCC/ OLD CORRUGATED CONTAINER/

AB: An effective technique for producing a large quantity of high quality fines that can be used for increasing the strength properties of old corrugated container (OCC) pulp is reviewed. Fines concentrations as high as 95% can be manufactured effectively by intensive refining of pulp in a PFI mill and the process is considerably more efficient than the conventional process of classification followed by sedimentation. Comparison was performed of the properties of these fines made at different refining levels, with the classified OCC fines and classified virgin pulp fines. The experimental results demonstrate that the quality of manufactured virgin fines is slightly better than classified virgin fines and considerably better than classified OCC fines in improving the mechanical strength properties of handsheets. (7 fig, 1 tab, 16 ref)

SO: B

00010

PI: 20202287 JA: 0202

TI: Effects of some process variables on screen fractionator performance

AU: Wakelin R F; Paul S T

JN: Appita \$IS=0003-6765

CI: vol. 54, no. 4, July 2001, pp 357-363 (C, K, P, S)

CT: EFFICIENCY/ FIBRE LENGTH DISTRIBUTION/ FRACTIONATION/ MECHANICAL PULPING/ PARAMETER/ SCREENING/

AB: Between 1994-1997 fractionation trials were carried out on the PAPRO Fibre Processing Facility, at Forest Research, Rotorua, New Zealand. The trials used pressurised refined mechanical Pinus radiata pulp produced on a Jylhavaara SD 52/26in 1250kW refiner. Separate experiments were done using slabwood (sawmill residue of mature wood), and thinnings (14y old juvenile wood, of wood densities 460 and 350kg/cu m). Two Ahlstrom F1 Moduscreen pressure screens were used, with batch screening in secondary and tertiary stages. The variables introduced were long fibre content, inlet concentration, stock temperature, volume reject rate, aperture velocity, rotor speed, and surface contour. More long fibres were retained as the aperture diameter was reduced. An increase in stock concentration can lower long fibre retention. The reject thickening and retention of long fibres was not affected much by large changes in the crowding factor. Usually higher temperatures gave lower reject thickening and retention of long fibres. Change in temperature affected the influence of the rotor on performance for smooth-contoured surfaces; as the temperature rose, the effect increased. (13 fig, 2 tab, 19 ref)

SO: B

00011

PI: 20202289 JA: 0202

TI: Operational parameters in screw press dewatering

AU: Xu J Q; Duffy G G

JN: Appita \$IS=0003-6765

CI: vol. 54, no. 4, July 2001, pp 369-375 (C, K, P, S)

CT: DESIGN/ KRAFT PULP/ LABORATORY TESTER/ PARAMETER/ PINUS RADIATA/ SCREW PRESS/ STOCK PREPARATION/ THICKENING/ WATER REMOVAL/

AB: A laboratory screw press consisting of a tank, pump, magnetic flowmeter, and a small screw press (with its own gearbox, drive, and motor) was used to study the dewatering of a bleached Pinus radiata kraft pulp in several conditions. The parameters which were varied were: screw press rotational speed, 27-71rpm; pulp suspension inlet stock, concentration 1.68-3.50%; feed pressure 0.4-6.8kPa; outlet stock concentration 14-23%; dewatering efficiency, 78.0-92.4%. It seemed that as the screw speed and feed pressure increased, the feed flow rate for the tested pulps rose. The flow resistance in the screw channel also affected the feed flow rate. When the stock concentration reached 10%, over 70% of the water had been removed. The effect of the feed pressure is less significant than the effect of the screw speed. Other types of pulp, at different feed stock concentrations need to be tested for both feed pressure and screw speed to find the optimum conditions. (20 fig, 13 ref)

SO: B

00012

PI: 20202360 JA: 0202

TI: Energy savings with ceramic refiner fillings running at low rotational speed

AU: Caucau G; Garnier Y; Tessier P

JN: Rev. ATIP \$IS=0750-7666

CI: vol. 54, no. 2, Apr.-June 2000, pp 51-56 (C, K, P, S)

CT: CERAMICS/ COMPARISON/ ENERGY CONSUMPTION/ PULP PROPERTIES/
REFINER DISC/ REFINING/ STEEL/

AB: A comparative study was carried out in order to quantify the benefits of ceramic over conventional chrome-nickel steel refiner plate fillings on pulp quality and energy consumption. Three different pulps (100% Canadian pine kraft pulp, 100% Eucalyptus pulp and a 50/50% Canadian pine kraft pulp and Eucalyptus pulp) were refined at low consistency in a pilot plant refiner, at two different rotational speeds and with different plate patterns and filling materials. Multivariate statistical analysis was used to provide an unbiased judgement as to the benefits of ceramic plates over conventional refiner plates. The results showed that ceramic plates provide better fibre development, higher pulp strength and significant refining energy savings. Also, lower rotational speed can be used with ceramic plates without any significant increase in fibre cutting. The refiner plate ceramic filling provides a unique opportunity for paper makers to drastically reduce their energy consumption without compromising quality of pulp. The savings generated should increase profitability and therefore market advantage. (5 fig, 1 tab, 4 ref)

SO: B

00013

PI: 20202411 JA: 0202

TI: Approach flow system of packaging paper and board machines

AU: Fladenhofer A

JN: Wochenbl. Papierfabr. \$IS=0043-7131

CI: vol. 129, no. 17, mid Sept. 2001, pp 1102-1105 (C, K, P, S)

CT: APPROACH FLOW SYSTEM/ BOARD MACHINE/ CLEANER/ DEAERATOR/
DEGASSER/ MIXER/ PAPER MACHINE/ SCREEN/ WET END/

AB: Voith Paper Fiber Systems' Wet End Process (WEP) redesigns the wet end components of a paper machine to improve process stability and paper quality and to reduce investment and running costs for high speed machines. The ComMix replaces traditional chests to enhance process stability while reducing volume by more than 50%. The HydroMix provides efficient mixing of fresh stock and screen water with up to 80% volume reduction. The new conical EcoMizer Cleaner improves cleaning efficiency independent of stock properties with 30% lower investment costs. The VoithVac stock deaerator minimises machine direction profile variations caused by pulsation on machines running at more than 1,000m/min. The Voith Paper Multi Screen ensures even flow through the sieve with little fractionation and no deposit formation. The CyclonAir removes air entrained into screen water in the forming section of fast running packaging paper machines. (10 fig)

SO: B

00014

PI: 20203168 JA: 0202

TI: Effect on screening performance with different screen cylinder aperture design

AU: Weckroth R; Grundstrom K J

JN: TAPPSA J. \$IS=1029-0109

CI: July 2001, pp 17-20 (C, P)

CT: CONTAMINANT REMOVAL/ EFFICIENCY/ PERFORMANCE/ PRESSURE
SCREEN/ SCREENING/ SLOT SCREEN/ THICKENING/

AB: A milled slot screen plate, and a wire slot one were compared at STFI's pilot plant to compare their efficiency in removing shives. Both had the same profile height, and a slot width of 0.15mm. The percentage of open area for the milled slot screen was 3.94%, and for the wire one, 4.48%. A PSV 2100 Hooper screen was used, and the feed volume flow was 2,500litre/min. Unscreened thermomechanical spruce pulp was run at 0.8-1.8 consistency for milled slots, and 0.8-2.8 for the wire screen. The results of sampling showed that the wire screen resulted in higher capacity than milled cylinders of the same slot size. For smaller shives, less than 150micron, the milled screen is more efficient, but for sizes over 150micron their performance was equal. (6 fig, 2 tab, 4 ref)

SO: B

00015

PI: 20203170 JA: 0202

TI: Low intensity refining of hardwood and deinked pulps with a new type of filling in a double disc refiner

AU: Sigl R; Bergfeld D

JN: TAPPSA J. \$IS=1029-0109

CI: July 2001, pp 24-29 (C, P)

CT: DEINKED PULP/ DOUBLE DISC REFINER/ ENERGY CONSUMPTION/ EUCA-
LYPTUS/ HARDWOOD PULP/ PULP PROPERTIES/ REFINER DISC/ REFINING/
SPECIFIC EDGE LOAD/ TROPICAL TREE/

AB: Low intensity refining trials were done at Voith Sulzer Stock Preparation's Research and Technology Centre in Ravensburg, Germany. A 7cu m pulper, two chests of 9cu m, and a Voith Sulzer's TwinFlo E double disc refiner were used. The stock consistency was 4%-5% with flow rates ranging from 360-2,100litre/min. Pulps tested were Scandinavian bleached birch and Portuguese eucalyptus; Indonesian mixed tropical hardwood; and deinked pulp, 50% old newspapers, and 50% old magazines. Testing was focused on comparing: 40 deg and 60 deg cutting widths; 2mm and 3mm bar widths; and the effect of different specific edge loads. To achieve optimum strength and optical properties, low specific refining energy, and increased refiner efficiency, the optimum conditions are: 40 deg cutting angle, for eucalyptus and birch, and 60 deg for mixed tropical hardwood and deinked pulp. A specific edge load of less than 1.0J/m, and fine bars (high cutting edge length) are more efficient for all pulps. (17 fig, 1 tab, 9 ref)

SO: B

00016

PI: 20203968 JA: 0203

TI: Screening: state of the art and future: to understand mechanisms and innovations better in order to improve quality and increase productivity

AU: Julien Saint Amand F

CI: 54th ATIP Annual meeting "Water, energy, waste: issues of the paper industry", Grenoble, France, 9-11 Oct. 2001, session 5, 26pp <Paris, France: Association Technique de l'Industrie Papetiere, 2001, 461pp, 3 vols, FRF1000.00> (C)

CT: CONFERENCE/ DESIGN/ EFFICIENCY/ HYDRODYNAMICS/ MODELLING/ PARTICLE/ ROTOR/ SCREEN/ SCREEN PLATE/ SCREENING/ SEPARATION/ SLOT SCREEN/ STICKIES/

CN: ATIP

AB: A probabilistic approach to the separation of particles having at least one dimension smaller than the slot width can be used to develop a model for screening. Transport and mixing in the upstream macro-flow is largely determined by the rotor. Particle separation results from the micro-flow conditions at the screen plate. As the slot width and passing velocity were increased on an experimental pressure screen increased, the pulp passage ratio increases and the cleanliness efficiency was reduced. The screening selectivity was unaffected. Compared to a foil rotor, a blade rotor improved the passage of fibres and reduced the cleanliness of the accept pulp, whilst there was a lower influence of passing velocity. Consistency has a major effect on screening capacity and costs. Under normal conditions a vortex is created at the slot inlet on profiles screening plates with fine slots. The fibre passage ratio is a function of the ratio slot velocity:velocity at screen surface. Wedge wire screen plates allow smaller slots to be used compared to Microvortex plates. Reduction of the profile height reduced the passage ration but increased pulp cleanliness. The screening efficiency is most influenced by contaminant size and shape distribution. (19 fig, 1 tab, 71 ref)

SO: B

00017

PI: 20204096 JA: 0203

TI: Mechanisms of rosin sizing in the neutral papermaking (III)

AU: Inaoka K; Iwasa S; Nakata T

CI: 2001 (68th) Pulp and paper research conference, Tokyo, Japan, 18-19 June 2001, pp 50-53, <Tokyo, Japan: Japan TAPPI, 2001, 180pp> (P)

CT: ALUMINIUM POTASSIUM SULPHATE/ CONFERENCE/ RETENTION/ ROSIN/ SCANNING ELECTRON MICROSCOPY/ SEM/ SIZING/

CN: Japan TAPPI

AB: As a retention aid under acid conditions, alum offers adequate sizing performance with increased pH values of paper stocks and the retention of dispersed rosin size can be very low at decreased sizing levels. Although cationic retention agents could ensure sufficient retention of dispersed rosin size, the sizing performance of paper proved to be very low when alum was not used, indicating that adequate size quantity is not the only factor relating to size development. When monitoring the distribution of dispersed rosin size on the paper sheets using scanning electron microscopy (SEM), alum addition proved to be an important factor in the fixing mechanism of dispersed rosin size in the wet end with large areas on the pulp fibre surface covered with a small quantity of size components and higher degrees of sizing ensuing. This depended upon the type of cationic polymer added as a retention aid with alum in alkaline paper production. While effective in sizing performance, the type of modified rosin in the dispersed rosin size had little effect in size retention with neutral papermaking conditions. Retention of size and distribution of dispersed rosin size and the relationship between dispersed rosin size and alum were critical for successful rosin sizing performance. (5 fig, 1 tab, 4 ref)

SO: B

00018

PI: 20204701 JA: 0203

TI: Recent developments in papermachine headbox screening

AU: Weckroth R

JN: Pap. Puu \$IS=0031-1243

CI: vol. 83, no. 6, 13 Sept. 2001, pp 462-465, 467 (C, K, P, S)

CT: APPROACH FLOW SYSTEM/ CASE STUDY/ HEADBOX/ SCREEN CYLINDER/ SCREENING/ SLOT SCREEN/ THEORY/

AB: Headbox screens provide a last line of defence against contaminants, and must therefore have a high degree of reliability, must not introduce strings and must not produce excessive pressure pulsations. This paper discusses some aspects of the theory behind the screening process, reviews recent developments in headbox screen design and presents two mill case studies which demonstrate the performance and reliability of this technology. The CAE MacroFlow is representative of the state-of-the-art in screen cylinder design, using a revolutionary new method for the manufacture of a constructed bar/wire cylinder. The technology combines the benefits of the wire cylinders with a strong mechanical design, and does not use any type of welding to support the screening wires on the bar supports. This results in excellent slot tolerances and smooth surfaces. (6 fig, 12 ref)

SO: B

00019

PI: 20205339 JA: 0203

TI: On the refining mechanism (Extended Abstract)

AU: Law K-N

JN: Solutions!

CI: Jan. 2002, p. 86 (C, K, P, S)

CT: CHIP/ MECHANISM/ REFINING/ THERMOMECHANICAL PULP/ TMP/

AB: The mechanism of chip refining was studied through microscopic examinations of fibre aggregates collected within a refiner and at the refiner discharge. A Sunds Defibrator CD300 pilot unit was used to produce a thermomechanical pulp from black spruce chips. The morphological and structural characteristics of the aggregates of the thermomechanical pulp indicated a preferential radial orientation of fibres and a rolling mode refining. The orientation of fibres in the refiner is controlled by both centrifugal and shear forces. The centrifugal force combined with the steam flow in the refiner is believed to be the prevailing factor. It is also believed that the shear action aligns the fibres in immediate contact with the bar surface in the direction of rotation. The aggregates had a relatively tightly held structure, implying that refining efficiency would be poor and fibre cutting extensive because the refining stresses concentrate on the outer elements of the aggregates. (23 fig, 4 ref) (Full text available from Tappi only)

SO: B

00020

PI: 20205374 JA: 0203

TI: Stock preparation. Part 1: pulp treatment processes

AU: Roux J-C

CI: The science of papermaking, 12th Fundamental research symposium, Oxford, UK, 17-21 Sept. 2001, vol. 1, pp 19-80 <Bury, UK: The Pulp and Paper Fundamental Research Society, 2001, 2 vols, 1482pp> (C, K, P, S)

CT: BEATING/ CONFERENCE/ DISINTEGRATION/ DISPERSING/ KINETICS/
PULPER/ REFINING/ REPULPING/ REVIEW/ STOCK PREPARATION/ THEORY/ UNIT
OPERATION/

AB: Stock preparation encompasses repulping, refining and hot dispersing processes. Process engineering covers unit operations aimed at altering or upgrading fibrous raw material plus contraries such as inks and various contaminants. Repulping, disintegration, refining or beating, hot dispersing and mixing are all included. Pulp disintegration is an area where substantial energy savings could be achieved. New approaches such as a planetary mixer are available to contend with the concept of apparent pulp viscosity with regard to rheology. The planetary mixer has so far been used as a pulper on a laboratory scale and defibreing is based on the application of heavy impact forces uniformly distributed between impeller and tank wall. Disintegration of 100% ONP at consistency 20% is achieved compared to 9% using a conventional helical pulper. Hot dispersion has recently found applications in recycling wax and hot melt glues in OCC. High speed dispersers and low speed kneaders have been proposed as ways to improve ink detachment before post flotation. Dispersers also have important role as mixers and reactors for bleaching chemicals. Predictions for the future include the use of chemicals in the kneader for microbiological decontamination. (27 fig, 5 tab, 65 ref)

SO: B