

# Technical Article Series

## Vibrating screen separators in the pulp and paper industry.

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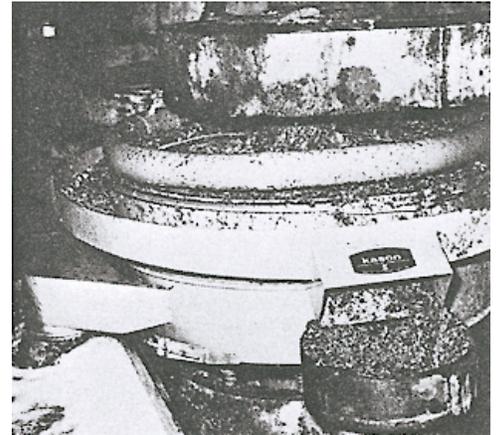
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# Vibrating Screen Separators in the Pulp and Paper Industry

*There was a time when the pulp and paper industry thought of circular screen separators only in relation to the clarification of size and coatings. But those days are gone forever! The pulp and paper industry is now one of the largest users of vibrating screen separators. Here is a brief review of the major applications.*



*Kason barker effluent clarifier with floating surge dam for efficient dewatering and screening.*

## A. WOOD PREPARATION

### 1. Hydraulic Barkers:

Kason's are used to clarify and remove suspended solids from recirculated water that could cause serious damage to very high pressure (1000 psi or more) pumps used in this barking process. Screens from 24-46 mesh are employed and capacities up to 750 GPM are reported. Removal of bark fines and other material also reduces solids build-up in log ponds.

### 2. Barking Drums:

Effluent from scraper conveyors is normally high in bark solids because it is impractical to use inclined stationary screens with openings smaller than 3/8". This effluent can pass to Kason's operating in a secondary clarifying position with screens as fine as 100 mesh. Kleen Screen rings must be used to eliminate blinding and capacity will be up to 400 GPM depending upon the nature of the bark solids. Water-driven logs having high pitch content will lead to serious screen blinding problems even on coarse screens, e.g. 10 mesh. Kason's are less expensive to install and operate than rotary screens and result in much cleaner effluent. Secondary screening of bark effluent can result in:

- a) Significant stream pollution reduction --effluent averages 0.015% consistency.
- b) Eliminating annual dredging.
- c) Sale of fine bark collected as furnish in the manufacture of board and cheap wrapping papers, such as car liner.

### 3. Bark By-Products:

The Kason has been effectively used in bark by-product processing. One company, for example uses a two-deck 72" Kason closed circuit with a briquetting press.

## B. COOKING LIQUOR

### 1. Clarification of Waste Sulphite Liquor:

A Kason with 100 mesh screen will remove approximately 70% of suspended solids present in waste sulphite liquor and a 48" diameter unit will handle approximately 250 GPM. Screening will reduce stream pollution, and where exchangers are used to recover heat, it will reduce down time for cleaning (particularly on plate-type exchangers) .

### 2. Clarification of Black Liquor Prior to Evaporation:

Kason's with 80 mesh screens remove fiber carried over from washers and definitely improve evaporator operation. The quantity of fiber to be removed is very small and capacities of approximately 400 GPM are possible on a 48" diameter unit. Feeding the screen under gravity conditions does require the installation of a surge tank and an extra pump in the system.

### 3. Secondary Classification, Slaked Lime:

Kraft mill causticizing plants normally employ a continuous lime slaker that incorporates a classification and washing section for grit. Fine grit and agglomerates of slaked lime may remain

suspended and pass on to the causticizer. A Kason with an 80 mesh screen will clarify slaker output at approximately 150 GPM reducing abrasion on valves and pumps.

## C. TREATMENT OF PULP AND FIBER RECOVERY

### 1. Knotting:

Kason's are competitive with conventional knotter screens for chemical pulp. The application is recommended for sulphite stock and a 48" diameter unit will handle 75 tons or more per 24 hours. The industry is moving towards pressure screens for sulphate or soda stock and this type of screen offers many known advantages.

### 2. Reject Dewatering:

A very large number of units are installed on dewatering rejects to produce regulated, high consistency feed for refiners. A 48" diameter unit will handle up to 20 tons per day accepting feed from 0.5 to 1.0% and discharging rejects at 6 to 12% consistency. 20 mesh screens are most frequently employed and white water losses are negligible. Rejects are being thickened in ground wood, sulphite, high yield sulphite and kraft mills. Light weight and small space requirement combine to allow for simple installation and rejects are normally gravity fed directly to the refiner.

Higher consistency can be obtained than that possible from rotary type drainers, deckers, inclined screens or perforated bottom drag conveyors, and installed cost is usually less. In high yield sulphite plants Kason's dewater centrifugal screen rejects and allow for separate refining rather than mixing with partially refined stock on interstage vacuum washers.

Cyclone rejects are dewatered by Kason's where they can be used in board or other lower grade products.

### 3. Shower Water Clarification:

Paper machine economizer water picks up fibre and cannot be used on felt showers because of its tendency to block nozzles. Screening at approximately 80 mesh will allow use of this hot water for showers and a 48" diameter Kason will handle approximately 550 GPM.

## D. CLARIFICATION OF SIZE AND COATINGS

Kason's Separators or similar units, employing the basic Meinzer motion, are used in most North American mills for clarification of size and coatings. Units employ 80-200 mesh screens and remove oversize solids from mixtures which include clay, starch, casein, ammonium stearate, latex, titanium dioxide, calcium carbonate, etc. Viscosities up to 25,000 cps and solids up to 74% are encountered. Kason's are used ahead of machine coating storage and also to handle coater recycle where fiber pickup is rejected.

## E. PULP MILL BY-PRODUCTS

Kason's are used widely in by-product processes. For example:

1. Yeast slurry clarification.
2. Vanillin classification (dry crystals).
3. Pre-clarification of skimmings in centrifugal tall oil acidulation plants.



*360° discharge is achieved with Cascade deck design, greatly increasing the capacity of this Kason Separator handling shower water.*