Kason Separators meet every screening requirement

Kason Separator Screens are self-contained, compact, production machines which make precise mechanical separations according to particle size through efficient use of multi-plane inertial vibration techniques. They are designed and built to solve the most difficult classifying, separating and dewatering problems.

1 to 5 screen surfaces are superimposed to yield up to 6 predetermined fractions. Kason Separators are being used to make accurate separations ranging from 2" to 0.0014" (400 mesh). Standard models, sized from 18" diameter to 72" diameter and equipped with the finest quality screens, are built of mild or stainless steel. Other construction materials or protective coatings can be supplied if required.

NEW APPLICATIONS FOR SCREENING

Any screening operation can be divided into one of four categories; Kason Separators are steadily finding new applications in every category. Kason Screen Separators find widespread use in:

1. Dry Separation — division of different dry materials on the basis of particle size.
2. Dry Classification — precise division of a dry material into sized fractions.
3. Solids/Liquid Separation — dewatering or concentration of solids; clarification of liquids.
4. Solids Classification in a liquid medium — also called wet classification.

Examples of applications in which Kason Screen Separators are being used effectively are on the next page.
examples of Kason Separator's effectiveness

**DRY SEPARATION**

**Foods** — recovery of rice from hulls, coffee beans from chaff, and tea from bags.

**Chemicals and Petrochemicals** — catalyst beds are classified into alundum balls, scale, clean catalyst pellets, and dust.

**Minerals** — separation of rock dust from asbestos shorts, alumina from rotary kiln brick impurities, and stones from pit sand.

**Animal Feeds** — scalping of foreign material from mash; removal of bone chips from meat meal.

**Grains** — separation of dockage (wheat, wild oats, etc.) from flax seeds; cleaning of agricultural seeds and grains.

**DRY CLASSIFICATION**

**Foods** — pea grading, instant coffee powders, ground coffees, dried milk, sugars, salts, cereals, starches, spices, nuts, rebolting flour, potato powder and flakes, powdered eggs, candies, powdered cheese, and bread crumbs.

**Chemicals** — polyvinyl chloride, polyethylene pellets, melamine, phenolics, cellulose acetate, polystyrene, sodium carbonate, calcium carbonate, copper sulphate, detergents, adipic acid, iron oxide, caustic soda flake, di-calcium phosphate, stearic acid, titanium dioxide, zinc oxide, sodium sulphate, potassium iodide, sodium alginate, borax, calcium carbonate, silicon carbide, monosodium glutamate, alum, calcium chloride, and sodium cyanide.

**Minerals and Metals** — metal powders (aluminum, copper, bronze, nickel, iron, magnesium, etc.), barytes, silica, bauxite, cement, brick clay, coke, fluorspar, limestone, mica, perlite, talc, antimony, dolomite, feldspar, diatomaceous earths, rock salt, and nepheline syenite.

**Pulp and Wood Products** — wood chips, particle board, sawdust, and wood flour.

**Pharmaceuticals** — aspirin, boric acid, epsom salts, sodium bicarbonate, tablet de-dusting, and granulations.

**Fertilizers** — granulated mixes; potash; phosphate rock; urea; and ammonium nitrate, sulphates, and phosphates.

**Abrasives** — carborundum, aluminum oxide, and blasting silica.

**SOLIDS LIQUID SEPARATION**

**Foods** — separation of bagasse from sugar melt, casein curd from whey, protein particles from yeast slurry, corn fiber from starch slurry, and gluten from wheat starch; de-watering of fruits and vegetables, spent coffee grounds, potato slices, instant rice, and tuna; clarifying of chocolate liquor, french fry oil, molasses, caustic bottle wash, and apple or citrus juices prior to filtration.

**Chemicals** — separation of salt from glycerine, polyethylene from extruder water, coagulum from latex, and algins from digestion liquor; dewatering of digested reclaim rubber and T.N.T.; clarifying of polyvinyl acetate emulsions, paints, and enamels.

**Pulp** — dewatering of rejects before refining; de-watering of knots.

**SOLIDS CLASSIFICATION IN LIQUID MEDIUM**

**Chemicals** — clarify aluminum paint suspension, remove oversize particles from suspensions fed to nozzle centrifuges, dewater Glaubers salt while removing silt, and classify pigments.

**Minerals** — separate impurities from kaolin slurry prior to centrifuging; classification of silica to remove iron impurities, columbium ore in closed circuit grinding, and cement slurry following ball mills.

**Pulp and Paper** — recovering usable fiber from mill effluent; classification of starch and coating suspensions, mill and white water to eliminate shower blocking, and Barker effluent.

**Ceramics** — clarify body and glaze slips for whiteware.

**Waste Disposal** — clarification of white water from pulp mills, cannery wastes, paunch manure from meat packing, distillery slop.
schematic of typical two-deck Kason Screen Separator
Kason Screen Separators are unitized machines which impart adjustable, multiplane, mechanical, inertial vibrations to material being processed. The basic assembly, shown on the opposite page, consists of a number of interchangeable frames for retention of screen cloth decks and for provision of discharge outlets.

A motor with a double extension shaft, fitted at each end with variable eccentric weights, is rigidly mounted to the main screening assembly. This assembly is supported on the circular base by rugged springs which allow the screen assembly to vibrate freely while completely preventing vibration transmission to the floor supporting the machine.

All parts above the spring level, including the motor, are integrated as a rigid structure. The spring isolation from the support base results in a self-balancing system which requires minimum power and avoids mechanical stress.

Material to be screened is fed to the center of the top screen. Oversize particles are moved by the multi-plane motion to the screen periphery where they are discharged. Undersize particles or liquid passes rapidly through the screen. Kason Screen Separators are equipped to handle up to five superimposed screens and, in the case of multiple frame units, each screen is equipped with a feed tray to redirect the undersize to the center of the screen beneath. This greatly increases screening efficiency by forcing material to pass over a maximum amount of screen surface.

The three dimensional inertial vibration motion of Kason Separators was originally discovered and developed by G. H. Meinzer. It is based on a principle in which motor rotation imparts vibration to an entire screen assembly in both vertical and horizontal planes. As proven in Kason Screen Separators, the system allows multiple deck construction, which conserves operating space, and makes maximum use of available screen. In addition, there is no flexing of wire in the screen cloth, and screen life is greatly prolonged.

The top eccentric weight of the double extension shaft motor operates in a plane which is close to the center of the mass of the assembly. This generates a horizontal throw to the screen assembly. The bottom eccentric weight rotates below the center of the mass, which creates a high frequency tilt on the screen. The third dimension is a tangential component produced by the combination of the horizontal and vertical movements. The tangential component moves oversize material laterally across the screen while encouraging undersize particles to flow through the screen.

Both top and bottom eccentric weights of Kason Screen Separators are independently variable for mass and angular relationship, giving a great degree of control over all vibration components. This results in the ability, described more fully below, to obtain optimum conditions for screening nearly any material.

ADJUSTING FOR OPERATION

Top Eccentric Mass — If the mass of the top eccentric weight is increased, the horizontal throw of the screen will also increase, causing oversize material to discharge at a faster rate. This is especially useful for applications such as de-watering in which the quantity of solids is extremely high.

Bottom Eccentric Mass — Increasing the bottom eccentric weight increases the vertical component of motion. This promotes turn-over of material at the screen surface, encouraging a maximum quantity of undersize material to flow through the screen. The vertical motion also inhibits blinding of the screen by "near-size" particles. When processing light or fragile solids, it is sometimes desirable to reduce the weight of the bottom eccentric to provide minimum vertical motion to avoid particle breakage and attrition.

Bottom Eccentric Lead — The tangential component of the motion imparted to material on the screen is controlled by the relative angular position of the top and bottom eccentric motor weights. The screening pattern is controlled, therefore, by altering the relative angle of the bottom eccentric to the top eccentric. Typical flow patterns generated by various angles are shown below.

When the two eccentrics are lined up and in phase, the tangential component is at a minimum, and there will be virtually no tendency for the material to spiral; it will simply discharge radially from the center to the periphery. When the bottom eccentric is positioned to lead the top eccentric, a spiral motion is imparted to solids on the screen and, under some conditions, it is possible to prevent discharge of oversize particles from the screen surface.

Adjustment of these three components with Kason Screen Separators can be made in a few minutes by the operator. This complete control allows Kason Separators to be adjusted to give maximum efficiency on the material being screened.
ENTER FEED SYSTEM

Kason Screen Separators use a single, centrally located feed pipe. 100% of the screen area is available for separating, and complicated flow-splitters or cumbersome piping arrangements are eliminated. Center Feed System also permits Kason Separators to fit into existing process lines with a minimum of extra piping.

SURGE-DAM*

*Used for solids/liquid separations, the Kason Surge-Dam allows solids to discharge rapidly and completely, but prevents passage of liquid from the screen deck. As solids are forced outward by multi-plane motion, the Surge-Dam exerts only enough to let them pass, but a tight seal is maintained in adjacent areas. Used in a great variety of dewatering applications, the Kason Surge-Dam is self-adjusting to a wide range of operating conditions.

CASCADE-DECK*

The Kason Kascade-Deck provides free, 90 degrees discharge from the screen deck in dry or wet separations. Full screen area is available for separation as solids cannot build up at the screen periphery while waiting for discharge. As solids reach the screen edge, they fall into the Kascade-Deck for rapid discharge. Capacity of the separator is increased greatly, and system overload is virtually impossible.

Packaging - Processing
Bid on Equipment
1-847-683-7720
www.bid-on-equipment.com
Kason Kleen-Screen Rings prevent screen blinding by fibrous, stringy, and sticky materials. Plastic Kleen-Screen Rings, controlled clearances within the separator, and multi-plane inertial vibration combine to create shearing actions which cut fibers and scrape away gummy materials. Hollow rings promote product flow; controlled movement assures uniform anti-blinding action over entire screen surface. Anti-blinding balls and other devices are available for granular materials and special requirements.

**KLEEN-SCREEN RINGS**

Packaging - Processing
Bid on Equipment
1-847-683-7720
www.bid-on-equipment.com

**DISCHARGE DOME**

Kason Discharge Domes contribute to rapid discharge of undersize particles as the Kascade-Deck contributes to the rapid discharge of oversize material. Tilted domes, deep frames, and oversized discharge spouts assure high capacity removal of liquids in solids/liquid separations or of dry material in scalping applications. Exclusive Kason Double-Slope Domes and twin spouts can be used to further extend discharge capacities in wet or dry separations.

**MULTI-DECK CONSTRUCTION**

Unique deck construction and three-dimensional inertial vibration permit up to 6 product fractions to be separated accurately in one pass through a single Kason Screen Separator. Multiple deck design combines with all other special Kason features to meet rapid discharge, full screen availability, and high capacity requirements. For example, a Kascade-Deck may be used in multi-deck construction if one fraction predominates. In many applications these Kason features have doubled outputs of a single machine.

**ADDITIONAL SPECIAL FEATURES**

* Dust covers for top or Kascade-Deck mountings.
* Flexible discharge spout connectors.
* Drying, cooling or combination decks.

*PATENT PENDING*
The Kason Verti-Flow Screen Separator has a unique design which provides unrestricted product removal in extremely high capacity applications. Screened solids or liquids fall vertically through the machine, and oversize material is removed via high-capacity 360° Kascade Deck. For example, a single Verti-Flow Separator will scalp dry cement for bulk loading at rates over 100 tons/hour.

**HIGH-CAPACITY CLASSIFIER**

This unit — for wet or dry classification — has several unique features that permit wide application in a diversity of industries. The Kascade Decks on this 48" model allow feed capacities usually associated with a 60" model. Due to its unique full 360° solids discharge pattern, solids do not use up screen area while trying to find spouts. From screen, solids drop off into Kascade Deck, then to spouts; maximum screening area is maintained. On this model the surface and spouts of the Kascade Deck have been lined with an abrasion resistant elastomer. All of the preceding are optional features available on all Kason models up to 72" diameter. (Cover has been removed for photographic purposes — normally operated as a closed system.)

**KASON DEVELOPMENTS**

**VERTI-FLOW SCREEN SEPARATORS**

Kason Vibrating Distributors are used when several separators, process units, or bins must receive equal portions of a common feed stream. In addition, Distributors will also rearrange a segregated feed stream to assure that each user receives an equal qualitative distribution (e.g., of particle sizes) of material. Designed for high capacity applications, Kason Distributors require a minimum of headroom and floor space.

**KASON SCREEN MOUNTS**

Kason Screen Mounts are designed for specific types of service to assure uniform tension, efficient screening, and extended screen life. A wide range of metal or plastic screens in market-grade or tensil bolting cloth are always available in required wire diameters and meshes. Three types of mounts are standard: an epoxy bonded, screen-to-metal ring mount for normal applications; a spot-welded design for very high temperature screening; and a pre-formed screen which can be supplied for field mounting when extremely abrasive materials are being screened.
the Kason 100"

vibratory screen separator

Designed to meet the demands of the chemical, pharmaceutical, food, ceramic, pulp & paper and other process industries for higher volume dry product separation and classification, de-watering and effluent clarification, the Kason 100" diameter multi-plane inertial vibrating screen separator gives maximum productivity per dollar of investment. Occupying only a fraction of the space needed for multiple units required to handle the same volume, the Kason 100 augments the 72" Kason heavy duty circular screen separator as the largest such unit ever offered commercially. It is rated approximately four times the capacity of a 48" diameter unit.

Every aspect of design has been selected to assure continuous productivity with minimum maintenance. Multi-plane inertial vibration of Kason separators permits efficient multiple deck screening to obtain various product fractions. Construction assures accurate separation, continuous discharge and maximum use of screen surfaces.

Kason's efficient central feed system completely eliminates flow-splitters and other cumbersome piping arrangements while at the same time making 100% of the screen area available for separating. The use of a wide variety of anti-blinding devices helps keeps screen openings clear of near-size material and speeds throughput.
Kason Separators give profit solutions to process problems

**HIGHER CAPACITIES** required by pulp mill for intermediate clarification of barker effluent was achieved with three Kason Separators equipped with Kascade-Decks and Surge-Dams. The Kason high frequency, low amplitude multi-plane action breaks fluid surface tension to provide effective separation, rapid discharge of liquid, and fast conveying of solids to discharge. Screen blinding from pitch, wedging, and stapling is eliminated.

**LONG SCREEN LIFE** is achieved by dairy by-product plants separating casein curd from whey at 200 degrees F with 200 mesh screen having openings of only 0.0029". Exceptional cloth life is also obtained when handling abrasive material because of complete absence of wire flexing or "whipping." Screens of any metal wire, nylon, silk, Teflon or other screen materials are available for all Kason Separators.

**QUICK AND EASY SCREEN CHANGE** is obtained by major fine chemical producer using 3-deck Kason Separator to simultaneously classify product into 4 precisely sized fractions with 10 to 200 mesh screens. Market requires 8 different specifications, necessitating fast screen changes. Operator releases a simple clamp ring, changes screen, and reassembles—in 10 minutes.

**MINIMUM SCREEN BLINDING** for fine limestone screening is achieved for specialty plant because of Kason’s unique multiplane motion. The vertical component of vibration ensures that problems due to “near size” particles are eliminated. On very difficult materials, the use of ball decks or Kleen-Screen rings allows unrestricted motion and gentle but effective impact to prevent clogging.

**ADAPTABILITY** was the reason a leading cosmetics manufacturer installed Kason Separators to obtain compact, sanitary sifters to remove foreign material from talcum powder while batch loading blenders. Operator dumps 100 lb. bags in seconds; classified talc discharges directly to blender. Multi-plane inertial vibration is readily controlled to yield optimum performance, and the basic Kason Separator may be modified by adding or removing components to obtain from 2 to 6 fractions. Kason Separators can be used for wet or dry service, and no alterations are required for dust-tight and leak-proof operation.
MINIMUM SPACE REQUIREMENT was provided for a PVC resin manufacturer requiring a screen to classify 10,000 lbs./hour of resin and occupy less than 25 sq. ft. of floor space. Headroom was restricted to 40" on mezzanine floor above packing area. Low head requirement of Kason Separators frequently results in single instead of multiple floor operations, even when several size fractions are required.

NO TRANSMITTED VIBRATION was the need in a silica sand plant requiring a rush installation for classifying 300 tons/hour of slurry containing 30% sand dry basis at 20 mesh. Three Kason Separators were shipped 5 days after receipt of order and were quickly installed on a wood plank floor. Fully controlled action of Kason Separators is imparted to the screen assembly, but it is elastically isolated from the integral base by a unique spring support. This allows operation on any foundation that will support the Separator's weight.

PILOT PLANT MODELS for reliable scale-up is achieved by a leading mineral dressing laboratory requiring portable, high capacity screening for an endless variety of wet and dry separations. Equipped with a full range of screens, Kason Separators readily adapt to dewatering, closed circuit classification with grinding mills, slimes removal, and dry classification of finished products. Pilot sized models are widely used, and accurate scale-up to production models is assured.

LOW OPERATING COST was gained by a kraft paper mill that replaced high maintenance reject dewatering equipment with Kason Separators. 3 units accept 100 tons/hour of pulp reject slurry and consume only 3 HP. All energy is utilized to produce free floating screen motion, so Kason Separators handle very high tonnages per unit of power input. Stress relieved structure and cycling type vibration eliminates abnormal deflections and ensures trouble-free service.

MINIMUM CAPITAL INVESTMENT was a benefit for a large Canadian cannery requiring primary waste treatment to meet government regulations. Kason Separators with very fine screens met effluent requirements, and installed cost was less than would be needed for other types of clarifiers. 1500 gpm plant effluent with high solids load is continuously clarified without operator attendance. Circular design of Kason Separators also simplified layout, and material handling equipment for transferring dewatered waste to trucks was minimized.