

**KUMAR
METAL
INDUSTRIES**



**PREPARATION &
SOLVENT EXTRACTION**



Our technical collaboration with industry leaders, Crown Iron Works–USA and Europa Crown–UK, since 2003, has enabled us to incorporate advanced Crown technology in the design, manufacture and supply of solvent extraction and oil refining plants in a wide range of capacities.



Under our manufacturing license from Anderson International Corp, USA, pioneers of Expeller® press technology we manufacture and sell Anderson Dox Extruders and Solvex Expanders in the Indian market. Each offering is tailored to the unique needs of the customer and is manufactured to the high standards and specifications laid down in Anderson International's design and quality policy.





WE ARE KUMAR

Kumar Metal Industries is a process engineering company manufacturing advanced oil mills, edible oil refineries, oils and fats processing plants, oleo-chemical plants and feed mills for companies all over the world. We are an ISO 9001-2015 company certified by TUV. We deliver custom, value-driven solutions, technically sound equipment with superior engineering. Through our hard work, integrity and emphasis on responsive service, we've gained the trust of more than 500 customers spread over 65 countries worldwide.

What started as a small fabrication unit in 1939 has grown into an industry favourite. Our manufacturing and fabrication units span over 23,000 sq m and house over 400 skilled technicians, quality control personnel, trained workers and the latest in precision European machinery.

Our fabrication facilities are equipped to manufacture high-pressure vessels and worked on by certified x-ray qualified welders. For hard facing and critical wear and tear parts, our highly trained TIG/MIG welders take over.



23,000 sq m manufacturing
infrastructure



400+
staff



570+
projects

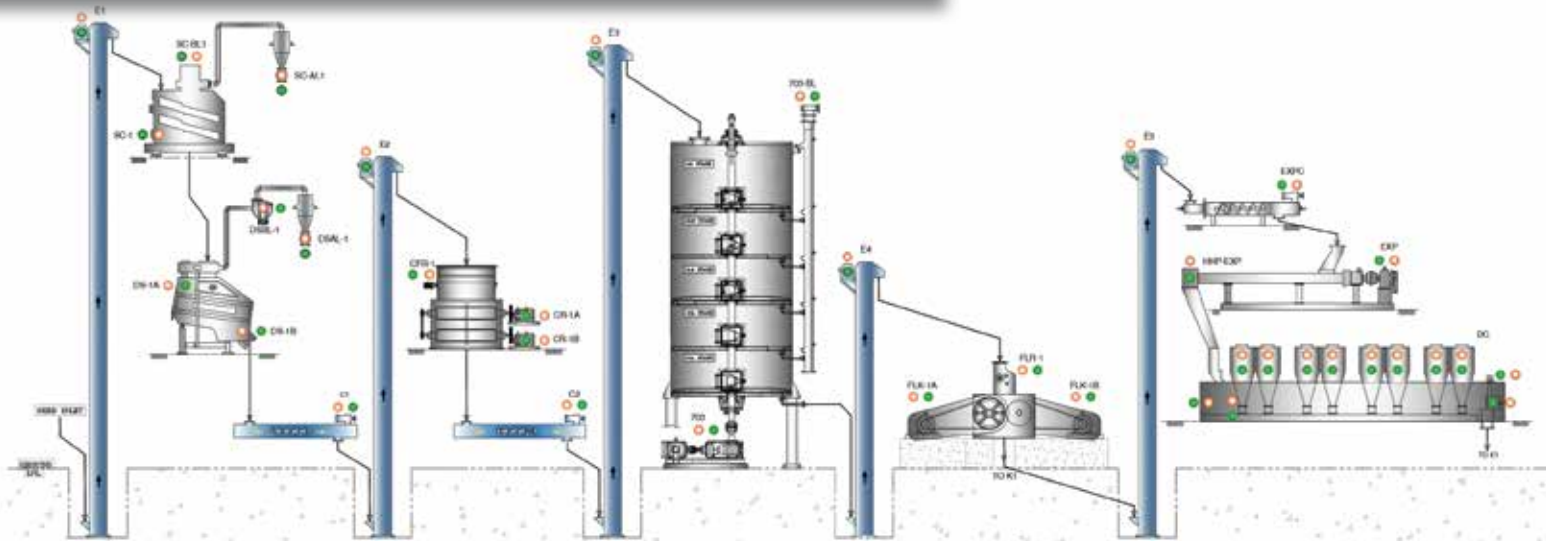


500+
customers



65+
countries

KUMAR PREPARATORY TECHNOLOGY



During the extraction process, oil-bearing seeds like soybean, sunflower, cotton, groundnut, mustard, shea nut, canola, rapeseed and rice bran have to be correctly prepared. Key preparation steps in extraction include seed cleaning, cracking, cooking, flaking, expanding and cooling. Depending on protein requirement, seeds can also be partially or fully dehulled. These applications are for oil seeds like soybean, cotton, sunflower, canola and rapeseed, mustard, castor, sesame, shea nut and groundnut, among others.



SEED CLEANER

The seed cleaner is used to thoroughly separate impurities like dust, leaves and stem present in feed materials. It is composed of screens in various sizes designed to segregate different fractions. An aspiration system is also provided to remove the light particles and loose hulls.

FEATURES

- Steel construction with two sieve boats made with laminated wood.
- Each sieve boat has one scalping screen layer and one grading/sand screen layer.
- For oilseeds like groundnut, soybean, sunflower and sesame.



DESTONER

A destoner efficiently remove stones, glass and other high-density materials from the grain stream. It works on the principle of difference in density to separate heavy stones from lighter seeds. It consists of a vibratory system with aspiration and works on the fluidization principle.

FEATURES

- Improves feed material quality.
- Complete inspection windows.
- Adjustable screen for efficient stone separation.
- Aspiration system eliminates dust emission.

ROTARY MAGNETIC DRUM SEPARATOR

A box type magnetic drum separator that separates ferrous particles from feed materials to protect process equipment from damage and ensure the uninterrupted flow of raw materials in the process.

FEATURES

- Magnetic separator, self cleaning
- Plug and play device with no additional setup.
- Removable inspection cover for maintenance and cleaning.
- Powerful rare earth magnet with 11,500 gauss.
- Adjustable hopper tray ensures the flow of process material.

STACK COOKER/ CONDITIONER

A vapour tight carbon steel construction with the double bottom fabricated from boiler quality steel. It features an advanced design and longevity of moving parts that enables higher productivity with minimal maintenance.

Stack Cooker pre-conditions seed to the desired temperature and ruptures the oil cell by flushing off intrinsic moisture as steam. This decreases oil viscosity, making it easier to separate during extraction. Cooking is also used to coagulate protein in seeds and sterilize them by destroying enzyme activity and preventing bacteria or mould growth.

FEATURES

- Maintains desired moisture content leading to fewer milling defects and lower power consumption in the flaker.
- Control mechanism used to maintain seed levels and requisite residence time.
- Steam trays optimize heat transfer during the cooking process and ensure zero tray leakages during the long run.
- Trays manufactured from boiler quality special grade plates and hydraulically tested at 2.5x higher than operating pressure to ensure equipment longevity.
- Sparge steam holes in rotating blade provided for efficient mixing and to avoid choking.
- Sturdy shaft and hard-faced agitator blades for proper mixing and durability.

KUMAR PREPARATION TECHNOLOGY





CRACKER

Cracking reduces particle size sufficiently to ensure uniform cooking without producing an excessive quantity of fines. Four chilled cast iron dynamically balanced rolls crack the seed into 4-6 pieces to increase its surface area. German technology, a roll hardness of 470-520 BHN and depth thickness of 25-30 mm, ensures the longer the life of rolls.

FEATURES

- Adjustable springs and Belleville washer to absorb the shock and avoid damage to the roll.
- The spherical, self-aligned roller bearing in the bearing housing of cracker rolls ensures their perfect alignment during runtime.
- UHMWPE side sealing are fabricated and fitted in the cracker to avoid the passing of uncracked seeds.



ONLINE WEIGHING MACHINE

Designed with French technology to meet international quality and specification standards. The online weighing machine is used to measure, record and total feed material in the plant, and is compatible with a PLC system for plant accountability. Suitable for oilseeds including groundnut, soybean, sunflower and sesame, among others.

FEATURES

- Consistent throughput for efficient process control.
- Variable speed control unit.
- Smooth endless vulcanized food grade belt.

EXPANDER WITH CONDITIONER

The expander prepares collets from soy flakes. Collets increase the porosity, which in turn increases the percolation of hexane in the oil cake/flake for the enhanced extraction of oil and faster yield.

FEATURES

- Make easy for percolation due to high porosity, enabling achieve higher miscella concentration
- Reduces solvent and steam consumption, as well as aflatoxin contamination level.
- High oil content seeds like sunflower, rapeseed and canola can be directly extracted without an expeller or with a special squeezomatic attachment in the expander.
- Aids in the increased production of the solvent extraction plant by about 20-30%.

FLAKER

The Flaker is a two-roll chilled cast iron machine with dynamically balanced rolls that prepares flakes of 0.25-0.3 mm thickness. The flaker ruptures the tough oil-bearing cellular structure for better recovery of oil during solvent extraction. Use of the flaker reduces the retention time of the solvent extraction section which in turn reduces the size of extractor resulting in cost reduction.

FEATURES

- Adjustable flake thickness during operation by a hydraulic system which ensures uniform thick flake transfer to the extraction plant.
- German technology dynamically balances high-quality ORT chilled cast iron rolls.
- Accumulator absorbs shocks to avoid the damage.
- The machine consists of a permanent magnet for entrapping any iron particles.
- Roll grinding attachment for edge grinding maintenance.

FLAKE /DRIER COOLER

The drier cooler is used to reduce moisture and cool flakes/collets. It has a modular design for flexible capacity increase. Maintains the temperature of the flakes and collets as required for the extraction process. Air that is blown in an annular space between the tray flows through the material and is sucked out from the top of the cooler.

FEATURES

- Modular design with separate drying and cooling modules.
- Each module is sealed to avoid mixing of air.
- Perforated trays are designed for an optimum, simultaneous flow of hot or cold air to maintain air pressure and required velocity.
- Minimal downtime and lower maintenance costs.
- Does not need an elaborate foundation as the gearbox, motor base frame and blowers are mounted on the machine itself.



DECORTICATOR

Decortication is the process of removal of hulls from the seed, it cuts the seed and separates the meat from the hulls. After decortication the meat are sent to screw press and the during extraction the load decreases and the capacity of the machine increases. Suitable for cotton seed and sunflower.

FEATURES

- Special graded cast iron rolls with interchangeable knife alloy.
- Shaft mounted in a spherical roller bearing and housing.
- Pressure-sensitive hydraulic system with self-control pumping unit that cuts seeds uniformly and does not allow the powder formation.
- This machine comes with a complete magnetic double roll feeder.
- Efficient separation that leaves a negligible percentage of hulls in the separated meat.

DOUBLE DRUM HULL BEATER

Separation and screening equipment. Used primarily for cotton seed and sunflower.

FEATURES

- During separation usually some kernel goes with the hulls but this beater reduces the kernel wastage which is going with hulls.
- Simple separation and screening.



HULL & SEED SEPARATOR

Separates meat powder and sticky meat from hulls maintaining minimum oil loss in the process. Suitable for cotton seed and sunflower.

FEATURES

- Variable speed regulating feeder.
- Mild steel shaker tray complete with suitable perforated sheets for sturdy operation.
- Heavy-duty steel frame complete with the drive stand.



HULLER & SHAKER

Separates hulls from the kernels and sends meat without hulls for further processing. Suitable for cotton seed and sunflower.

FEATURES

- Efficient separation of hulls from the kernel.
- Simplicity of adjustment.



DENSITY SEPARATOR

Used primarily for cottonseed and sunflower, the partial dehuller removes hulls from seeds up to a certain percentage to increase the protein content in de-oiled meal. It is a multi-deck seed separator which removes the loose hulls. Suitable for cotton seed and sunflower.

FEATURES

- Perforated basket beater to separate fine meat powder.
- Meat powder collection chute and zigzag cascade chamber.

PARTIAL DEHULLER

Partial dehuller removes hulls from seeds up to a certain percentage to increase the protein content in de-oiled meal. It is a multi-deck seed separator which removes the loose hulls. Suitable for soybean.

FEATURES

- Heavy-duty steel construction incorporating sieve boats made with waterproof laminated wood.
- Feeding apparatus ensures an even spread of product over the full working width of the machine.
- Efficient air system ensures uniform aspiration and good separation of hulls from prime product.
- Complete and easy access for clean out through the auger.

CROWN DEHULLING EQUIPMENT



COLD DEHULLING

The Crown cold dehulling process is used in scenarios where a grain dryer or conditioner is already installed, and customers want to add aspiration to create a high protein meal. The Crown aspirator is set up after the cracking rolls. Beans and hulls cascade downward releasing hulls from the meat. Recirculated counter-current heated air will lift the hulls separating the two products.

HOT DEHULLING

Before commencing the Crown hot dehulling process, beans are cleaned to remove sticks, pods, and trash. After cleaning, they enter the Crown whole bean aspirator to remove loose hulls and field dust after which they pass into the Crown vertical seed conditioner (VSC) where the beans are conditioned by a slow heating process that raises the temperature of the beans.

As the temperature rises, moisture in the bean rises to the surface allowing the patented Crown aspiration system to remove it, drying the beans and softening the hulls in the process. After the beans are properly conditioned in the VSC they enter the patented Crown jet dryer which injects heated fresh air and recirculates filtered hot air to shrink the hull, releasing the hull and meat bond.

WARM DEHULLING

As in the hot dehulling process, beans entering the warm dehulling system should be properly cleaned to remove sticks, pods, and trash. After cleaning, the beans enter the Crown Whole Bean Aspirator to remove loose hulls and field dust and then on to the Crown Vertical Seed Conditioner (VSC) where they are conditioned through a slow heating process raising the temperature of the bean.

As the bean temperature rises, the moisture of the bean migrates to the surface allowing the patented Crown Aspiration System to remove the moisture, drying the beans and softening the hull.

SECONDARY DEHULLING

Hull streams from cleaners, aspirators, and other separation devices contain significant amounts of bean chips and valuable oil. If not recovered, these lost bean chips represent substantial losses in high mill feed residual oil content. The secondary aspirator, incorporated into a properly designed 2-deck screening system removes the meats from the middle cut. The heavy-duty construction provides longevity against abrasion from aggressive hull streams.



CASCADE ASPIRATORS

Crown aspirators efficiently separate heavy and light materials, using a combination of gravity, impact rods, and air. Product is introduced into the integral feeder, which controls and distributes the feed across the entire cross-sectional area of the aspirator, and also provides an air seal. Material free falls through a series of specially designed and positioned impact rods, breaking any bonds between the product and liftings. Heavier phase material is discharged from the bottom of the aspirator. Lighter material is airlifted to the top of the aspirator by the counter-current and subjected to a final rectification to separate any entrained heavy phase material before ejection from the system. Standard design includes inlet and outlet connections for a completely closed-loop air system.

DEHULLING ASPIRATORS

Crown aspirators are used to aspirate either hot or cold cracked beans and remove the hulls and other loose material from the cracks. They are built with the same heavy-duty feeder used for whole bean cleaning, and the units can either be choke fed or fed by regulated control. The special rectification section removes additional entrained meats from the hulls, reducing the load on the secondary dehulling system. Crown aspirators are fully insulated and designed for closed-loop air for warm applications. Depending on conditions, they can provide a significant amount of drying. Crown aspirators can also be used for once-through air.



WHOLE BEAN ASPIRATOR

These aspirators are built to withstand the abrasive nature of whole beans and typically installed after a scalper or screener. They remove dust, dirt, and light phase material. Aspirator impact rods are solid steel for longevity under extreme service conditions.

FEATURES

- Designed to be choke fed or fed by regulated control.
- Optional variable speed drive system to provide plant flow rate control.
- Designed to resist abrasive wear caused by whole beans.



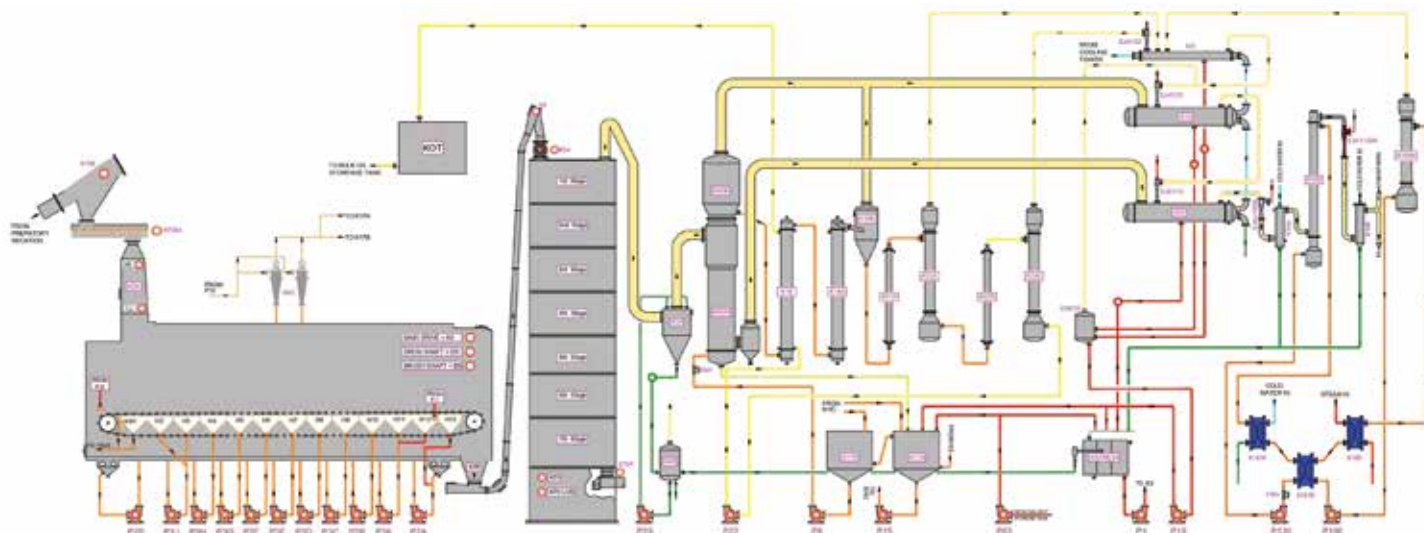
VERTICAL SEED CONDITIONER

The Crown VSC is a combination heater and dryer used on free-flowing granular solids like soybeans and rapeseed. The heater is a stacked design with multiple heating sections using low-pressure (1 Bar or 15 PSI) steam-heated oval tubes. Crown's patented aspiration system dries the seeds by removing free moisture brought to the surface during heating. A low-powered rotary-style discharge creates a steady material flow to the plant with minimal electrical load requirements.

FEATURES

- Efficient separation of meats and hulls.
- Simplicity of adjustment.

KUMAR CONTINUOUS SOLVENT EXTRACTION PROCESS



Solvent extraction is an efficient and reliable extraction to process edible oil from oilseeds and nuts using solvent, with Hexane being the preferred choice. Industrial oil processing for the edible oil generally involves the solvent extraction step which may or may not be preceded by pressing. Hexane-based processes have been in commercial operation for a long time. For such processes, it is possible to achieve oil yields in excess of 95% with a solvent recovery of over 95% which in compare to 60 to 70% oil yield by mechanical expeller pressing. The solvent extraction method will remove all but about 1/2% of residual oil, uses less energy, and requires less maintenance. It is relatively efficient and reliable, and making it the primary means of separating large tonnages of oil from protein meal.

The Solvent Extraction plant extracts the majority of the oil from the prepared raw material using the counter-current flow of miscella at specified operating temperature for a predefined extraction time

frame. Miscella feed flow rate design and specially designed wedge wire screen enable optimum oil recovery.

The extracted meal is transferred to a desolventizer toaster to recover entrained solvent which removed, and desolventized material is conditioned by controlling and adjusting temperature and moisture. Vapours from the DT are taken to the condenser for vapour/solvent condensation and recovery of solvent via the economizer.

Solvent is recirculated after removal of moisture. After fines separation using hydroclones, miscella is fed to the distillation section that comprises an evaporator, heater, and vapour condensing unit. Miscella is transferred to the evaporator via an economizer where it is initially heated up and part of solvent is recovered by utilizing heat of vapours from the desolventizing unit.

EXTRACTOR SPECIAL ACCESSORIES

Kumar offers a range of innovative, proprietary accessories to allow you to get the most out of your preparatory and solvent extraction solutions.



WEDGE WIRE

Kumar's proprietary wedge wire screen design ensures better percolation and improved efficiency of extraction.

MISCELLA HOPPER

Devoid of welded joints to ensure zero leakage issues and made with stainless steel.

KUMAR CFx EXTRACTOR



Kumar's CFx Extractor is of horizontal construction. It comprises an articulated band conveyor assembly which receives material from the feed hopper and transports it at a very slow predetermined speed from the feed to discharge end. The conveyor moves over rails suitably located within the extractor and rides on specially constructed sprockets at either end. It has an adjustable damper to regulate the height of the bed of material on the band conveyor.

A series of spray breakers ensure the perfect quantity of solvent spray on the moving bed, with liberal provision for light and sight glasses. The band conveyor assembly is designed to act as a filter bed for eliminating fines. The system comprises a wedge wire system with a drum shaft, brush, main drive and a mesh cleaning system.

FEATURES

- Optimum oil recovery due to well-designed miscella circulation resulting in efficient solvent meal contact and a better percolation system.
- Draining time is designed for low residual solvent percentage in the extracted meal, which reduces the hexane load in the Desolventizer Toaster, and lowers energy cost.
- A high-pressure liquid cleaning system for the screen keeps the band conveyor clean internally and externally to avoid flooding due to choking of wedge wire screen.

DRIVING SYSTEM

Fitted with an EN8 shaft and sprocket for reduced wear and tear and longevity.

SPRAY DISTRIBUTION SYSTEM

Spray nozzles are fitted in the extractor for uniform miscella distribution, mesh cleaning and to minimize choking the bottom of the extractor.

LEVEL CONTROL

Radar type non-contact level controller to maintain optimum material levels and ensure minimum hexane losses.

RAIL

An alloy monorail is fitted in the KUMAR CFx extractor to maintain proper alignment, avoid breakdowns and ensure longevity.



HYDROCLONE

Efficient cyclone-centrifugal separator to remove the final traces of fines from the full miscella.

CROWN EXTRACTORS



CROWN EXTRACTOR - MODEL III

For high capacity plants above 500 tpd, the Crown Model III continuous loop shallow bed extractor offers the benefits of low power requirements, excellent component life, ease of operation and the capability of high operating capacities. The Crown design is the most efficient of several methods of extracting vegetable oils from oil-bearing seeds. It maximizes extraction efficiency while at the same time minimizes steam consumption. The flake bed is turned completely over, allowing the solvent to contact flakes from all sides. Self-cleaning drainage screens — stationary, V-bar screens are swept clean by the continuously moving bed of material. The incline of the chain before discharge minimizes the possibility of solvent overflow to the DT. Continuous discharge of flakes improves DT performance. Easy to assemble and expand.



CROWN EXTRACTOR - MODEL IV

The Crown Model IV Extractor is a continuous counter current immersion type extractor that employs a shallow bed approach to extraction. It is designed for granular materials that have a higher density than the solvent, and will therefore sink in the solvent. It does not use screens. The basic horizontal fabrication houses a unique patented en-masse type conveyor system, which draws the material along the smooth extractor bottom. Material is immersed in solvent flowing from the other direction keeping the solids wet at all times. Applications of this system include specialty extraction, algae extraction, soy protein isolates and concentrates and specialised solvents extractions.

CROWN DTDC

Crown DTDC uses a significantly lower amount of steam and as a result, distinctly lower solvent losses owing to the unique counter-current flow as well as improvement to meal and vapour flow throughout the vessel. Fabricated vertical, multi-stage unit meal first passes through basket type pre-desolventizing trays heated by indirect steam. Exiting vapours flow around these trays at low velocity. The meal then passes from one steam-heated desolventizing tray to the next via special chutes to control the meal level.

The direct steam tray at the bottom contains a number of holes through which steam is evenly distributed in a true counter-current system. Meal then passes from one steam heated desolventizing tray to the next via special chutes to control the meal level. The direct steam tray at the bottom contains a number of holes through which steam is evenly distributed in a true counter-current system. Vapours travel upwards through special Crown Schumacher trays in the upper sections and exit via the vapour wash. A Rotary Valve (S.S. 304 vanes) is located in the last desolventizing tray and its speed is variable and controlled from a level transmitter in the upper tray thus regulating the discharge of meal to the Dryer/Cooler section.

FEATURES

- Automatic level control with actuated gates, chutes or variable rotary valves means less operator attention required.
- Unique counter-current flow.
- Low horsepower/ton requirements.
- Heavy-duty steam chests and robust computer-designed sweep arms.
- Basket type pre-desolventizing trays.
- Large dome of DT for reduced dust carried out with vapours.
- Patented vapour recovery system for even less steam use and lower solvent consumption.

CROWN SCHUMACHER



KUMAR DESOLVENTIZER TOASTER



Extracted meal is transferred to the Desolventizer Toaster for removal of entrapped solvent. Desolventized material is conditioned by controlling and adjusting direct and indirect steam. Conditioned toasted meal is sent to meal cooling section for further processing.

Kumar's SOLVEx Desolventizer Toaster is a vapour tight stainless steel and carbon steel construction in several stages with a bottom-driven drive mechanism and pneumatic float and door system to control bed height in each stage for better desolventization and toasting.

The extracted meal is transferred to the Desolventizer toaster for removal of entrapped solvent. Desolventized material is conditioned by controlling and adjusting direct and indirect steam. Conditioned toasted meal is sent to meal cooling section for further processing.

Desolventization takes place with direct and indirect steam. A specially designed sparge tray adds open steam, a precisely designed duct for vapour space and sufficient vapour space in each compartment. Vapour temperature is controlled via the temperature transmitter on the vapour duct and steam control valve in the sparge steam line.

FEATURES

- Pneumatic float and door assembly to control bed height and uniform discharge of the meal for efficient desolventization.
- Specially designed scrappers with hardened face for minimal wear and tear.
- Maximum heat utilization from vapour reduces steam consumption and ensures better solvent recovery.
- Waste vapour washing system reduces fines and vapours.
- Unique zero vent system for recirculation of vent vapours back to the extractor, ensuring no vapour is vented into the atmosphere.
- Vapour travel area designed for maximum heat recovery.
- Sparge steam tray distributes sparge steam uniformly for complete desolventization of the extracted meal and lower hexane losses.
- Steam trays made with boiler quality plates for longevity.
- Shell plates of first two compartments and dome plate are SS construction to minimize corrosion from Hexane vapours.
- Designed per ASME section VIII Div 1, 2013 Edition.



Solvent distillation is carried out in three stages of vacuum to achieve an incremental concentration of miscella at a predetermined rate. Each stage is differentiated by the incorporation of a precisely designed U type siphon pipe, eliminating the use of a centrifugal pump to ensure a continuous flow of miscella and reduce power consumption. The Economizer is a compact design with a built-in flasher and requires minimum floor space and less piping. It provides high-efficiency flashing, which increases the miscella concentration up to 75%.

Final stage stripping is carried out in the presence of steam under a higher vacuum of 700 mmHg, allowing lower temperature distillation and ensuring undamaged crude oil without colour fixation. Maximum solvent from the oil-solvent mixture (miscella) is recovered at the distillation stage. Final solvent traces from oil coming out from distillation zone are recovered in oil stripper working under vacuum. Air entrapped within the system along with solvent is passed through the recuperation system where solvent traces from outgoing vent gases/vapours are recovered by absorbing the solvent in mineral oil. Hexane from the solvent absorbent is recovered by heating the mixture and condensing the solvent. This solvent-free absorbent oil is reused for recuperation/recirculation.

FEATURES

- Highly efficient cyclone-centrifugal separator type fines separation system helps to avoid fouling in the distillation system and minimizes over-heating of the oil, reducing utility consumption.
- Lower retention, maximum heat transfer takes place which enhances oil quality.
- Stripper is designed for proper film formation and removal of solvent.
- Dryer is designed for high vacuum and comes with a spraying system to remove traces of hexane and dry the oil before discharge.
- Hydroclones are used to separate fines from the miscella before entering to the distillation section.
- Lower deposition of sludge in the evaporators' tubes minimizes frequent cleaning.
- Condensers are designed for optimum solvent condensation at reduced vacuum at a wide range of cooling water temperatures.
- Vapour absorption system with well-calculated packing area and stripping section to absorb uncondensed hexane before escaping to the atmosphere preventing solvent loss.
- Less effluent discharge.

KUMAR MEAL COOLER



In applications where a separate cooler is needed, Kumar's vertical meal coolers reduce the temperature and moisture of the meal coming out of the Desolventizer Toaster.

Kumar's Meal Cooler is a vertical, cylindrical multi-compartment vessel designed for the efficient drying and cooling of feed meal to optimum atmospheric temperature. This cooler includes an agitator and air circulation system that consists of hot and cold air blowers, air cyclone, airlock, radiator and air ducting and fitted with a drive with gearbox and motor.

FEATURES

- Efficient drying and cooling of meal via aspiration system and ideal size and number of perforations.
- Level transmitter to maintain the compartmental bed height.
- Efficient blower and air heater per required CFM for lower power consumption.
- Mechanical door and float system to maintain feed bed height.
- Size and stages customised to capacity and feed specifications.





State of the art instrumentation and software for complete processing control from your desk. Offsite control and troubleshooting through a cloud-based online system. The plant can be operated remotely; as can process rectification measures. Process automation ensures better control of critical process parameters like steam, water and all other utilities and chemicals, improving yield, final oil quality and reducing human error.

FEATURES

- PLC Panel with controller & IO cards (HART compatible analogue IO cards)
- PLC architecture is client-server architecture with ring topology.
- Operator interface for control of plant motors, control valves and monitoring of process conditions is via a PC based SCADA system.
- Sequence interlocking for process equipment is performed within the PLC.



KUMAR PERFORMANCE GUARANTEE

The Kumar name is synonymous with integrity, value-driven solutions, sound engineering, performance, integrity and a service-oriented mindset. Every piece of equipment you buy is built to perform and deliver your objectives.

LOWER ELECTRICITY CONSUMPTION

Precisely designed process piping manifolds, high-efficiency process pumps and energy-efficient electrical motors leading to lower consumption of electricity.

LOWER STEAM CONSUMPTION

Maximum heat is recovered by regeneration of heat in steam economizers during the extraction process. Heat from the hot vapour is utilized to heat the miscella to its evaporation temperature. Heating vessels are appropriately insulated to reduce radiation losses drastically.

LOWER HEXANE LOSSES

Kumar's condensers are designed with sufficient heat exchange area, and our plants are designed with zero vent system to reduce hexane losses.

MAXIMUM YIELD & RESIDUAL OIL CAKE

Kumar's screw presses always maintain maximum yield and lower residual oil in cake resulting in the utmost performance level of expeller machines.

MINIMAL BREAKDOWNS

Before shipment, we assemble our machinery and material handling equipment in the factory and conduct running trials to ensure perfect alignment resulting in negligible breakdowns during the commissioning period.

OPERATOR FRIENDLY & EASY TO MAINTAIN

We use superior quality hardware in our process plants, and equipment construction is simplified for operation and maintenance. Operating per procedures outlined in our user manual ensures low operation and maintenance costs.

SMALLER WORKFORCE REQUIREMENT

We supply premium quality and precise instruments for reliable, consistent and better process control, so you need fewer operators to run our machines.

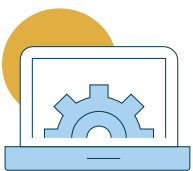
SAFETY STANDARDS

Kumar carries out systematic HAZOP studies of extraction plants and can provide hazard analysis and essential safety requirement documentation. Our plant layouts are designed in keeping with international safety standards.

INTERNATIONAL CERTIFICATION

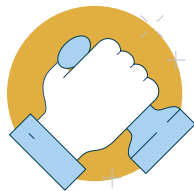
In keeping with international norms and guidelines, our equipment and machinery are manufactured in compliance with ASME and EU directives.





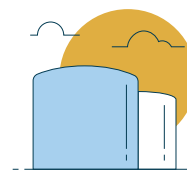
DESIGN & ENGINEERING

Kumar assist in identifying the most appropriate technology and equipments customized for your needs. 3D modelling, Isometrics, layouts for piping, equipments, foundations, site plan, etc are led by our team of dedicated engineers that devise a customized solution for client requirements



QA & QC

We design, install and operate under a Quality Assurance Program that ensures our entire process, from equipment design, material selection and procurement to manufacturing, testing and certification, is per internationally accepted codes and practices.



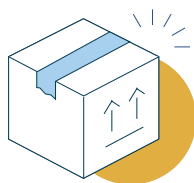
INSTALLATION

We have an independent team to manage project installations efficiently. They are trained in all aspects of the installation process, including equipment shifting, foundation layouts, piping, instrumentation, cabling and insulation. They erect major pieces of equipment onto their prepared foundations and install associated machinery and interconnecting equipment and piping efficiently and smoothly.



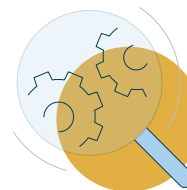
AFTER SALES SERVICE

Our team of sales engineers make regular client visits to troubleshoot and offer suitable suggestions for stocking recommended spares. We also provide operational training to clients' staff to ensure smooth operations. We believe in 24/7 after-sales support. Please contact if a visit from our service team is necessary.



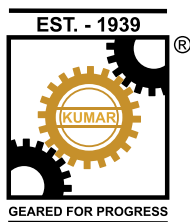
SPARE PARTS

In addition to the occasional troubleshooting visits, which can be arranged to monitor progress or advise on possible expansion plans, we can also arrange spare parts as required.



TECHNICAL AUDITS

We can arrange technical audits of your existing plants and generate detailed performance reports to assist with process changes related to output, energy consumption, spares, inventory and plant upgrades. Technical audits reduce downtime as they ensure regular preventive maintenance of plants and machines.



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