



# NIKUL PHARMA

## EQUIPMENT

**Manufacturer  
Of Process  
Equipments  
for Pharmaceutical,  
Chemical, Api , Food,  
Cosmetics &  
Beverages industries**







NIKUL PHARMA  
EQUIPMENT

# Mixing, Blending & Kneading Technique.



## High-Shear Mixer Granulator - ( RMG )

A high-shear granulator consists of a cylindrical or conical mixing bowl, a three-bladed impeller, a chopper, an auxiliary chopper, a motor to drive the blades and a discharge pot. By either circulating hot or cool liquid or steam through the jacket, the mixing bowl is jacketed for heating or cooling the contents of the bowl as the case may be. The high-shear wet granulation process using high-shear granulator can be divided into 5 stages and they included ;

- Internal and External surfaces of Mixing Bowl, Mixing Bowl cover, Impeller, Granulator, and Discharge Chute constructed in SS 304/316L.
- Numatic Operated lid lifting.
- Parts easy to dismantle, clean and re-assemble
- Pneumatics pre-tubed
- Gaskets of Teflon / Silicon
- Bowl surface finish of 0.3RA (inside / outside)
- ATEX Compliant option available
- Customised capacities available
- Capacity 5 Ltrs To 750 Ltr

## Ribbon Mixers Blender

Ribbon Mixers are a specific type of powder blenders that consist of 2 parts mounted on a central shaft. The mixing medium often consists of inner and outer helical ribbons that are designed to move material both inwards and outwards. Ribbon blenders get their name from the ribbon agitator that makes up part of their design. A U-shaped horizontal trough makes up the rest of the structure of a ribbon blender. The ribbon agitator within the blender is made up of a set of inner and outer helical blades.

- Blending of a large number of dry solids.
- Drying of powdered materials suitable for wet phase mixing.
- Mixing of drugs, cosmetics, and various chemicals.
- Dry blending of capsule ingredients.
- Lubrications of dry granules and pellets in large quantities.
- Coating of solid particles with liquids to produce a suitable formulation.
- Capacity - 10kg to 5000Kg



## Paddle Mixer Blender

Paddle type Mixer or paddle blender ensure mixing of powder with liquid substances homogeneously. Also known as Mass Mixer Machine, it is widely used in mixing pharmaceutical tablet granulation powder. Apart from it also uses for food ingredients mixing, chemical powder mixing and cosmetic paste mixing operations. Machine having two variants which includes single shaft paddle mixer and double shaft paddle mixer. Suppose if you are looking for mixer that can use for mixing dry and wet materials, then paddle shaft agitator is best choice to go for. Agitator uses for blending liquids and sludges with dry solids.

- Fast, even liquid addition and coating by spraying system.
- Available in Capacity 50 kg to 4000 kg. model
- Minimal heat generated due to internal friction & High particle movement
- Paddle agitator for center discharge.
- Inner & outer paddles on the triple action multi-zone rotor.
- High Speed stirrer up to 60 RPM.

## Sigma Mixer Kneader And Extruder

The sigma mixer extruder contains a set of kneading blades and one or two extrusion screws that are contra-rotating. In a w-shaped trough, the blades are positioned on a horizontal axis. One or two extrusion screws are below the blades in a separate cavity. The Kneader Extruder includes a set of counter-rotating kneading blades and a discharge screw. The blades are mounted on a horizontal axis in a u-shaped trough. Below the blades in a separate cavity is the discharge screw.

- Low mixing time approx. 15% less time.
- Eliminates the manual task of scraping out sticky/tacky materials.
- Eliminates operator exposure to materials of elevated temperatures or of a toxic nature, thereby improving plant safety.
- Speed variation of the extrusion screw allows adjustment of the product flow, depending on the viscosity.
- Sigma Capacity - 10 Ltrs to 2500 ltrs.





# Blending and Mixing Technique



## Octagonal Blender

The name "Octagonal" is given because of its form and the ability to hold larger quantities of particles. Octagonal Blender might be similar to double cone or even "V" adjuster but occupies less space and power. Equipped with a shell of octagonal shape supported by both ends, the special thing about this machine is that even though it operates in low speed operation, it balances high proportion of material in a very convenient manner.

- Capacity - 25 ltrs to 25000 ltrs.
- Slow speed mixer with gentle amalgamation of Dry granule.
- Optional in built in space intend. No external PTS necessary.
- The baffles are eliminating with amalgamation profile analysis obtainable.
- Pneumatically actuate valves for dust free transfers.
- Bins with Level sensory for automatic cut off.
- Automatic Seals on shafts for Pneumatic connections.
- CGMP design for effortlessness of cleaning with CE Certified.
- Capacity obtainable from 50 L to 10000 L (Higher capacity up to 20000 L on demand).

## Double Cone Blender

Mixing is one of the most common pharmaceutical operations. It is difficult to find a pharmaceutical product in which mixing is not done at one stage or the other during its manufacturing. Double Cone Blender is one of the commonly used equipment for mixing ingredients. Widely used in the Pharmaceutical and cosmetic industry, double cone Blender Versions are used for mixing of fragile homogenous particles of dry powder and granules of different sizes and forms. The cone form of the Version enables uniform combination with automated ejection with higher efficiency and a stainless steel body.

- The Double Cone Blenders design is most often used for the intimate dry blending of free-flowing solids.
- The solids being blended in these units can vary in bulk density and in the percentage of the total mixture.
- Materials being blended are constantly being intermixed as the Double Cone rotates.
- Capacity- 25 ltrs to 2500 ltrs.



## Conta Bin-Container Tumbler Blender

Container Tumbler Blender is a single step dust-free transfer system to intermix the powders in a homogeneous form in the production of tablets and capsules in formulation plants. With better mixing property and an IBC Bin advantage, it can be inclined at an angle of 15 degrees to 20-degree angles, giving an easy uplift for easy rotation of the blender.

- Interchangeable different capacity IBC Bin can be used on same machine use for mixing.
- This is a closed and contained system where by a single step transfer material from Container of the Conta blender is transferred to the tablet press hopper.
- In granulation room the dry granules enter to the container for blending through a dust free connection and the same container is loaded over to the blender for blending
- Totally dust free.
- Also another advantage is adaptability of this system to handle more than one size of bunkers or containers so processing of different sizes of production batches in single equipment.
- Capacity- 50 ltrs to 2000 ltrs

## Continuous Mixer

A continuous mixer is a large piece of industrial equipment used to blend different ingredients together. It may be used in a variety of different industries, including food production, chemical manufacturing, pharmaceutical testing and manufacturing, and plastic/composite production. A mixer (as of asphalt) into which the ingredients of the mix are introduced continuously, are mixed as they pass through the mixer, and are then discharged in a continuous operation. opposed to batch mixer.

- Lower size of the mixing vessel for a same production level.
- Less segregation risk due to the absence of handling operations, such as filling and emptying.
- Lower running costs.
- Better definition of mixture homogeneity, at the outlet of the apparatus.
- Capacity- 25 kg to 2000 kg





# Blending and Mixing Technique



## 'V' Shape blender

One of the most equipment in this category, V cone blender adjuster or twin shell adjuster comes with two hollow cylindrical shells welded at an angle of 75 degree of 90 degree. The equipment is mostly used when there is a need of precise formulation of powder and granules mixing & lubricating. The containers having the "V" shape creates continuous split and recombines the materials creating minimal attrition. The equipment is mostly used in Pharmaceutical, food, cosmetics, nutraceutical, plastic and other allied industries. Easy to clean and with an option of intensifier bar for special applications, V cone mixer is designed in a manner to give its customers a wear resistant discharge, minimal maintenance and zero contamination.

- Enclosed rigid drive with reduction gear box and motor.
- "A" type rigid structure of the machine with two sides resting of product container.
- Product container having discharge with butterfly valve and man hole.
- Capacity- 25 ltrs to 3000 ltrs.
- Safety reeling provided for rotating area of product container.

## Mass Mixer

The mass mixer is designed for uniformly mixing of dry and wet material and specially suitable for powder of pharmaceuticals, food, herbals, agro chemicals & chemicals. The mass mixer consist of a rigid fabricated structure motor, gear box, mixing drum, stirrer and tilting device. specially designed self adjusting sealing arrangement of unique design is provided to ensure that no black particle enters into the mixing drum. the material under mixing process can be monitoring bthrough acrylic dust cover and its control dusting and contaminations. the tilting device is provided to make easy the unloading of the material and easy cleaning of the mixing drum.

- Available in working capacity of 5 litres – 1000 litres
- Available in all grades of stainless steel, carbon steel and special alloy steels.
- Stainless steel surfaces are polished to desired standards. All exterior non-stainless surfaces are painted with enamel paint.
- Paddle agitator for center discharge.
- Blender is mounted on supports providing adequate discharge clearance.



## Planetary Mixers

Planetary mixers are an ideal mixer for the products of different viscosities, densities, shapes & proportions. The major uses include the production of latexes, dispersion & microdispersion of chemicals, explosive & agricultural pesticide formulations. It is suitable for mixing / blending powders as well as thorough mixing of ointments, creams, lotions, toothpaste, resins, slurries, ceramics, colors, pigments, rubber & other compounds.

- Provision to mix Products under vacuum for de-aeration purpose.
- Top drive & agitator assembly can be lifted & lowered by motorized as well as hydraulic systems.
- Teflon scrapers are provided to avoid localized heating or cooling & ensure uniform mixing.
- A smaller version of planetary Mixer is Provided with a manual lifting arrangement for the bowl instead of top drive & agitator assembly.
- Capacity - Capacity - 3 ltrs to 2500 ltrs.

## Conical Screw Mixer

The conical mixer can be equipped with a high speed rotor for liquid addition or de-lumping product. Rotating up to 20m/s, this rotor creates vortex effect and injects the liquid through the paddles directly in the product resulting in an excellent dispersion or coating. By spraying the liquid in the mass itself in a vortex, we avoid over-moistening of particles and risk of sticking phenomena on the vessel. This intensifier can replace several lump breakers.

- Gentle mixing of free flowing and segregative powders, pastes and liquids
- Addition of liquids of powders by means of spray nozzle or intensifier
- Intensive dispersion of liquids and solids by means of the intensifier
- Granulation by moisture addition
- Heating and cooling
- Drying by means of heat input in combination with vacuum and possible liquid recovery
- Capacity- capacity 50 kg to 1000 kg.





# Drying and Vacuumize Drying Technique



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## Fluid Bed Dryer - FBD (cGMP Model)

Fluidized bed dryer (also called fluid bed dryer) is a kind of equipment used extensively in the pharmaceutical industries to reduce the moisture content of pharmaceutical powder and granules. The equipment works on a principle of fluidization of the feed materials. A continuous fluid-bed system is a machine in which a continuous flow of "wet" powder, granular or flakes material is conveyed over a perforated bed.

- Excellent gas-particle constant results in strong heat and mass transfer rates, resulting in high moisture removal rates.
- If part of the thermal energy for drying is supplied by the internal heat exchanger, high thermal efficiency is usually achieved.
- Lower initial and ongoing costs
- Drying contact time is reduced.
- Stability and easy to control.
- Capacity - 5 kg to 1000kg

## Tray Dryer (cGMP Model)

Chemicals and pharmaceuticals are two industries where tray dryers are used. Tray dryers are well suited to drying sticky materials, granular mass or crystallized materials, precipitates, and pastes. Agricultural drying has been made possible with its simple design and capacity to dry large quantities of products. Tray drying refers to dehydrating small pieces of produce by exposing them to a source of hot dry air or to the sun until dry enough to store at ambient temperature with minimal spoilage.

- Capacity - 6 tray to 192 tray.
- **Fan & Motor** : According to models doors are provided with smooth moving hinges, latch catch & sealing gaskets. Well balanced large propeller type fan (S) fitted inside the chamber with suitable shaft & dual bearing with Electric motor (S) drive.
- **Heaters** : 'U' type tubular heaters are provided inside the chamber for maximum heat transfer. Steam heated models are fitted with finned type steam radiators.
- **Controls Panel** : Control Panel box consists of contactor assembly, On & Off switch, Digital Controller neon lamps, operating push buttons are incorporated in the control Box.



## Rotocone Vacuum Dryer- (RCVD) (cGMP Model)

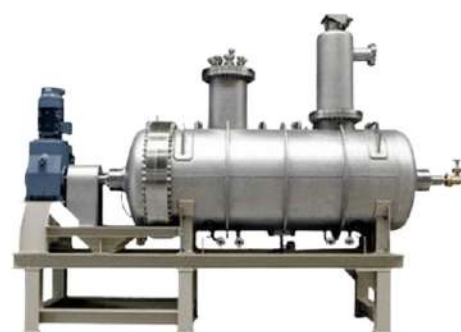
Roto Cone Vacuum Dryer is suitable for drying the material which can not operate at low Temperature easily oxidized, poisonous in nature. It operates at low Temperature efficiently under vacuum. It is very economical by total solvent recovery. The roto cone vacuum dryer is equipment used in drying of products that are damaged by high temperatures and materials having special characteristics such as easily oxidized, strong irritants, poisonous dust and volatile compounds. The machine is also designed to release a product that is completely powdered and lump free.

- Drying time Reduces and eliminates need of re -drying of lumps.
- N2 pulse jet dust filter provided for better operational efficiency of products.
- Discharge valve with Quick openable for direct packing of dry products into bags or drums.
- Best Suitable to process crystalline or amorphous powders which prone for lumps.
- CGMP construction with safety railing to avoid personnel injury. Available from 100 Ltrs. to 5000 Ltrs. gross capacity.

## Paddle Vacuum Mixer Dryer (cGMP Model)

The Paddle Vacuum Mixer Dryer is suitable for mixing and drying the material which can not operate at low Temperature easily oxidized, poisonous in nature. It operates at low Temperature efficiently under vacuum. It is used for raw materials drying and mixing powder or granules of Pharmaceutical Materials, Crystalline, Insecticides, Pesticides, and Food industry and heat sensitive products.

- Continuous rotation of ribbon blade, material will make continuous movement motion in the container and reach to uniform mixing and drying at low temperature..
- Dust free operation.
- High vacuum operation
- Fast and uniform homogeneous mixing & drying at low temperature.
- Solvent recovery
- Continues vacuum maintain during process..
- Very low value of final moisture even at low drying temperatures.
- Paddle mixer capacity - 100ltr to 1000ltr.





# Drying and Vacuumize Drying Technique



## Vacuum Shelf Tray Dryer (cGMP Model)

The Vacuum Shelf Dryer is basically a tray dryer working under vacuum conditions. Its use vacuum to pump air and humidity out from the closed heat chamber due to vacuum making the chamber on the vacuum state thus increased drying rate greatly and saved energy. The boiling point of the material to be brought down for drying and the entire system is in closed loops so, no contamination occurs. The evaporation's evolved during the drying process is cooled down through a connected condenser and collected in receiver.

- Vacuumize shelves drying on low temperature system for high toxic, Hygroscopic & heat sensitive materials.
- Vacuumize closed system can be with condenser, Receiver for solvent recovery.
- Very low value of final moisture even at low drying temperatures.
- Safety feature: Vacuum relief valve, Safety pressure relief valve, Temperature Controller & Overload protection.
- Option for heating media can be steam/ hot water / hot thermic fluid.
- Capacity - 6 trays to 96 trays.

## Agitated Vacuum Dryer (cGMP Model)

Agitated vacuum drying is an efficient method for removing volatile components from plastics, ceramics, metals, specialty chemicals and other products. Due to the reduced pressure within the dryer, the liquid's boiling point is lower than in atmospheric conditions and drying can proceed at lower temperatures. The entire drying chamber is well machined to bring about a close encounter with the agitator blade thus ensuring proper shuffling of the material and thus avoiding localized overheating. The leak-proof front opening door ensures easy cleaning of the entire chamber.

- Capacity - 5 litres to 5000 litres chamber volume.
- The top-loading and bottom unloading facility provides for easy charging and discharging of the material.
- The cyclonic trap prevents the fine dust of the dry material from flying into the vapor condenser.
- The condenser and the condensate collection tank prevent the vapors from entering the vacuum pump.



## Agitated Nutsche Filter Dryer (ANFD) (cGMP Model)

Agitated Nutsche Filter/ Dryer (ANFD) technology is particularly suited to meet the stringent requirements of the pharmaceutical and fine chemicals industry for solids washing separation & Drying, in the most challenging process conditions. Agitated filters and dryers, combined filter-dryers are designed to remove the residual liquid phase from the cake by performing the filtering and drying operations in the same vessel. Agitator filters are suitable for filtration of liquids with a high solid content. The liquid is separated mechanically using a permeable layer/ filter medium under vacuum or pressure.

- A special height-adjustable agitator design improves the degree of filtration effectiveness and enables the mechanical discharge of the solid.
- It can effectively perform the separation of solid matter from a liquid under pressure or vacuum, in a closed system.
- Capacity - 5ltr to 5000ltrs.
- A special height-adjustable agitator design improves the degree of filtration effectiveness and enables the mechanical discharge of the solid.

## Infrared Dryer (IR Dryer) (cGMP Model)

Umbrella Infrared dryer its kinds for the open/ outdoor heating/ drying applications, the main advantage of the Umbrella type Infrared dryer is its Umbrella structure which enables the Infrared waves to direct on the material under the process. The Umbrella is designed with such material that it should not absorb the Infrared waves emitted by the Infrared emitter placed under the Umbrella structure.

- Highly efficient in converting electrical energy into heat for electrical IR.
- Greater rate of heat transfer.
- Compact in size.
- Heats only the object without heating the environment.
- Easy to zone for uniform heating of the product.
- Faster response to changing process conditions.
- Quick start up and shut down.
- Easy to have cut off zones for narrow widths.
- Umbrella of the Infrared Umbrella dryer works as direct to the Infrared waves.





# Milling, Size Reduction & Grading Technique

## Cone Mill



## Vibro Shifter



## Multi Mill



## Ultrasonic Generator

### • Cone Mill (cGMP Model)

Cone milling is one of the most common methods of milling in the pharmaceutical, food, chemical and associated industries. They are typically used for size reduction and deagglomeration or delumping of powders & granules. Generally used for reducing material to a particle size as low as 180µm (80 mesh) a cone mill produces less dust & heat than alternative forms of milling. The gentle grinding action & quick discharge of correctly sized particles ensure tight particle size distributions (PSDs) are achieved.

### • Multi Mill (cGMP Model)

Multi Mill is a self contained portable unit useful for high speed granulating, pulverising, mixing, shredding and chopping of wide range of wet and dry materials without special attachments. Desired output of product depends on wide range of model selection which varies through direct driven, belt driven, perforated screen size & motor HP. Multi Mill is widely used in pharmaceutical industries, food industries, R&D purpose, pharmacy colleges for education purposes, etc.

### • Ultrasonic Vibro shifter (cGMP Model)

Vibro Sifter is a revolving vibrational sifting system designed to provide sorting, scale and scoring procedures for all applications in the medicinal, chemical, food and cement industries. And so, when you need separating, scalping, and grading during processing, then this is the total equipment you require. Pharmaceutical Vibro Sifter is used to separate mass composition of solids, liquid from solid and grading the material as per particles size. It is a type of pharmaceutical machine used for separation of pharmaceutical solids or liquids. A vibro sifter machine consists of a screen / mesh placed on the base plate.

### • Ultrasonic Generator (cGMP Model)

The electronic ultrasonic generator is a power supply. It transforms AC electrical energy from a power source such as a wall outlet, to electrical energy appropriate for energizing a transducer at an ultrasonic frequency. In other words, the ultrasonic generator sends high-voltage electrical pulses to the transducer. The method to detect the transducer frequency is simply to use impedance analyzer. If you do not have the impedance Analyzer (expensive device), use function generator and remove the transducer connection.

## COMMUNITING MILL (cGMP Model)

Comminuting mill is used for the down sizing, milling, pulverization and dispersion of wet and dry products in pharmaceutical, chemical, food, cosmetics, fertilizers industry etc. Comminuting mill is used for the down sizing, milling, pulverization and dispersion of wet and dry products in pharmaceutical, chemical, food, cosmetics, fertilizers industry etc. The product is poured from the top through in feed hopper and material falls on the rotor blades beater assembly for milling or pulverization. Due to the knife edges mounted on rotor, the downsizing of particle takes place and through sieve material gets pushed outward from the bottom opening.

- Fitted on castor wheels for easy mobility.
- Wide range of sieve of perforated and wire-mesh.
- Easy and simple to change knife to impact forward vice-versa by reversible chamber.
- Dynamic balanced beater assembly bearings are in a separate pillow block at outside chamber.
- High speed milling, granulating, pulverizing, mixing & size reduction of wet & dry material.

## Oscillating Granulator (cGMP Model)

Oscillating granulator is used for gentle homogenization, size reduction, grading and sieving of dry, sensitive powders and granules in pharmaceutical, chemical and food industries. Oscillating Granulator has one rotor with five edges, which oscillate on horizontal axis at about 180 per minutes. There is one half round sieve mounted at the bottom of the rotor. Product is charged from the top through in feed hopper and material falls on the rotor lades.

- Uniformly granulation & fewer fines of wet material and dry materials.
- Rotor move oscillating motion with 180 stroke per minute.
- Easy to operate; move, clean, convenient
- An Inline granulation & user friendly.
- Zero dusting & maintenance free.
- Flame proof motor and Push Button Station.
- Inline granulation with Roll compactor & Tipper with FBD Bowl.
- Limit switch at charging hopper & over load relay protection.





# Tablet Presses Technique



## Single Rotary Tablet Press Machine

A tablet press or a pill press machine is a mechanical device that is used to manufacture tablets by compressing the powder. The tablets, hence produced, are of uniform size & weight. These machines have the competency to manufacture a variety of tablets for multiple industries, ranging from pharmaceuticals and nutraceuticals to industrial pellets and cosmetics. The single rotary tablet press machine is a highly compatible machine and is extensively used in industries like- pharmaceutical, food, etc. It is designed for small batch production. The hopper capacity of the machine is 4 litres and the number of stations varies from 9 to 23. Main pressure and Pre-pressure of single rotary tablet press machine can be altered. Both values depend on the size of the compress and the filling depth. They also depend on the physical specification of the material that is used for compression.

## Double rotary tableting machine

The double-sided rotary tablet press machine is designed to facilitate this process. A double rotary tableting machine is used to produce definite and simple tablets from powdered material. It is a very much widely used machine in various sectors like Pharmaceutical, Herbal medicine producing industry, Ceramics, and other industries that are related to this industry. A double rotary tableting machine is designed to work efficiently, the machine compresses the tablets with maximum cleanliness and accessibility. Therefore this simplifies the maintenance of the Rotary compression machine. Any machine operator can easily operate the Double rotary tableting machine. There is no much hassle in its operations.



## Tablet Inspection Belt

Suitable for Visual Inspection of Tablets from both the sides  
Design is cGMP - All Product contact parts AISI 316 & non-contact parts AISI 304 «  
The output always depends upon tablet size and operator skill «  
Easily movable and easy to dismantle for cleaning «  
The belt is driven by 0.5 HP AC motor controlled through AC Variable Frequency Drive «  
Tablet Inspection is suitable for visual inspection of tablets from both sides. An electronic regulator can regulate the speed of feeding of the tablet. The tablets are inspected on one side and automatically get reversed and travel on a lower belt for inspection on the tablet's other side. The rejected tablets are removed by hand and passed tablets are routed to a container through a magnetic chute to hold any foreign/steel particulate. Inspection Belt Units are specially designed with Stainless Steel grade 304 and are equipped with Food Grade PVC endless belt.

## Tablet Capsule Metal Detector

Pharmaceutical metal detector systems facilitate quality control by monitoring for the presence of ferrous and other metallic contaminants in granulated or powder-form dosage forms. Metal detectors are used in food and pharmaceutical industries to detect metal contamination in products or packets. The metal contamination may occur in food and pharmaceutical products due to the presence of metallic pieces or components (viz., fasteners, pins, buds, eroded or corroded metallic parts etc.)

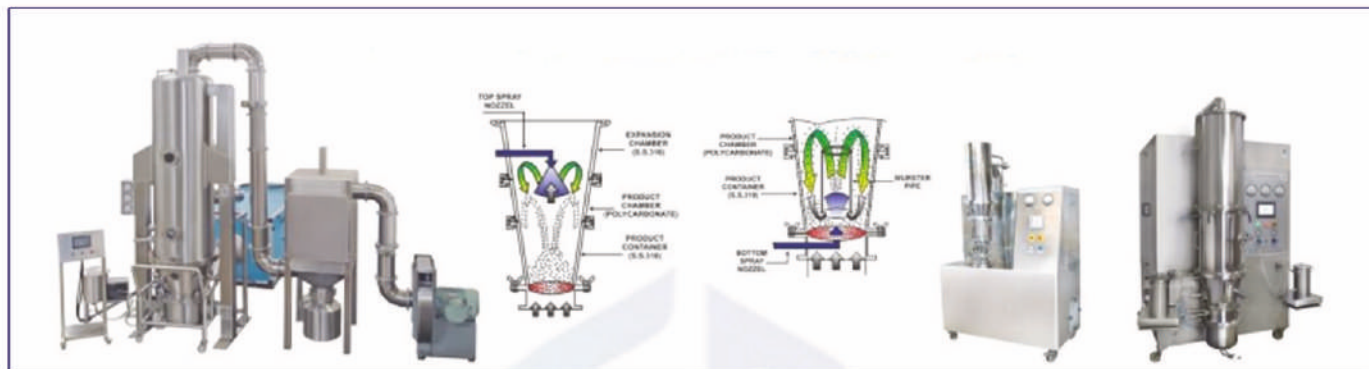
- Very high throughput rate
- Superior Detection Capability
- Self-Calibration
- Maximum Configurability
- IQ/OQ documentation package included
- Modern, Rugged User-Friendly Interface
- The principle of transmitting a magnetic field and analyzing a return signal from the target and environment.





# Spray Granulation, Pellets Coating & Integrated Granulation Technique

## Fluidize Bed Granulation & Pellets Coating- FBPC



Nikul Pharma Fluid Bed Processing involves drying, cooling, agglomeration, granulation and pellets coating of particulate materials. Its ideal for heat sensitive and non heat sensitive products in Pharmaceuticals, Biotech, Nutraceuticals, Chemicals, Foods, Dairy, Confectionery, Agrochemicals, Herbals & Detergents industries.

- Available model 2 liter to 1200 liter working capacity.
- Single Pot Technology for mixing, granulating, drying & Pellets Coating.
- Easy mechanism to change from process of granulation to coating.
- Wurster Coater-Bottom Spraying system for Pellets and Granules Coating.
- Top Spraying system for Granulation.
- Sophisticated PLC controls with HMI Touch screen.
- Precise flow rate Spray system with atomized spray gun and peristaltic pump.

## Integrated Wet Granulation Line



Nikul Pharma Integrated granulation lines as per current Good Manufacturing Practices requirements that product is fully contained during processing to protect operators and environment. Also improved productivity through closed materials transfer, automation, increased yields and efficient cleaning procedures.

- An Integrated granulation line for solid dosages available from 2 liter to 1200 liter working capacity.
- Closed process technology for grading, mixing, granulating drying, milling, blending & tableting.
- Reduced need of cGMP space.
- Reduced amount of transfer operations.
- Reduced need of operations and operation cost.
- Higher yield.
- Better containment for highly potent materials.
- Materials transfer by vacuum transfer system.
- Sophisticated PLC controls with HMI Touch screen.



# Tablet Coating & Material Conveying Technique



## Automatic Tablet coating - Autocoater (cGMP Model)

Fluidized bed dryer (also called fluid bed dryer) is a kind of equipment used extensively in the pharmaceutical industries to reduce the moisture content of pharmaceutical powder and granules. The equipment works on a principle of fluidization of the feed materials. A continuous fluid-bed system is a machine in which a continuous flow of "wet" powder, granular or flakes material is conveyed over a perforated bed.

- Available model 12" to 66" pans size for 1 kg to 500 kg batch size.
- Tablet film & sugar Coating with Aqueous, Non aqueous, Enteric, Non Enteric.
- Perforated Pan or solid pan with variable speed drive through VFO.
- Advanced PLC Controls with HMI Touch screen.
- Atomize Spray systems with Peristaltic pump, spray Gun & solution tank.
- Inlet Air handler is with Pre filter, blower, dehumidify coil, heat exchanger, Final filter & HEPA.
- Exhaust air blower with scrubber for treats air pollution free.
- Tablet discharging through special diverter assembly.
- Inbuilt with CIP/WIP System.

## Conventional Coating Pan/ Pellegrini type Coating Pan



Conventional coating machine are used to sugar coat tablets, pellets, pills, candy etc. in for a variety of industries such as Pharmaceuticals, Confectionery, Foods and others. They are also used for rolling and heating beans and edible nuts or seeds.

- Available model 12" to 72" pan size for 1 kg to 500 kg batch size.
- Solid Pan with 30° mounted with drive unit.
- Hot air blower system with temperature controls.
- Available pellegrini type coating pan for 300 kg batch size.
- Available mobile type Atomize spray system with peristaltic pump, solution tank & spraying nozzle.
- Available polishing canvas pan.

## Materials Conveying System



The Tippler-lifting and tipping device is a hydraulic device which is having an arm used for lifting and turning FBD bowl by 180. Thus it is used to unload bowl of fluid bed dryer trough milling to IBC Bin.

The IPC Bin loader is used for transferring and discharging the material dust free and without human touch in pharmaceutical industries for Load powder in to HSMG, tablet press, blender & blister pack

The IPC Bin is use for handles, stores, transfers and mixes the material dust free and without human touch in pharmaceuticals, foods & chemicals.

The Pneumatic /Vacuum transfer system is unique dry material transfer system for dust free and avoid to human touch.



# Liquid Dosage Process Plant Technique

## Oral Liquid Syrup Manufacturing Plant



Nikul Pharma Equipment has been designed & manufacturing fully automatic Oral Liquid Syrup Manufacturing Plant consisting of Sugar Loading System, Sugar Melting Vessel, Basket Filter & Transfer Pump, Syrup Manufacturing Vessel, Inline Homogenizer, Zero Hold up Filter press, Storage Tank with stirrer, Interconnecting pipeline, Transfer Pumps, Integrated automatic control panel & Working Platform. Available capacity is 500 liter to 5000 liter per batch size.

## Preparation Vessels, Storage Tank



Nikul Pharma Equipment has been designed & manufacturing preparation vessels, Reactor and storage tank and has consolidated a process as customer needs.

- Design compliance with cGMP.
- Capacity up to 25,000 Liter with Vertical & Horizontal design..
- Atmospheric, Vacuum or Pressure Operation. .
- Plain, Jacket for heating & cooling..
- Mechanicals or Electro polishing of internal surface.
- Integrated Cleaning in Place-CIP & Sterilizing In Place-SIP as an Option.
- Validation protocols & Instrumentation celebration

## Inline Homogenizer/ Dispohomo Reactor/ Stirrer/ Colloid Mill



Nikul Pharma Equipment has been designed & manufacturing different type of Inline Homogenizer, Dispohomo Reactor, Agitator, Stirrer & Colloid Mill and has consolidated a process as customer needs,

- Design compliance with cGMP.
- Capacity up to 5,000 Liter.



# Injection & Sterilizing Technique



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## Multicolumn Distillation Plant

Multi-Column Distillation Plant is based on FINN-AQUA design. It consists of specially designed columns that make optimum use of interstage heat exchange (Multi-effect distillation method) to produce pure pyrogen-free sterile distilled water for injectable as per IP/BP specification.

- Design is cGMP - All contact parts AISI 316 & non-contact parts AISI 304
- Capacities available from 50 ltrs to 2500 ltrs
- Electro polished from inside & outside
- PLC based system for automated operation

## Dry Heat Sterilizer

Dry heat sterilization is accomplished by the conduction of heat. Heat is absorbed by the outside surface of the device and is transferred through the entire device till the target temperature is attained. Dry heat kills microorganism by oxidizing molecules.

- Design is cGMP - All contact parts AISI 316 & non-contact parts AISI 304.
- The sterilizer is supplied with pressure module with HEPA Filter.
- Temperature range of 160°C-180°C to 250°C / 270°C.
- The doors are provided with vertical latch arrangement for proper locking.



## Pressure & Filling Vessels

Pressure vessels are used to transfer the product to the membrane filter under Nitrogen pressure. While Sterile filling vessels are used to collect the filtered sterile solution. They work as holding vessels in the product filling room. They consist of a Type 316 L stainless steel.

- Design is cGMP- All contact parts AISI 316 & non-contact parts AISI 304.
- Available capacities from 50 ltrs to 200 ltrs.
- Electro polished from inside and outside.

## Pure Steam Generator

As per cGMP requirements it is recommended to use Pure Steam in place of filtered plant steam. This steam is used for all in-situ sterilization of vessels, Piping Distribution systems, autoclaves, and for humidification of sterile rooms. This will prevent contamination by particulate matter, organics and biological loads like Pyrogen, which is unavoidable in the case of plant (black) steam.

- Design is cGMP - All contact parts AISI 316 & non-contact parts AISI 304.
- Available capacities from 100 kg to 500 kg / hr.
- Reduces scale effects.
- No circulation pumps or spray nozzles required.
- Available in both vertical and horizontal configurations.
- PLC based controls.





# Ointment/Cream/Paste Process Plant & Filling Technique

## Ointment/Cream/Paste Gel Manufacturing Plant



Nikul Pharma Equipment has been designed & manufacturing fully automatic Semi solid manufacturing Plants are ideal tools for the pharmaceutical & cosmetic industries for the production of Ointment, Cream, Lotion, Gel, Tooth Paste & emulsions & homogenization, Available model 50 Liter to 5000 Liter working Capacity.

The fully automatic and semi automatic Ointment, Cream, Tooth Paste, Gel, Shampoo manufacturing plant consisting of:

- Pre determined water phase vessel
- Interconnecting pipeline.
- Pre determined oil, wax, and petroleum jelly phase vessel.
- Transfer Pumps (Bump Pump, Lobe Pump & Metering pumps)
- Vacuum Homogenizer Mixer vessel

## Tube Filling and Sealing Machine

Tube Filling and Sealing Machine Designed for untouched and single machine process. Tube filling machines are manufactured in order to fill ointments, toothpaste and other material in a plastic tube. The tube fillers are a reliable and accurate filler system that offers clean filling of the tube at optimum speed. The role of tube filler is to measure the parameters for quality filling of tubes.

Salient Features:

- Design is cGMP - All Product contact parts AISI 316 & non-contact parts AISI 304
- Capacities from 35, 60, 120 tubes per / min
- Specially designed no tube no fill Mechanism
- Extremely accurate filling volume at each pump setting
- Tube changeover from one tube size to another

## Liquid Filling Machine

Machines employed for filling of liquids or powders into bottles are called bottle filling machines. The bottle filling machines are the important machine tools for the packaging process in various industries like pharmaceutical, chemical, agriculture, food etc. As the bottles are released into the filling area, a sensor sees the bottles and will automatically begin the filling process by actuating the filling machine. The Auto-Fill™ provides a variable fill time setting that can be adjusted to provide the amount of time required for your filling machine to fill your bottles.

- This machine is used to package syrup, milk, water, glycerin, juice wine liquor, and shampoo. Lotions, liquid soaps, lubricant oil, motor oil, essential oils, cleaning chemicals, and cooking oils also use this filling technology.





# Reaction & Filtration Technique



## Reaction Vessel

Reaction vessels are the heart of a chemical plant where the chemical changes and wide variety of reactions take place which include condensation, polymerization, etherification hydrolysis, hydration, reduction, oxidation, hydrogenation etc at a pressure (up to 30 kgs/cm<sup>2</sup>) and at temperature ranging -20°C to +250°C.

- In industry reaction vessels are made of unreactive metal alloys with a high melting point such as stainless steel.
- In a laboratory most reaction vessels are made of glass or ceramic since they are unreactive so do not interfere with the reaction taking place and have a high melting point so they are not damaged during an exothermic chemical reaction.
- In industry reaction vessels are made of unreactive metals.
- In a laboratory most reaction vessels are made of glass or ceramic since they are unreactive so do not interfere with the reaction taking place.

## Agitated Nutsche Filter Dryer (ANFD)

Agitated nutsche filter dryers (ANFD) are a mainstay in fine chemical and pharmaceutical manufacturing. They are multipurpose pieces of specialist equipment with a wide range of industrial applications, but they are primarily used for active pharmaceutical ingredient (API) filtration following crystallization. The minimum hold up of filtrate in the equipment. Reduced workforce & no manual handling of the product. The Agitator moves clockwise, anticlockwise, up and down. This ensures thorough washing and re-slurring of the cake. Toxic and hazardous material can be processed. Product purity maintained. Blending of product possible before discharging. The product can be washed thoroughly and economically with solvents. Complete automation with PLC is available.

- Capacity – 10ltr to 5000 ltrs
- Vacuum or pressure filtration possible.
- The inert gas atmosphere can be maintained.
- Minimal contamination of the cake.
- Very high solvent recovery.



## Centrifuge

Centrifuge refers to a device that uses its centrifugal force and separates all the components present in a fluid by spinning that particular fluid at a very high speed inside the container as this separates the fluids of various densities from its solid form. It generally works by creating a denser particle and substance that can move towards the centre in a rotational form. Also, the object which is less dense can be moved and thereby displaced to the centre of the machines. In size 24", 36", 48", 60" Contact part AISI 316 non-contact part AISI 304 as per cGMP model.

- Capacity – 10 kgs to 600kgs

## Zero Hold Up Filter Press

The Zero Hold Up filter press is used for achieving clear filtration quality for high-value liquids. The press has the cake filter aid and solids enclosed which conveniently allows the filtration of toxic, hazardous, and explosive liquids. Sparkler Filter Press is a filtration machine used to filter liquid in pharmaceutical, chemical, beverage, and other industries. Filter Press works on the principle of pressure feeding. Sparkler Filter Press is considered the most efficient filtration machine due to its significant properties

- Design is cGMP - All contact parts AISI 316 & non-contact parts AISI 304
- Complete filtration process without hold up of unfiltered liquid
- Gives crystal filtration by filtering particles up to 1 micron size.
- Flame proof motors and electricals available





# Liquid Dosage Process Plant Technique



Multiple Cartridge Filter



Bag filter Housing



Vent Filter Housing



Magnetic Filter



Basket Filter

**Multiple Cartridge Filter Housing-** A Filter Housing is a casing around filter Cartridges or Bags or Basket. Filter Housings are available in different sizes and styles. The design of Filter Housing is dependent on the following factors Flow Rate. Operating Pressure.

**Bag filter Housing-** Bag Filter Housings are used in a variety of applications where the filter is to be designed for high flow rate and high dirt holding capacity. They are particularly useful for applications where there is high suspended solid load in the fluid and high flow rate.

**Vent Filter Housing-** The term vent filter is used as these filters are mounted on the top of the storage tank in order to prevent the liquid from various microbial and other particular contaminants. Vent Filter are designed as per customer's requirement and are provide with and without jacket as per requirement.

**Basket Filter-** A basket filter is suitable for coarse filtration or with low contamination. The dirt collects in the basket-like screen insert and can be easily removed during cleaning. But the filter element can also be adapted for the finest metallic chips: If desired, magnets can be installed in the screen basket filter



Module Filter



Duplex Filter



Membrane Filter Holder



Conical Filter



Leaf Filter

**Module Filter-** A Filter Housing is a casing around filter Cartridges or Bags or Basket. Filter Housings are available in different sizes and styles. The design of Filter Housing is dependent on the following factors Flow Rate. Operating Pressure.

**Duplex Filter-** Duplex strainer or twin basket strainer is a type of filter built into a fuel, oil or water piping system and it is used to remove large particles of dirt and debris. The duplex strainer system usually consists of two separate strainer baskets housings.

**Membrane Filter Holder-** Membrane filtration apparatus. Funnels Membrane Filter Funnels. This filtration apparatus are with fritted glass support that is recommended for routine filtration of corrosive liquids and removal of particles from LC solvents.

**Conical Filter-** Conical Filters are used to catch and filter any type of debris from a waste stream. A variety of mesh screens are available to remove micron-sized particulates as well as larger, 1/4" sized particles. The cone filter has been highly successful in many applications such as pumping from wells and sump pumps.

**Leaf Filter -** Leaf filters, sometimes called tank filters, they consists of flat filtering elements (leaves) supported in a shell. The leaves are circular, arc-sided, or rectangular, and they have filtering surface on both faces.





# NIKUL PHARMA EQUIPMENT



## Our Precious Clients



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