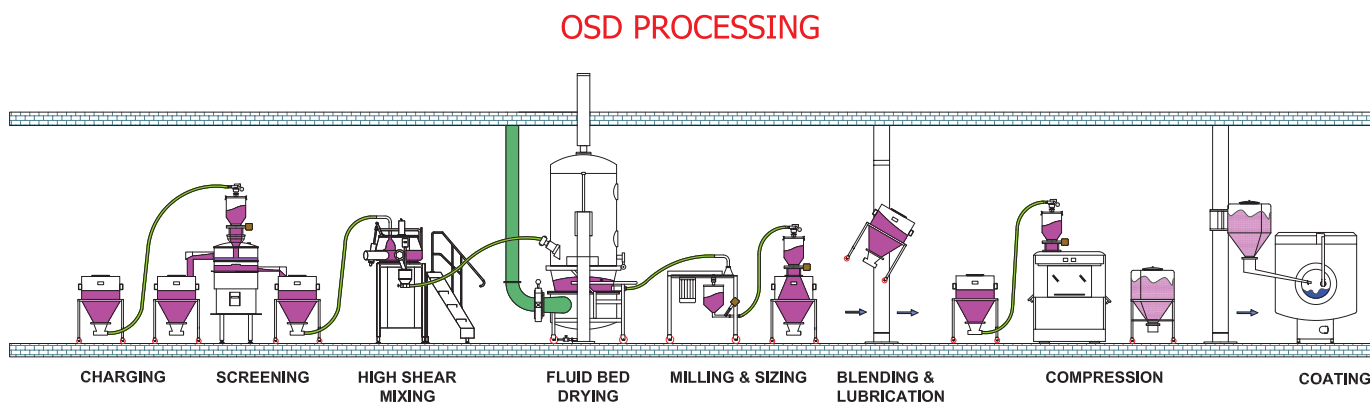


NEXTGEN PROCESSING METHODOLOGIES



In the pharmaceutical industry, granulation or agglomeration refers to the act or process in which primary powder particles are made to adhere to form larger, multi particle entities called granules. It is the process of collecting particles together by creating bonds between them. Bonds are formed by compression or by using a binding agent. Granulation is extensively used in the manufacturing of tablets and pellets.

A sequence of different operations is used to achieve the desired quality of granules. At every level of a complete granulation process, different individual operations are performed using dedicated equipments. Tablets are then compressed and coated in subsequent processes.



Screening: Pharmaceutical products are formulated using different ingredients in different combinations. According to the need of every formulation, each ingredient is required in specific weight and particle size. Process of achieving these raw materials in desired particle size is called screening. Vibratory systems having adequate sieve size is used for efficient screening.

High Shear Mixing and granulating: It is a process of mixing all the raw material homogeneously using binder solutions to achieve proper bonding between particles. High Shear Mixer Granulator (RMG) has been widely used in pharmaceutical industry for blending, massing and granulating. Mechanical agitation by different axial impeller and a chopper at respectively lower and higher speed is used for mixing, densification & agglomeration of wetted raw materials.

Fluid Bed Processes: Fluidization principle is used for drying the wet granules in quicker and effective way. Pre treated process air passes through the bed of product lying in product container and suspends the product particles for drying. Particles are carried high in expansion chamber up to the air velocity reduces and fall back due to gravity. This cycle or fluidization continues till the process is finished. During this cycle, heated process air removes the moisture from the particles and dries the product. Equipped with different essential features and systems, fluid bed systems can be used for granulation, coating, layering as well as pelletization.

Milling & Sizing: The granule properties play a very vital role in end performance of the tablet. Hence, granulation and achieving desired property of granules by sizing is the most critical operations. Equal size of active ingredients allows uniform mixing and blending with other inactive ingredients. Homogeneously mixed and dried granules can be milled using different mills or granulators.

Blending & Lubrication: Blending is essential to achieve the final homogeneous blend of granulated & sized active ingredients and inactive ingredients like color, lubricant, binder etc before compressing the tablets. All raw materials are blended in closed operation using few designs of blenders to ensure that the desired mix is available for compression.

Compression & Coating: Using compression machines, blended mix is converted in to tablets of require size and shape by applying necessary force on specific quantity of mix with the help of a set of shaped tools between close dies.

On compressed tablets, uniform film coating is done to improve the properties like visual appearance, swallow ability, taste, odor etc. It is the system of tumbling a mass of tablets in rotating pan and uniform coating solution spraying while the preconditioned process air is passing through. Pre heated process air dries the moisture from solution and allows it to create a very thin uniform film on the tablet.

LAB Mixer Granulator with fix & changeable bowl



SALIENT FEATURES

- » In compliance with CGMP Guidelines
- » All contact parts SS 316
- » Table top model having user friendly features
- » Ergonomically designed compact foot print
- » Easy to clean and maintain
- » Speed setting through frequency drive
- » PLC based operation with color HMI
- » Bowls with jacket & temperature sensor (Optional)

Technical Specifications

Model	Gross Capacity	Working Capacity	Batch Capacity in Kg	Main Motor HP (750-1500 RPM)	Chopper Motor HP (1500-2880 RPM)
RMG-3	3 Liters	2.4 Liters	0.6-1.2 Kg	1HP /2HP	0.5 HP / 0.75 HP
RMG-5	5 Liters	4 Liters	1-2 Kg	1HP /2HP	0.5 HP / 0.75 HP
RMG -10	10 Liters	8 Liters	2-4 Kg	2HP /3HP	0.5 HP /1.0 HP
RMG - 10/5/3	10/5/3 Liters	8/4/2.4 Liters	4/2/1.2 Kg	2HP /3HP	0.5 HP /1.0 HP
RMG -25	25 Liters	20 Liters	05 -10 Kg	3HP /5 HP	1.5 HP /2.0 HP
RMG -25/10	25/10 Liters	20/8 Liters	10/4 Kg	3HP /5 HP	1.5 HP /2.0 HP

LAB Processor



Technical Specification

Model	FBP-3	FBP-5	FBP-15
Gross Capacity in Liters	9	18	45
Max. Working Volume in Liters	6	10	30
Batch Size (kg) Min. & Max.	1-3	2-5	5 -15
Blower Motor (HP)	2.0	3.0	5.0
Air Flow (CFM)	270	350	550
Air Flow (m³/ hr)	460	595	935
Electrical Heater (kW)	9	12	18
Atomization Air Pressure	1- 3	1 - 3	2 - 4
Number of spray Nozzles	1	1	1
Spray Nozzle Port	1	1	1
Compressed air Pressure(bar) @ 20CFM	6.0	6.0	6.0
Drying Temp. (°C)	30-80 °C	30-80 °C	30-80 °C
Electrical supply	3 Ph. AC	3 Ph. AC	3 Ph. AC
In case of Steam Heater instead of Electric Heater			
Steam Pressure (kg /cm sq.)	3.5	3.5	3.5
Steam Consumption (kg /hr)	26	36	45

SALIENT FEATURES

- » In compliance with CGMP Guidelines
- » All contact parts SS 316
- » Table top model having user friendly features
- » Variable process controls
- » Ergonomically designed model
- » Easy to clean and maintain
- » Pneumatic bag shaking
- » PLC based operation with color HMI
- » Total process recipe management

LAB Coater with changeable pan



Technical Specification

Model	LAB Coater-18" / 12" / 8"
Working Capacity (Kg)	2-5 / 0.5-1.5 / 0.5-0.9
Pan Diameter (mm)	450 / 305 / 205
Pan Mouth Diameter	250 / 150
Pan Speed (RPM)	2-18
Main Drive Motor (HP)	1
Inlet Blower Motor (HP)	1
Exhaust Blower Motor (HP)	1
Inlet Blower Capacity (CFM)	300
Exhaust Blower Capacity (CFM)	350
Electrical Heater (KW)	6
Compressed Air (CFM at 6bar)	20
In case of Steam Heater instead of Electric Heater	
Steam Consumption (Kg / Hour)	50
Steam Pressure (Kg / Cm²)	3.5

SALIENT FEATURES

- » In compliance with CGMP Guidelines
- » All contact parts SS 316
- » Ergonomically designed compact foot print
- » Easy to clean and maintain
- » PLC based operation with color HMI
- » Interchangeable pans to accommodate smallest test batch
- » WIP system (Optional)
- » Easy front loading and un loading
- » In built process Air Handling System with HEPA filter
- » Highly efficient non chocking type spray guns
- » Automatic controlled process parameters
- » Spraying interlocked with pan rotation & blower functions
- » High efficient solution dosing system with peristaltic pump
- » Variable frequency drive for blowers to control air quantum.

Lab Mill



Lab Coating Pan



Lab Blender



Lab Sifter



High Shear Mixer Granulator



Technical Specification

Model	Gross Capacity	Working Capacity	Batch Capacity	Main Motor HP (750-1500 RPM)	Chopper Motor HP (1500-2880 RPM)	Gear Box Ratio
RMG -50	50 Liters	40 Liters	10-20 Kg	5 HP /7.5 HP	2.0 HP / 3.0 HP	5:1
RMG -100	100 Liters	80 Liters	20 - 40 Kg	7.5 HP /10 HP	2.0 HP / 3.0 HP	7.5:1
RMG -150	150 Liters	120 Liters	30 - 60 Kg	10 HP /15 HP	3.0 HP / 5.0 HP	7.5:1
RMG -250	250 Liters	200 Liters	50 - 100 Kg	22.5 HP /30 HP	3.0 HP / 5.0 HP	10:1
RMG -300	300 Liters	240 Liters	60 - 120 Kg	22.7 HP /30 HP	3.0 HP / 5.0 HP	10:1
RMG -400	400 Liters	320 Liters	80 -160 Kg	35 HP /40 HP	5.0 HP / 7.5 HP	10:1
RMG -600	600 Liters	480 Liters	120 - 240 Kg	40 HP /50 HP	5.0 HP / 7.5 HP	10:1
RMG -700	700 Liters	560 Liters	140 - 280 Kg	40 HP /50 HP	7.5 HP / 10.0 HP	10:1
RMG -800	800 Liters	640 Liters	160 - 320 Kg	50 HP /60 HP	7.5 HP / 10.0 HP	15:1
RMG -1000	1000 Liters	800 Liters	200 - 400 Kg	60 HP /90 HP	10.5 Hp /15.0 HP	15:1
RMG -1200	1200 Liters	960 Liters	240 - 480 Kg	80 HP /100 HP	10.5 Hp /15.0 HP	15:1

SALIENT FEATURES

- » In compliance with CGMP Guidelines.
- » All contact parts are made of SS 316
- » Pneumatic product discharge
- » Perfectly engineered mixer & chopper for uniform and homogeneous mixing of substances.
- » Shorter mixing and granulating time
- » Designed for optimum use of bowl capacity
- » Effective sealing for leak proof operation
- » Easy to clean & maintain
- » PLC based operations with color HMI (Optional)
- » Variable frequency drives for both motors (Optional)
- » In-line co-mill (Optional)
- » Flam proof electrical (Optional)
- » Pneumatic lead opening
- » Binder spraying system (Optional)
- » WIP / CIP system (Optional)
- » Mechanical seal for chopper and impeller motor (Optional)

Fluid Bed Dryer / Processor / Coater



Fluid Bed Processor

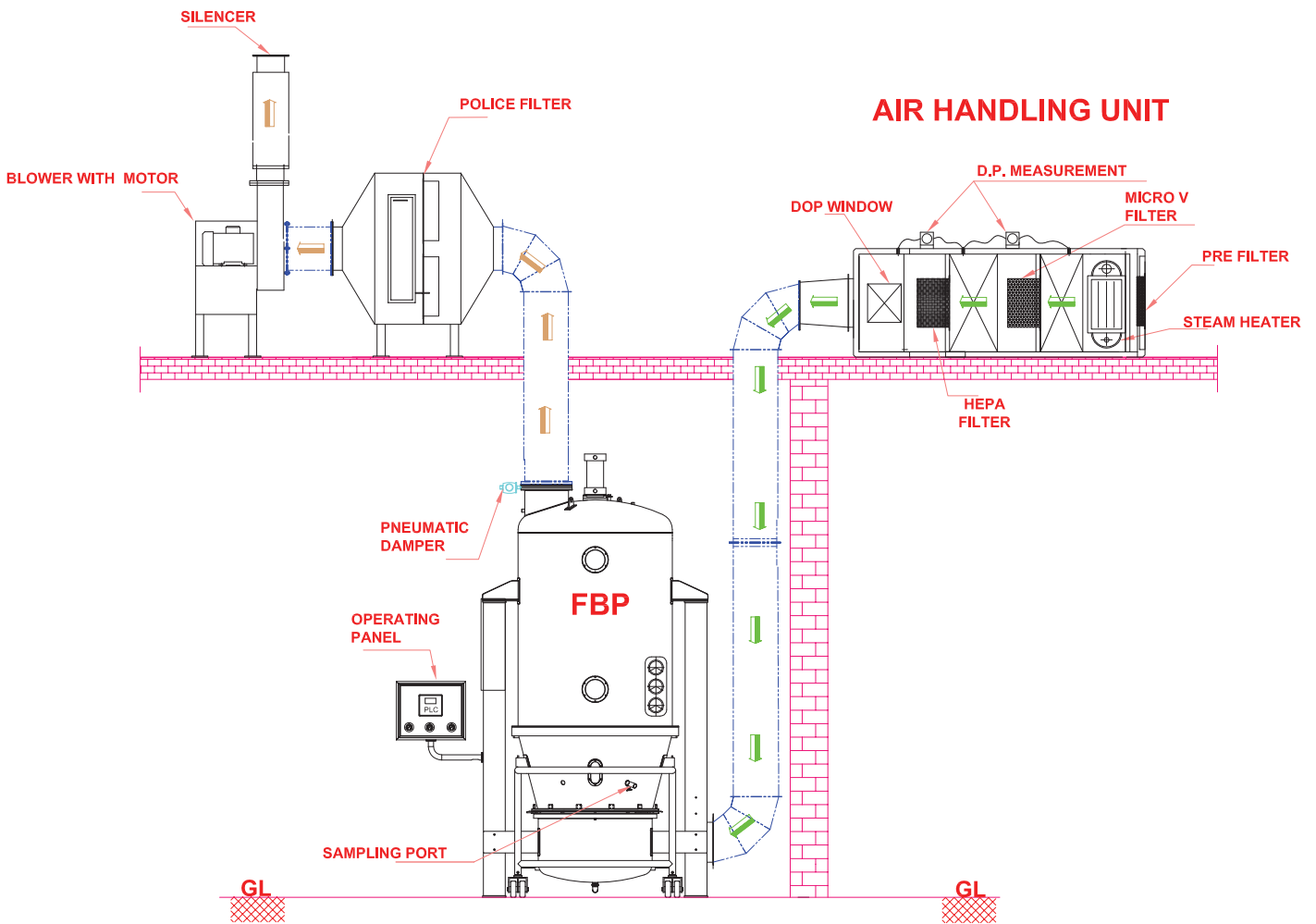
SALIENT FEATURES

- » In compliance with cGMP guidelines
- » All contact parts are made of SS 316
- » Very accurate temperature control by $\pm 2^{\circ}$ C
- » PLC based operations with color HMI (Optional for FBD)
- » Easy to Dismantle the dutch sieve & perforated sheet at product container during product change over
- » Single pole technology for mixing ,drying ,granulating and pallet coating (if essential features are taken)
- » Inbuilt on line sampling device
- » Finger bag lifting and lowering by rod less pneumatic cylinder
- » Very precise temperature control for inlet air, product chamber & exhaust air
- » All electrical and pneumatic components of reputed brands
- » Bottom spraying system – Wooster design (FBC)
- » AHU with HEPA filter as a standard feature in FBP (Optional for FBD)
- » Wet and dry scrubber (Optional for FBC)
- » Flame proof design (Optional)
- » Product charging system (Optional)
- » WIP system (Optional)
- » Inlet & outlet duct (Optional)

* Motor HP will change if equipped with bottom spraying system, HEPA or scrubber and ducting length above 5 meter.

Technical Specification										
Model	FBD/P/C - 30	FBD/P/C - 60	FBD/P/C - 120	FBD/P/C - 150	FBD/P/C - 200	FBD/P/C - 250	FBD/P/C - 300	FBD/P/C - 400	FBD/P/C - 500	FBD/P/C - 600
Working Capacity in Liters	90	170	290	350	475	575	675	900	1110	1330
Max. Working Volume in Liters	60	120	240	300	400	500	600	800	1000	1200
Batch Size (kg) Min. & Max.	12 - 30	24 - 60	46 - 120	60 - 150	80 - 200	100 - 250	120 - 300	160 - 400	200 - 500	240 - 600
Blower Motor (HP)	7.5	12.5	25	25	30	30	40	50	50	60
Air Flow (CFM)	750	1100	1900	2000	2588	2700	3235	3824	4412	5500
Air Flow (m ³ /hr)	1275	1870	3230	3400	4400	4590	5500	6500	7500	9350
Steam Pressure (kg/cm sq.)	3.5									
Steam Consumption (kg/hr)	90	130	150	186	216	244	344	344	344	344
Electrical Heater (kW)	20	36	NA	NA	NA	NA	NA	NA	NA	NA
Atomization Air Pressure (For FBP) @ 35 CFM	2 – 4 Bar									
Number of Spray Nozzles	1	1	3	3	5	5	6	6	7	7
Spray Nozzle Port	2	2	3	3	3	3	3	4	4	4
Compressed air Pressure(bar)(@ 30 CFM)	7	7	7	7	7	7	7	7	7	7
Drying Temp. (°C)	30-80 °C									
Electrical supply	3 Ph. AC									

GA of FBP



Note: Std. Ducting Inlet-3 mtr & 1 Bend, Std. Ducting Outlet-3 mtr & 2 Bend,
 Motor HP will change if equipped with HEPA or Scrubber & Ducting length above 3 mtr.
 Any Kind of Ducting & Elbows will be in Customer's Scope.

Vibro Sifter



SALIENT FEATURES

- » Noiseless & maintenance free machine for high speed sieving
- » Compact & portable foot print
- » All contact parts and screen is made of SS 316
- » Very less power consumption
- » Designed for quick and easy dismantling of contact parts for cleaning
- » Double & Triple deck options available (Optional)
- » Flame proof electrical (Optional)

Technical Specification

Model No.	Screen Dia. (mm)	Capacity (Kg/Hour)	Charging Height (mm)Approx	Discharge Height (mm)Approx	Motor (HP)
NVS 12"	310	1 to 10	765	510	0.25
NVS 20"	500	20 TO 40	1150	600	0.25
NVS 30"	750	100 TO 200	1270	730 & 880	0.5
NVS 36"	900	200 TO 300	1300	775 & 900	1.0
NVS 48"	1200	300 TO 400	1340	910 & 1065	1.5

Multi Mill

SALIENT FEATURES

- » Reversible beater direction
- » All contact parts including beaters, scrapper blades and screen is made of SS 316
- » Designed for quick and easy dismantling of contact parts for cleaning
- » Designed for continuous operation
- » Cylindrical screen allows higher productivity
- » Castor wheel mounted equipment
- » Flame proof electrical (Optional)

Technical Specification

Model	NMM-250
Output	50-250 Kg/Hr
Rotor Dia	250 mm
Rotor Speed	750/1500/2300/3000 RPM
No. Of Beater	12 knife and impact edges and 2 Scrapper Blades
Screen Dimension	Inner – 260 mm
Screen Height	135 mm
Motor	3 HP/1440 RPM/415 C/50 Hz
Starter	"DOL" with reversible switch
Charging Height Approx	1445 mm
Discharging Height Approx	730 mm



Conta Blender



Technical Specification					
Model No.	Gross Capacity (Liters)	Capacity (Kg)	Max RPM	Motor (HP)	No. Of Motors
NCB 25	75	25	1-18	1	2
NCB 50	150	50	1-18	2	2
NCB 100	300	100	1-18	3	2
NCB 250	600	250	2-10	3	2
NCB 500	1250	500	2-10	5	2
NCB 600	1500	600	2-10	7.5	2



SALIENT FEATURES

- » Better mixing efficiency than any other tumbling type blenders
- » Flexibility of handling different batch volumes as different sizes of bins can be accommodated on single drive
- » Entire working area is protected by a railing with a bin entry gate
- » Bin entry gate & bin position is interlocked to prevent any accident
- » Flat plan stopping for easy loading and unloading of bin
- » cGMP complying design with complete SS cladding.
- » Built in butterfly valve for easy discharge
- » PLC based operation with color HMI (Optional)

Lifting & Tilting System



Technical Specification									
Bowl Capacity (Kg)	60	120	150	200	250	300	400	500	600
Lifting & Tilting Device (HP)	2.0	2.0	2.0	3.0	3.0	3.0	3.5	5.0	5.0

SALIENT FEATURES

- » A very useful process supporting equipment for inter process material handling
- » cGMP complying design with complete SS cladding.
- » Easy to operate and clean
- » Designed on hydraulic system
- » Safety lift lock to prevent any accident
- » Up and down position of lifter is controlled by limit switch for safety
- » Easy to clamp with FBD bowl
- » Discharge cone is fitted with a butterfly valve
- » FLP construction (Optional)
- » Additional locking and positioning (Optional)
- » PLC based operation with color HMI (Optional)
- » Pneumatic discharge valve (Optional)



Auto Coater

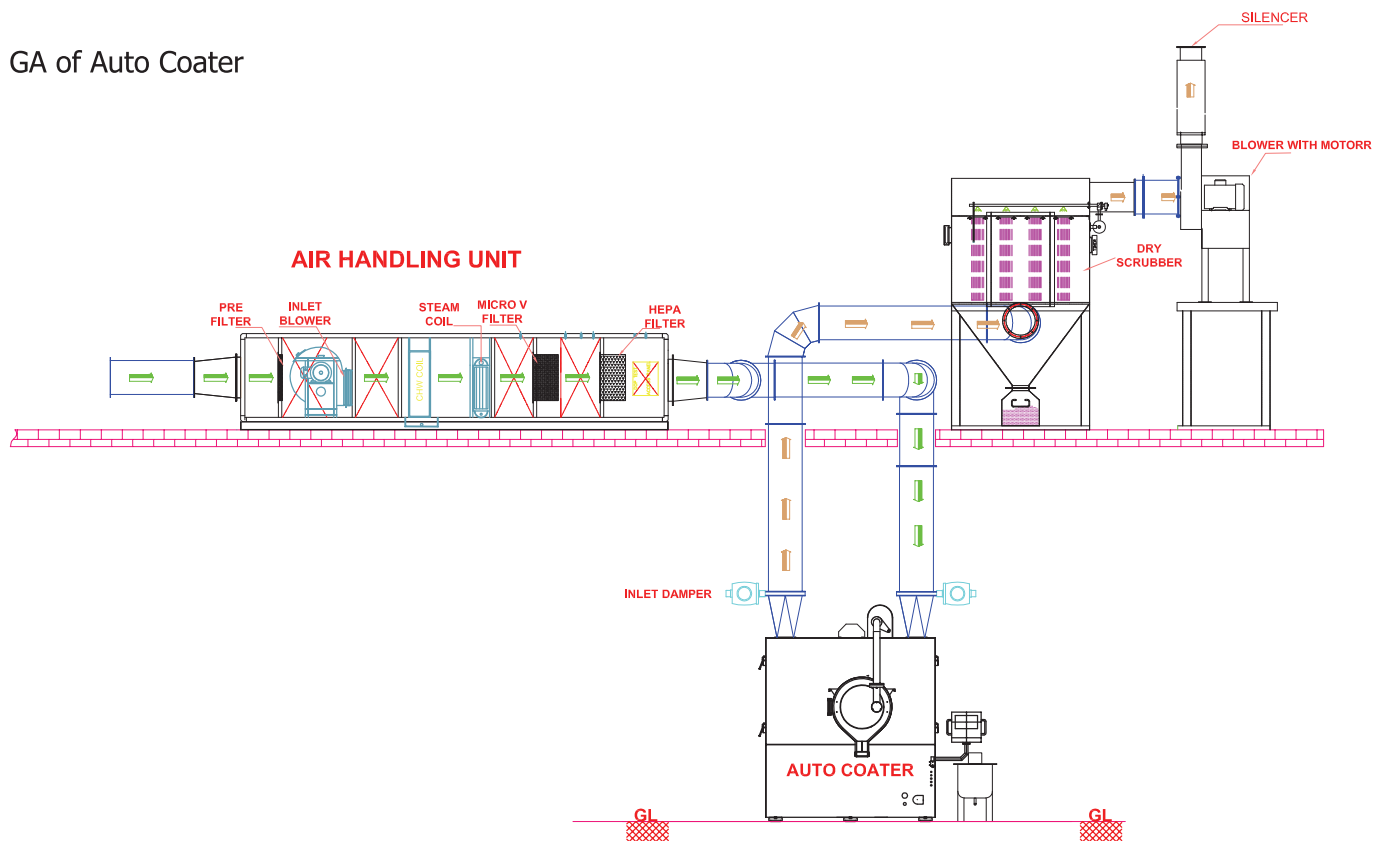


SALIENT FEATURES

- » In compliance with cGMP guidelines.
- » Modular design makes it user friendly
- » Accurate Temperature Control within $\pm 2^{\circ}\text{C}$
- » In built WIP (Wash in Place) system with pump
- » Easy to clean & maintain with less changeover time
- » Quick release plenums for easy cleaning of pan & plenums
- » Leak proof sealing of doors ensures efficient operation without any energy loss
- » Fully automatic operation through PLC with color HMI
- » 3 Stage AHU with D.P Gauge & 45mm puff insulation
- » Sugar dosing system (Optional).
- » Interchangeable pans (Optional)
- » Flame proof design (Optional)
- » Wet scrubber at exhaust (Optional)
- » Inlet & outlet duct (Optional)

Technical Specification					
Models	Coater-24"	Coater-36"	Coater-48"	Coater-60"	Coater-66"
Working Capacity (Kgs.)	5-20	25-70	70-150	120-300	180-400
Pan Diameter (mm)	600	915	1220	1525	1680
Pan Mouth Diameter	250	300	480	600	600
Pan Speed (RPM)	2-15	2-15	2-15	2-12	2-12
Main Drive Motor (HP)	1	1.5	5	5	7.5
Inlet Blower Motor (HP)	2	3	5	10	15
Exhaust Blower Motor (HP)	2	5	10	25	40
Inlet Blower Capacity (CFM)	450	1300	2700	5000	6000
Exhaust Blower Capacity (CFM)	500	1700	3000	6000	7000
Electrical Heater (KW)	22	36	N.A	N.A	N.A
Compressed Air (CFM at 6bar)	20	20	25	35	35
Steam Consumption	70	95	125	198	292

GA of Auto Coater



Note: Std. Ducting Inlet-3 mtr & 1 Bend, Std. Ducting Outlet-3 mtr & 2 Bend,
 Motor HP will change if equipped with HEPA or Scrubber & Ducting length above 3 mtr.
 Any Kind of Ducting & Elbows will be in Customer's Scope.



NPM PROCESS EQUIPMENTS

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Phone: +91 2717 294945, 2717 325315

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