

# UMANG

*innovative solutions*



## Umang Pelletisation Technologies

Screw Extruder  
Die Roller Extruder  
Basket Extruder  
Sigma Mixer Extruder  
Fluid Bed Multiplier Processing  
Spheroidizer  
Solid Drug Layering  
Fluid Bed Rotor

Welcome to the world of  
Pellet Processing



Innovative Solutions from last 25 years...

**Umang Pharmatech Pvt. Ltd.**

Engineering Division

## SCREW EXTRUDER CONE/RADIAL

The basic principle of extruders is the conversion of wetted powder into uniform size extruders (400-2000) micron size with the addition of binders.

Umang Offers three types of Low Pressure Extruders.



USSE-60

### CONE EXTRUSION



### AXIAL EXTRUSION



### RADIAL EXTRUSION



### Specifications :

Model	USSE - 60	UTSE-60/70	UTSE-100/110	UTSE-130/140	UTSE-170/180
Batch Cap./Kgs.	1-4	5-50	30-150	50-400	100-900
Motor (H.P)	1	2	7.5	12.5	25

Umang Extruders are manufactured as per general chemical industry standards and cGMP standards for Pharmaceutical Applications.

### UTCE-70 CONE EXTRUDER



### UTCE-110 CONE



### UTSE-100 RADIAL DESIGN



## DIE ROLLER EXTRUDER

The principle of operation for Die Roller Extruder utilizes two rollers. The first roller is called the Knurling roller and its job is to push the wetted feed material through the holes in the other roller which is the perforated die roller. The perforation size of the roller decides the size of extrudates, but the performance of the die roller extruder is defined by the sophistication of the perforated die roller design. Umang has many years of experience in refining these dies to succeed where our competitors have failed.



UDRE-65E

The extrudates are cut to finite lengths with the help of adjustable cutter within the perforated roller. The size of extrudates that is possible is 1.0 mm - 10.0 mm and capacities are up to and including multiple tone per hour.

### Specifications :

Model	UDRE-65 L	UDRE-65 R	UDRE-65 E	UDRE-100	UDRE-130	UDRE-200	UDRE-270
Batch Cap./Kgs.	1-3 kgs/hr	5-15 kgs/hr	10-25 kgs/hr	50-90 kgs/hr	150-300 kgs/hr	300-700 kgs/hr	500-1500 kgs/hr
Motor (H.P)	1	1.5	2	7.5	10	20	40

## BASKET EXTRUDER



UBRE-300

The Umang Basket Extruder program is our lowest pressure short path extruder design. Available from bench level through multiple ton per hour sizes these versatile extruders are made for both pharmaceutical as well as industrial designs.

Unique in the range of providing either clamshell die sets as well as single piece die designs, Umang Basket Extruders offer the broadest range of basket extruders available in the World today. Basket extruders are used in applications where low pressure is necessary to insure either an easily dispersed product or the limitation of heat generation for temperature sensitive products. Our extrusion blades and rollers are available in a range of nip angles to help with extruding difficult products and to make sure that the smallest extrusion flight to die gap is maintained.

### Specifications :

Model	UBRE-150	UBRE-300	UBRE-450	UBRE-600
Batch Cap./Kgs.	1-5	60-100	200-450	300-1200
Motor (H.P)	2	7.5	20	50



USME-100

## SIGMA MIXER EXTRUDER

The basic principle of extruders is the conversion of dry powder to be mixed with the help of twin sigma blades first and then an extruder is fitted below the blades to convert the dough to uniform size extruders (400-3000) micron size.

Umang Extruders are manufactured to general chemical industry standards and cGMP standards for Pharmaceutical Applications.

### Specifications :

Model	USME - 5	USME - 30	USME - 100	USME - 300	USME - 500
Batch Cap./Kgs.	1-4	5-50	30-150	50-400	100-900
Motor (H.P)	2	4	25	50	80

## SPHEROIDIZER



USPH-500

The Spheroidizer consists of a round disc mounted on a vertical shaft spinning at high speed at the bottom of a cylindrical chamber or drum. The cylindrical drum is called the bowl and the spinning disc is called the chequered plate. The chequered plate has a grooved pattern to increase the friction with the product and to break the extrudates to length. When the extrudates are charged into the Spheroidizer, they are thrown at the edge of the spinning plate by centrifugal forces. By contact with the plate the extrudates are cut into short cylindrical segments which are rounded by collision with the drum wall, plate and each other. The fines generated during the process of Spheroidization are compressed into the surfaces of the spheres. After the particles have obtained the desired spherical shape they are discharged via centrifugal force through an opening in the bowl wall.

**Specifications :**

Model	USPH-250	USPH-380	USPH-500	USPH-700	USPH-900	USPH-700 (T)	USPH-900 (T)
Batch Cap./Kgs.	0.2-1	0.5-3.2	3-10	5-20	15-50	10-40	30-100
Motor (H.P.)	1	2	5	7.5	15	15	30



2 mm  
Chequered  
Plate



3.25 mm  
Chequered  
Plate



6.5 mm  
Chequered  
Plate

## UICE - UMANG INTEGRATED CONTINUOUS EQUIPMENT



UICE-100



UICE - LAB



A closed method for extrusion & spheroidization.

**Features :**

- GMP Feeder.
- Screw extruder with 400-2000 microns mesh.
- Spheroidization with plate of various options 2 mm, 3.25 mm & 6.5 mm.
- Complete closed design.
- Minimal dust generation.
- Various machine sizes from R & D to Full Scale Production.
- CIP Possible.
- Complete PLC operated machine.
- Hinged design on all sides.

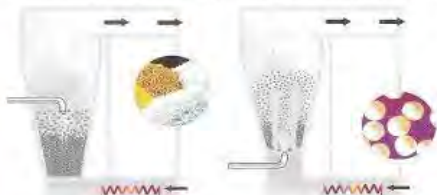
**Specifications :**

Model	UICE - LAB UTSE-30 & USPH - 75	UICE - 30 UTSE-60 & USPH - 500	UICE - 100 UTSE-100 & USPH - 700	UICE - 250 UTSE-130 & USPH - 900
Batch Capacity	20 - 500 gms / Batch	20 - 30 kgs / hr.	30 - 100 kgs / hr.	50 - 250 kgs / hr.
Motor (H.P.)	1	7	12.5	22.5

## FLUID BED MULTIPLE PROCESSING-UFBM

### 1 LITRE FLUID BED BOTTOM & TOP SPRAY

Mini - Lab is a table-top fluid bed for laboratory use, sized for product volumes from 100 ml to 700ml. It is ideal for handling fine powders, pellets, granules, crystals and also tablets.



A suitable binding agent is sprayed from the top into the fluidized product causing controlled agglomeration. The agglomerates formed are subsequently dried.

A suitable liquid is sprayed from the bottom (tablets, Pellets, etc) ensuring uniform coating. Multiple air distributors, wurster & different spray nozzles are available as key features enabling various product applications.



MINILAB

### 2 LITRE FLUID BED BOTTOM, TOP SPRAY & ROTOR



UFBM-1

The Umang Fluid Bed Multiple (UFBM) has been developed to meet the pharmaceutical industry's requirements for flexibility in unit operations and is based on the principle that one basic unit can be used for numerous processes simply by interchanging a module.

#### Specifications :

UFBM Specification	Model No.	Unit	Micro (Mm)	Mm	1	3	15	40	70	125	400	800	1200
Maximum Working	Top Spray	lrs.	—	1.2	4	16	16	79	100	154 (T)	540	1025	1320
Volume of Standard	Wurster	lrs.	50ml.	0.6	1.5	5	19	39	70	132 (T)	413	825	1140
Product Container	Rotor	lrs.	—	—	1 & (250)	7(300)	7(380)	7(350)	22(500)	70(700)	200(1100)	450(1400)	640(1600)
Exhaust	Capacity	H.P	0.25	0.5	1	2	3	10	15	25	40	60	75

### 6 LITRE FLUID BED BOTTOM, TOP SPRAY & ROTOR



DRYER



WURSTER



TOP SPRAY GRANULATOR



ROTOR

#### Processes :

- DRYING :  
Top Spray.
- PARTICLE COATING :  
Bottom Spray (>50 microns).
- GRANULATING :  
Top Spray, Rotor Granulating.



UFBM-3

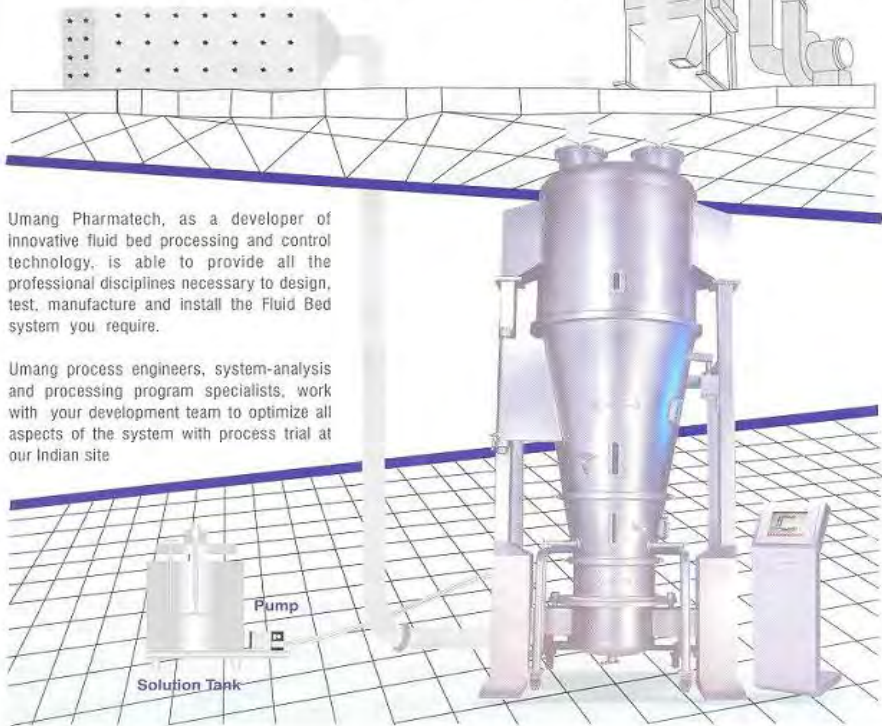
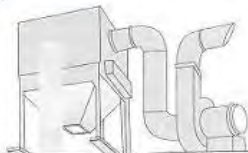
- PELLETIZING :  
Top Spray, Bottom Spray, Rotor Processing.
- COATING :  
Top Spray, Bottom Spray, Rotor Coating.

## FLUID BED MULTIPLE PROCESSING - UFBM-60

Process Air  
Exhaust Blower

Fully integrated processing systems with matching accessories, designed and manufactured by Umang Pharmatech

Explosion  
Outlet



Umang Pharmatech, as a developer of innovative fluid bed processing and control technology, is able to provide all the professional disciplines necessary to design, test, manufacture and install the Fluid Bed system you require.

Umang process engineers, system-analysis and processing program specialists, work with your development team to optimize all aspects of the system with process trial at our Indian site



BOWL LOADER



LIFT



DISTRIBUTION PLATE



FILTER CAGE



CARTRIDGE FILTER



ARU



PRODUCT BOWL



CP NOZZLE



## SOLID DRUG LAYERING



USDL-900

Specifications :

Model	USDL-380	USDL-500	USDL-700	USDL-900	USDL-1100	USDL-1300
Batch Cap. (ltrs.)	7	22	70	130	260	520
Motor (H.P.)	3	5	10	20	40	75

Centrifugal processing is single unit operation. The process involves the deposition of successive layers of an active compound onto nonpareil seeds resulting in the formation of uniform sized pellets. The operation is carried out using a plain rotating plate. During processing, the starter seeds are wetted with a moistening liquid while rotating on the base plate. Dry powder dusted on nonpareils adheres, increasing their size and forming larger pellets.

Growth occurs by a process of binding of powder/liquid binding and consolidation. After liquid addition and dusting creates the correct diameter pellets, then tumbling of the coalesced aggregates increases their sphericity.

The requirements of process validation or Good Manufacturing Practices (GMP) are simplified as the complete spheroid production process is restricted to a single processor. Min. size possible 200microns.

## FLUID BED ROTOR UFBR-700

Fluid bed rotor process by principle is essentially a horizontal wurster process, because it fully utilizes the 3 main features below.

1. Concurrent spraying takes place below the product bed without premature droplet evaporation.
2. High centrifugal energy is created inside the product bed by the rotating disc. The process air which enters the process chamber vertically at the periphery of the rotating disc reinforces the product's helical motion, so that practically every particle is permanently rolling around its own axis.
3. Regular, statistical reproducible exposure of the particles to the spray nozzle by means of a defined disc rotation speed.

Analysis has shown that the rotor induced centrifugal forces move the entire product bed creating a denser film deposition. i.e. To obtain a wurster identical drug release profile, one would have to apply a little less coating agent with the rotor.

Our Rotor is not limited to film coating only, but permits a number of processing options.

Rotor granulation can be accomplished by spraying a suitable binder suspension on powders. Both granulate production and spheroidization is completed by the spherical rope motion of the formulation. The final stage drying can be rapidly achieved as the large free area around the rotor disc allows the throughput of large air volumes.

Pelletization, such as the production of non-pareils, is accomplished by rapid powder and binder addition onto dummy seals through a single, combined bottom spray nozzle (in this case tangential spray). This process allows weight gain of approximately 250% per hour.



Specifications :

UFBR	Unit	380	500	700	900	1100
Batch Capacity	ltrs.	7	20	70	130	200
Power	H.P.	5	10	20	30	40

Note : All specifications in this catalogue are subject to change without notice for further development.

## Umang Granulation Technologies

HighShearMixer  
 ConeMill  
 VacuumTrayDrying  
 ContinuousMixer  
 FluidBedCoatingSystem  
 TabletCoatingSystem  
 MeltExtruder  
 SprayDryer



## Our Global Presence



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