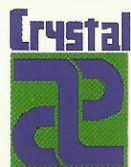


## Roll - Compactor



Producing granules of higher Bulk Density & better flow ability



**CRYSTAL AUTOMATION PVT. LTD**



## Theory of Granulation

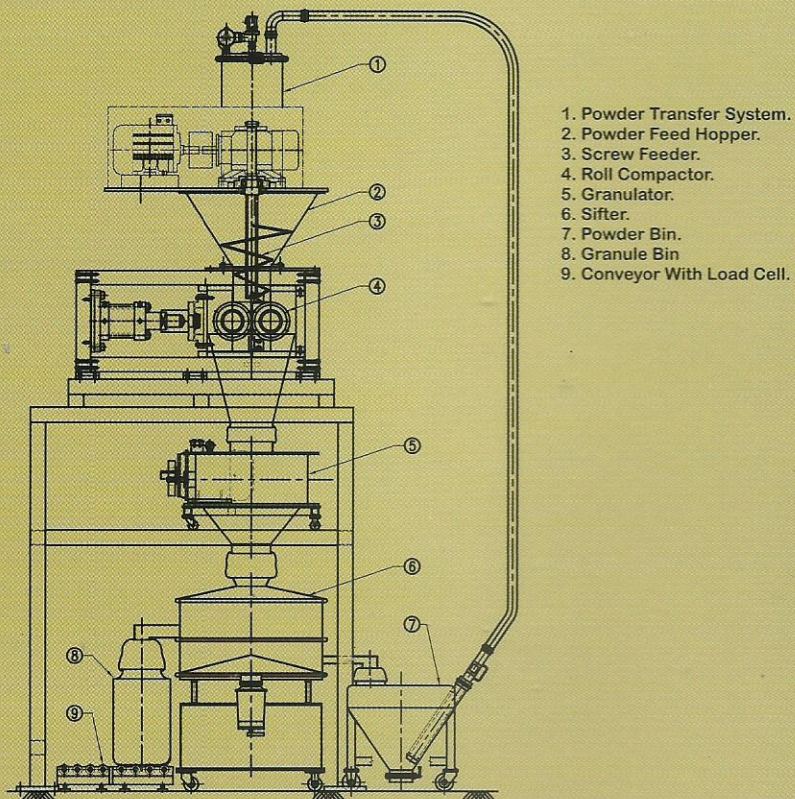
Two categories of granulation methods: wet type and dry type.

Wet type granulation requires water or binder, to be added during the granulation process; consequently a drying process is essential after granulation stage.

Dry type granulation eliminates the addition of water, or binder, and as a result the drying process is not required. (Bonding agents or lubricants however can be added during the dry granulation process.)

Some powder raw materials have the characteristics of low density (low specific gravity) and bad flow ability. By using the Roller Compactor- dry granulation process, it will improve the above characteristics and result in a bigger bulk density, higher specific gravity and good flow ability granules.

## Dry Granulation Systems



## Application

### **Pharmaceuticals:**

- Free flowing granules for automatic packaging.
- Compact granules to reduce package size.
- Dust free granules to facilitate handling.
- Granules can be filled in smaller capsules.
- Granules for tableting.

### **Food Industry:**

Granules for compressed candies, chocolate, dairy products, seasonings, etc.

### **Chemical Industry:**

Catalysts, fertilizers, pesticides, dyes, cosmetics and other chemicals.



## Features

Dry granulation is one of the main uses of the Roller Compactor.

The advantages of dry granulation by this machine are :

The Roller Compactor is designed to have 3 functions in one unit. These are compression, granulating and sifting. It is a simpler operation than wet granulation (mixing, pasting, kneading, drying, sifting, and granulation, etc.)

No water or other liquid is added, so the loss of active ingredients due to decomposition can be eliminated. Highly stable granules can be obtained.

Feeding Hopper can move up and down by the inbuilt hydraulic system for ease of maintenance and cleaning.

Charging screw and roller speed are designed for precise and variable adjustment.

The pressure of hydraulic system is adjustable to accommodate a wide range of materials.

Wide ranges of screen mesh sizes are available for the granulator screen. The temperature of the roller system can be reduced by the connection of a cooling system to the rollers.

The connection of a cooling system to the bottom of hopper will further reduce high temperatures generated during the operation that maintain the product quality.

High percentage of re-usable granules can be reached by the better-designed breaking blades and fine crushing rollers.

OPTION: A vibration sifter, which can filter small or undersize granules for re-granulation is available as an option.

OPTION: An automatic suction conveyer for the charging or recycling of powder or granules is available to assist in the reduction of labour costs and to maximize the production.

The resulting granules are uniform. The tablet weight can be controlled within narrow limits.

The resulting granules are suitable for direct compression without slugging.

The resulting granules of light powder can be easily filled into capsules.

The resulting granules flow easily for efficient automatic filling and packing procedures.

No water or air pollution treatment is required.

This machine can be maintained easily and requires a small floor space

For the processing of thermo sensitive materials, the rolls can be fitted with a cooling system.

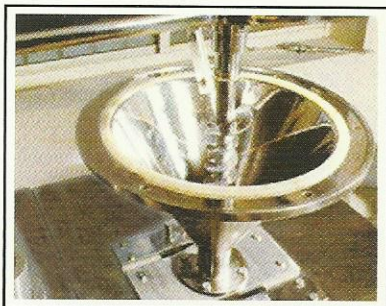
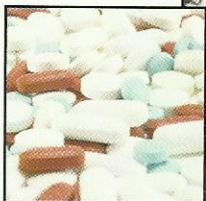
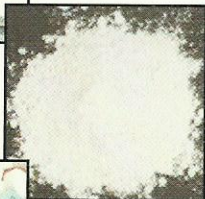
## Compaction Theory

The design of the Roller Compactor is based on the Dry Granulation Method.

The powder charged in the hopper is compacted and fed into the gap between two compacting rolls.

The compacting rolls process the powder into a flake that can then be granulated into the desired mesh size through the granulator.

To cope with any kind of complex material, this Roller Compactor is designed for precise adjustment of three variables: Roller Speed, Screw Speed, and Roller Force Pressure. Adjusting the screw speed and roller speed sets the roller gap.





### Three Adjustable Variables

The roller compactor is designed for precise adjustment of three variables to allow for different kinds of material. The three adjustable variables are Screw Speed, Roller Speed, and Roller Pressure; the calculation of bulk density is related to adjusting of the roller gap, the screw speed and the roller speed. The capacity differs depending on the bulk density of the materials according to the following equation:

$$Q = \pi \times D \times W \times t \times \gamma \times N \times 60 / 1000$$

D: Roller Diameter (cm) W: Roller Width (cm) t: Flake Thickness (cm)  $\gamma$ : Bulk Density (gm/cc) N: Roller Speed (rpm)

The capacity of the machine depends on the specific gravity, bulk density and types of material being used.

MODEL	CAPACITY	COMPACTING ROLLER DIA X W (mm)	MAX. ROLLER FORCE	TOTAL CONNECTED LOAD	OVERALL DIMENSIONS WxLxH(mm)	NET WEIGHT
CA -RC-5	5 kgs / hr	100 x 40	5 ton	3 HP	800X1000X1750	900 kgs
CA -RC-30	30 kgs / hr	150 x 60	15 ton	7.5 HP	900X1100X2250	1,100 kgs
CA -RC-70	70 kgs / hr	200 x 80	20 ton	10 HP	1100X1200X2450	1,200 kgs
CA -RC-200	200 kgs / hr	300 x 150	30 ton	20 HP	1500X1870X3500	1,300 kgs
CA -RC-400	400 kgs / hr	400 x220	40 ton	35 HP	1800X2200X4000	1,700 kgs



## CRYSTAL AUTOMATION PVT. LTD.

Manufacturers & Consultants of:

INDL. AUTOMATION EQPTS. & SP. PURPOSE MACHINE

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