



# Solid Dosage Process Solution

## CCS Integrated Granulation-Coating Line

### Europe

**Stockholm Office**  
Danvik Center 28  
131 30 Nacka Sweden  
E-mail: [info@pharmadule.com](mailto:info@pharmadule.com)  
Tel: +46 (8) 587 42 000

**Milan Office**  
Centro Direzionale Milano Due, Palazzo Bernini,  
Via Fratelli Cervi 20054 Segrate (MI) Italy  
E-mail: [info@pharmadule.com](mailto:info@pharmadule.com)  
Tel: +39 02124120204

### U.S.A

**New Jersey Office**  
101 Morgan Lane, Suite 303, Plainsboro,  
NJ 08536  
E-mail: [info@pharmadule.com](mailto:info@pharmadule.com)  
Tel : +1 (908) 722-6845

**Houston Office**  
11490 Westheimer Road, Ste800. Houston,  
Texas 77077  
E-mail: [info@pharmadule.com](mailto:info@pharmadule.com)  
Tel: 281-597-8515

### Asia Pacific

**Shanghai Office**  
No.29,Jinwen Road,Zhuqiao Airport Industrial  
Park,Shanghai,China  
E-mail:[smp\\_info@morimatsu-LifeSci.com](mailto:smp_info@morimatsu-LifeSci.com)  
Tel:+86 21 38112058

**Yokohama Office**  
23-6 Fujimi Bldg., Minamifujisawa Fujisawa  
Kanagawa 251-0055 Japan  
E-mail: [smp\\_info@morimatsu-LifeSci.com](mailto:smp_info@morimatsu-LifeSci.com)  
Tel: +81-466-52-4505

**Gifu Office**  
1430-8,Minobe,Gifu,501-0413,Japan  
E-mail: [smp\\_info@morimatsu-LifeSci.com](mailto:smp_info@morimatsu-LifeSci.com)  
Tel: +81-58-323-0333

**Mumbai Office**  
502/503, Lodha Supremus II, Road no. 22,  
Wagle Industrial Estate, Next to New Passport  
office, Thane (W) - 400 604  
E-mail: [smp\\_info@morimatsu-LifeSci.com](mailto:smp_info@morimatsu-LifeSci.com)  
Tel: +912248904400

**Singapore Office**  
3 Fusionopolis Place #02-52 Galaxis Work  
Loft Singapore 138523  
E-mail: [smp\\_info@morimatsu-Lifesci.com](mailto:smp_info@morimatsu-Lifesci.com)  
Tel: +6565134156





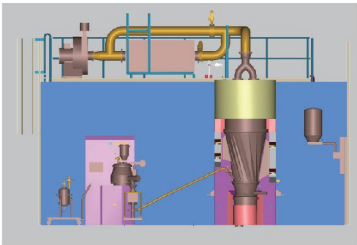
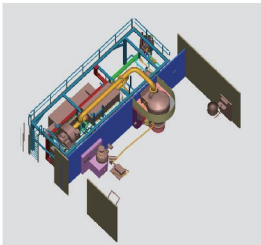
# CCS Integrated Granulation-Coating Line

CCS (Combined Closed System) Integrated Granulation-Coating Line is specially designed & constructed for the solid dosage production in pharmaceutical field. Based on the wonderful operating performance and process reproducibility, the systems are highly appreciated by most leading pharmaceutical companies and institutions.



## High Efficiency Granulation System

- Fast and efficient vacuum convey system for feeding, transferring & discharging
- Stable and efficient equipment performance
- Little dust diffusion & Higher product yield



## Automatic Control System

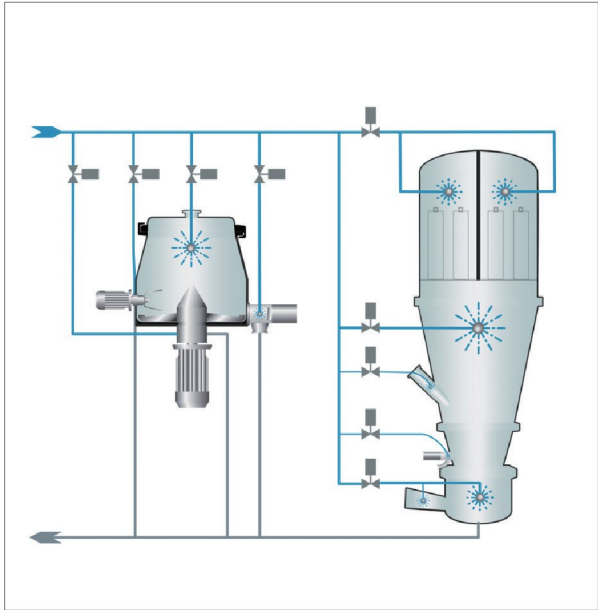
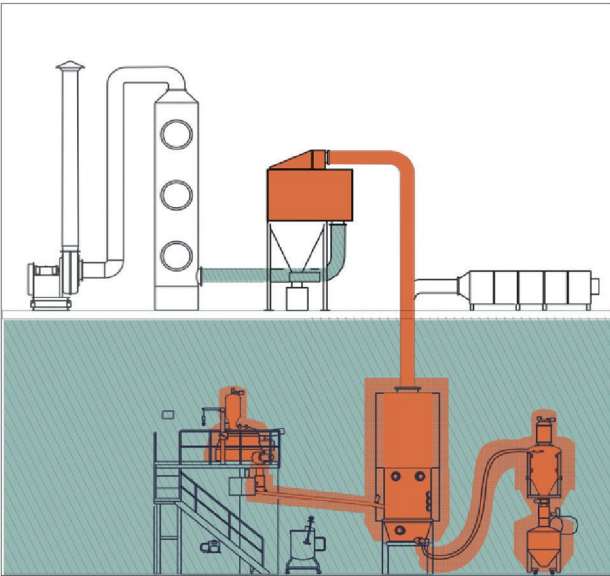
With excellent hardware, CCS control system designed for manual and recipe batch automatic operation, provides friendly and convenient operating experience.

- Effective due to recipe management
- Intelligent panel control system, MES systems upon request
- Easy switching Manual/Auto Operation
- Batch report, validation documents
- Audit Tracing, Elec-signature
- Upgradeable monitoring controls such as NIR, MW



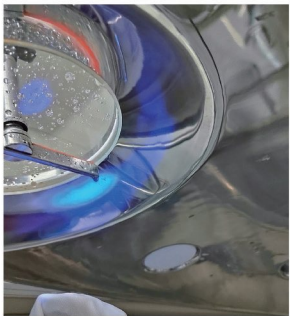
## Safety System

- 12 bar Pressure-shock Resistance
- Powder& Organic Solvent Explosion Proof
- Quick Action Valve Protection
- Grounding Monitoring



## GMP design

- No dead zone
- High surface finish with Mirror treatment
- Spraying Coverage Test
- Blow-out valve for drying



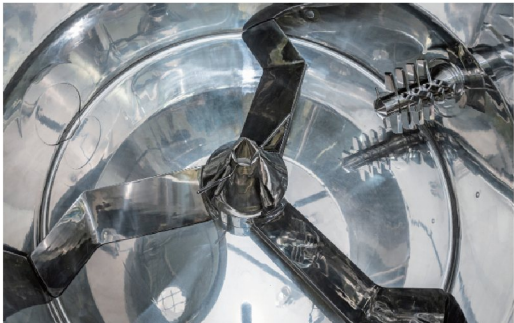


# WG High Shear Mixer Granulator

WG high shear mixing / wet granulator is the first choice for the process needing high granulate density and rapid granulation.

## Excellent mixing effect

- Various types of impeller are designed based on calculation, simulation & practical, suitable for materials with different characteristics.
- 3 blades are mounted tangentially on the hub.
- High efficiency thank to the coordination of the bowl cone structure and the mixer.
- Optimize product yield & mixing efficient, due to the minimum gap between the impellers and the bottom of the bowl.



## High shear chopper

- High speed controlled smoothly
- Two choppers choice for different material characteristics
- Shorten process time
- Reduce binder amount

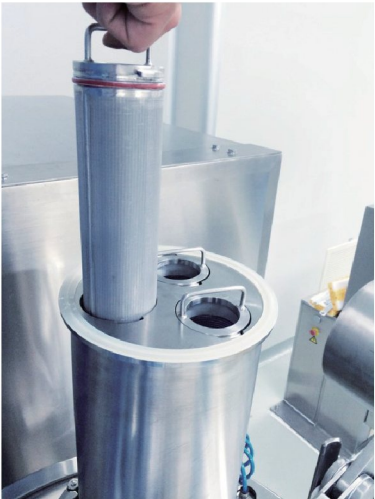


## Spray Nozzle

- Pressure spraying nozzle with pyramid -shape liquid pattern.
- Spraying angle and mounted height adjusted upon the materials loading height.



## Excellent details



### WG technical data

Model	WG30	WG50	WG150	WG250	WG400	WG500	WG800
Working volume(L)	15-30	20~50	50~120	100~250	180~420	230~550	350~800
Working capacity(kg)	15	25	60	120	200	270	400
Mixer speed(rpm)	350	270	200	160	140	125	110
Mixer motor power(kW)	5.5	7.5	11	22	30	37	45
Chopper speed (rpm)	3000	3000	3000	3000	3000	3000	1500
Chopper motor power(kW)	1.1	1.5	4	7.5	11	11	15

Also accept the user's non-standard order



# MDCG Multifunctional Fluidized Bed

The fluidized bed ensures an fast, gentle and even particle drying process, with smart design & precise process control, that will demonstrate a repeatable and reliable operation performance. What's more, The fluidized bed is easily integrated with other granulation equipment, that fits a complete granulation line seamlessly.

### Highlights:

- Excellent mixing performance
- Rapid heat & mass transfer
- Gentle fluidizing
- Closed convey for product flow



## Multi application

**Drying**

Short Batch Period  
Uniform Drying  
Reduced filter load

**Top granulation**

Improve flowability & Compressibility  
Homogenous granules  
Reducing Fine/Dust

**Bottom coating**

Pellet coating, Control release  
Effective process controls  
Wide size range of coating core

## Atomizing nozzle

Spraying nozzle is key component for granulation & coating process. The accuracy of spraying is achieved by continuous control on liquid flowrate & gas pressure.



$\alpha$ -Spray angle: 10°~70°



Droplet size: 10~100 $\mu$ m



Bore: 0.5/0.8/1.0/1.2mm



## Air Distributing

### • Multi-layer distributor

Special Sintered Stainless-Steel mesh, superior performance and durability



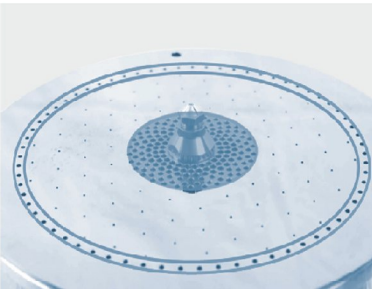
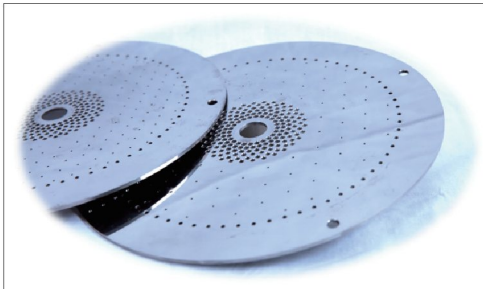
### • Spiral air distributor

Improving the airflow uniform and the product homogeneity.

### • Air distribution plate for coating

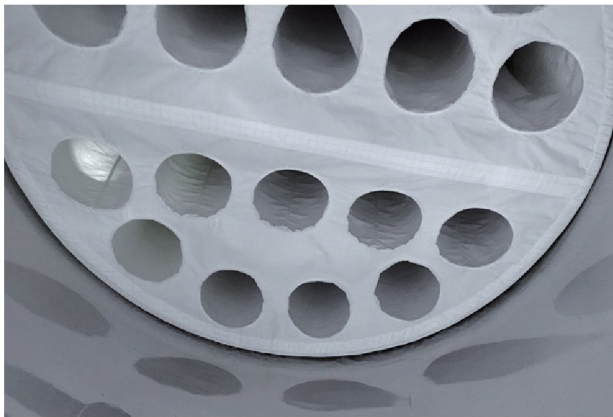
Different bottom plates accommodate to coating for variety of product sizes & bulk densities

Suitable ADP has to be selected to get consistent fluidization at minimum attrition.



## Twin-chamber shaking filter

Divide chamber into two sections with the filter bags assigned in each one. Shaking the filter bags individually assure the fluidizing continue, that guarantees a faster & more efficient production.







Typical system layout

Fluidized bed technical data

Model	Function	Working capacity (L)	Max. air flowrate (Nm3/h)	Operation power (kW)	PA consumed (Nm3/min)	Steam consumed (kg/h)	Chilling water consumed (t/h)
MD50	Coat	10~35	1250	18	5	60	7
	Granulate Dry	10~50					
MD150	Coat	10~35	2000	30	5	100	12
	Granulate Dry	10~50					
MD250	Coat	10~35	3000	42	6	150	18
	Granulate Dry	10~50					
MD450	Coat	10~35	4800	50	8	230	25
	Granulate Dry	10~50					
MD750	Coat	10~35	6000	60	10	300	32
	Granulate Dry	10~50					

# Auxiliary Unit

## Vacuum convey system & Mill & Lifter



# Air Handling



## WIP skid

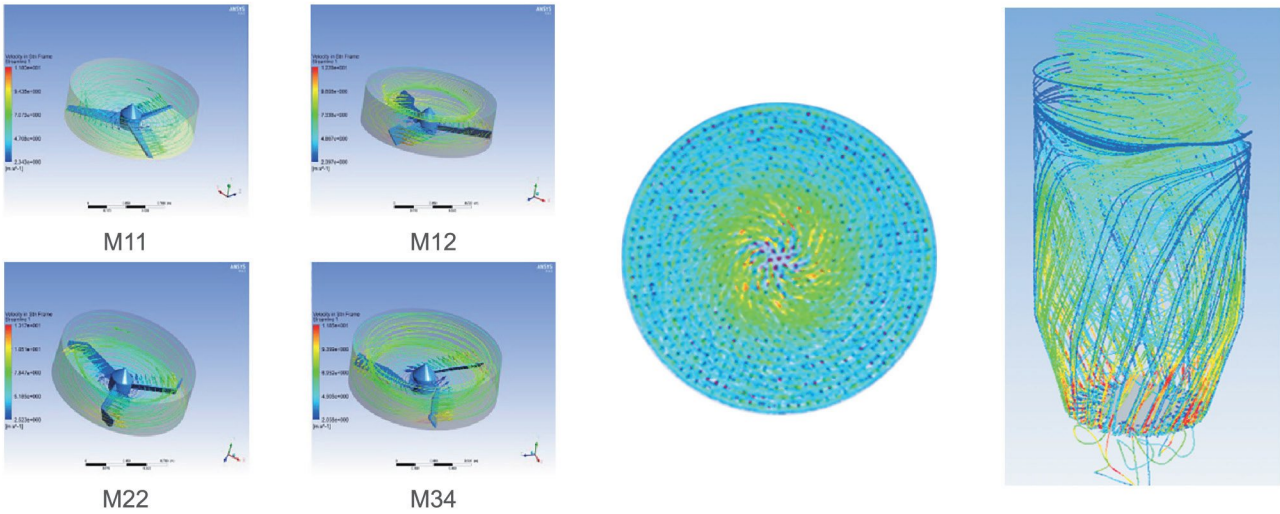
Accurate concentration, pressure & temperature



Value-added Services

- Process consulting
- Product process development and optimization
- Engineering construction
- FAT, IQ & OQ services available
- Service and training

Simulation Services



Lab Services



Renferences



• Pilot-scale: 25kg/batch



• Plante-scale: 300kg/batch