



# PHARMX<sup>®</sup> HIGH SHEAR GRANULATOR

EFFICIENT MIXING AND GRANULATION  
OPTIMIZED TO YOUR PROCESS



Experts in Solid  
Dosage Technology

A Division of *Spraying Systems Co.*<sup>®</sup>





# MAXIMIZE YOUR BATCH

## DESIGN FLEXIBILITY ENSURES PEAK PERFORMANCE FOR HIGH SHEAR GRANULATING MIXERS

Whether you need solid dosage technology for R&D, pilot or production applications, Fluid Air can help. Our PHARMA<sup>®</sup> high-shear granulating mixer can be quickly and cost-effectively customized to meet your unique processing challenges. Processing ingredients with special requirements? One pot processing?

**Let us help you optimize your production.**

### BENEFITS:

- Simplify your scale-up
- Minimize process downtime
- Optimize production
- Reduce maintenance
- Improve product quality

### DEFINITION

#### What is High-Shear Granulation?

High-shear granulation is an effective way to turn powders into dense granules for tableting or coating. To create the granules, powders are added to the mixing bowl and the bowl is sealed. A large impeller rotates at slow speeds, spinning the powders into a vortex. After the powders are blended together, liquid is added to the product using a pump or pressurized container. A high-speed chopper tool located in the bowl shears the granules and removes air. The mixing continues until the desired granule size and density are achieved.

When granulation is complete, the product can be dried in the bowl using vacuum drying with gas assist (if so equipped) or the product can be discharged and dried in a MAGNAFLO<sup>®</sup> fluid bed dryer. For many products, wet milling of the product with a GRANUMILL<sup>®</sup> and vacuum conveying into the fluid bed dryer provides several advantages including automated material transfer, uniform sizing of product prior to drying to reduce drying time and a more spherical particle shape for improved material flow.

## EFFICIENT GRANULATING AT UP TO 90% BOWL CAPACITY

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### PROCESSING POWDERS, GRANULES, AND LIQUIDS TO REQUIRED SPECIFICATIONS

The PHARMX® high-shear granulator has a mixing bowl with a bottom-driven mixing impeller and side mounted chopper. The bowl geometry is optimized to permit working volumes from 30-90% of full capacity.

Mixing Impeller System



## EFFICIENT, HOMOGENEOUS MIXING EVEN AT LARGER CAPACITIES

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### CREATING A QUALITY PRODUCT

The dome shaped lid permits product to perform a complete roll over as it moves up the side of the vessel wall. This ensures efficient mixing even when running at larger operating capacities.

Dome Lid



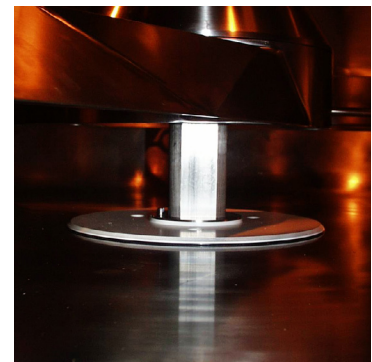
## REDUCE DOWNTIME BETWEEN BATCHES

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### CLEANING YOUR SYSTEM WITH EASE

PHARMX® mixers are equipped with auto-cleaning and liftable tool systems for simplified system cleaning and reduced set-up time. Designed to comply with stringent industry regulations, the auto-cleaning systems cleans the bowl, tools and discharge valve as well as flushes and drains the seal purge system. After the cleaning phase is complete, the liftable tool system raises the impeller 4-8" to permit inspection or swabbing of the impeller, seal and bowl bottom, reducing downtime between batches. No removal of mixing impeller required.

Liftable Tool System



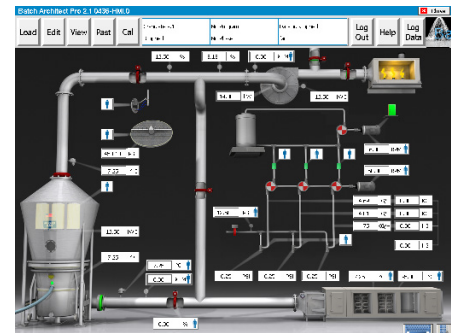
## PHARMX® SYSTEM ADVANTAGES

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- Optimized bowl geometry and mixing efficiency permit operation up to 90% capacity for larger batches
- Equipped with auto-cleaning and liftable tool systems for easy clean-up and inspection
- Robust variable speed chopper and impeller drive systems for maximum energy transfer
- Consistent impeller tip speed for all models ensures scale-up
- Flexible bowl configurations available to match all your processing needs
- Elliptical vessel lids promote homogeneous mixing action
- Ensure process validation with Spraying Systems Co. liquid dispersion nozzles for precise and repeatable liquid addition

**PROCESS CONTROL SOFTWARE  
MAXIMIZES OPERATING FLEXIBILITY**

- Simple enough for R&D scale machines; sophisticated enough for applications requiring 21 CFR Part 11 FDA compliance
- Configure for manual control or optional phase or recipe-based control
- Runs on Allen-Bradley® Logix processors, RSLogix™ 5000 Software, PanelView Plus™ or FactoryTalk® SE Platform



**Batch Architect Pro™ Status Screen**

Allen-Bradley is a trademark of Rockwell Automation

**PHARMX® HIGH-SHEAR GRANULATING MIXER SYSTEMS: SPECIFICATIONS**

Model Number	PX1*	PX25	PX50	PX100	PX150	PX250	PX400	PX600	PX1250
Total bowl volume (L)	1, 2, 4, 6, 8, 13	31	58	119	162	274	432	633	1286
Charge- max. liters @ light bulk, 0.3 - 0.5	0.9 - 7.5	28	58	107	150	246	389	569	1157
Charge- min. liters	0.3 - 2.5	8	15	30	42	69	109	159	324
Impeller max. speed (RPM)	950	354	289	227	205	172	148	130	103
Impeller power (HP)	0.5	3	5	10	15	40	50	75	150
Chopper speed range (RPM)	1500 - 9750	500 - 4000	500 - 4000	500 - 4000	500 - 4000	500 - 4000	500 - 3000	500 - 3000	500 - 3000
Chopper power (HP)	0.25	1	2	5	7.5	10	15	20	40

\*Specifications vary depending on bowl size



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