Mixer and blender capabilities

For *Powder and Bulk Engineering*'s first-ever mixer-blender capability chart, we sent questionnaires to mixer manufacturers and suppliers, inviting them to provide details about up to three mixer models designed to blend dry bulk materials alone or with liquid ingredients. More than two dozen companies responded. We compiled their answers to produce the following chart. We appreciate the advice from Peter R. Holman, Holman Engineering, and David S. Dickey, MixTech, on the chart's parameters.

Note: Items with an asterisk (*) are options.

Company	Model	Mixer type	Feed material: Solid/solid	Feed material: Solid/liquid	End product: Agglomerate	End product: Coating	End product: Paste	End product: Pellet	End product: Powder	End product: Slurry	Operation: Batch	Operation: Continuous	Operation: Lab	Mixing/blending method: Agitation	Mixing/blending method: Gravity	Mixing/blending method: Pressure	Mixing/blending method: Intensification	Mixing/blending method: Tumbling	Mixing/blending method: Other	Intensity: High	Intensity: Low	Intensity: Intermediate	Mixer has intensifier or lump breaker?	Materials handled: Abrasive	Materials handled: Fibrous	Materials handled: Fragile, friable	Materials handled: Free-flowing	Materials handled: Pastes	Materials handled: Pellets	Materials handled: Powders	Materials handled: Sanitary	Materials handled: Slurries	Materials handled: Sticky/tacky	Materials handled: Wide particle size distribution	Mixer characteristics: Complete discharge	Mixer characteristics: Easy cleaning	Mixer characteristics: Handles wide range of particle sizes in the mix	Mixer characteristics: Low energy requirements	Mixer characteristics: Low maintenance	Mixer characteristics: Method(s) for liquid addition	Mixer characteristics: Uniform liquid additions	Standard capacity range: Batch in ft³	Standard capacity range: Continuous (per hour)	Standard capacity range: Horsepower	Standard capacity range: Speed	Notes
A&J Mixing International	Phlauer ASSP Series high-performance mixers	Paddle	●			●			●	●	●	●	●	●								●	*	●	●	●	●		●	●	●	●		●	●	●	●		●	●	1 to 60	150 to 18,000 ft³/h	1 to 200	17 to 115	
American Process Systems/Eirich Machines	OptimaBlend fluidizing paddle blender	Fluid-bed, paddle, plow, ribbon, ribbon-paddle combo	●	●	●	●	●		●	●	●			●								●		●		●	●		●	●	●	●		●	●	●	●	●	●	●	0.5 to 500		0.5 to 300	NA	
	DRB double-ribbon blender	Fluid-bed, paddle, plow, ribbon, ribbon-paddle combo	●	●	●	●	●		●	●	●			●								●		●		●	●		●	●	●	●		●	●	●	●	●	●	●	0.5 to 500		0.5 to 300	NA	
	PlowBlend	Fluid-bed, paddle, plow, ribbon, ribbon-paddle combo	●	●	●	●	●		●	●	●			●								●		●		●	●		●	●	●	●		●	●	●	●	●	●	●	0.05 to 500		0.5 to 300	NA	
Bepex International	Turbulizer	Dispersion, paddle, pin	●	●	●	●	●	●	●	●	●	●	●	●			●				●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		100 to 100,000 kg/h	5 to 500	Any	
	Extrud-O-Mix	Kneader, single-screw	●	●	●	●	●	●	●	●	●	●	●	●		●	●				●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		5 to 5,000 kg/h	0.5 to 100	Various	
	Hydramix	Paddle, twin-rotor	●	●	●	●	●	●	●	●	●	●	●	●								●		●	●	●	●		●	●		●	●	●	●	●	●	●	●	●		100 to 10,000 kg/h	1 to 100	Slow	
Charles Ross & Son	Vertical blender	Conical screw	●	●	●		●	●	●		●		●	●								●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		1 to 1,000				
	Ribbon blender	Paddle, ribbon, ribbon-paddle combo	●					●	●		●	●	●	●								●	*	●	●	●	●		●	●	●	●		●			●	●	●		1 to 5.5				
	Tumble blender	Double-cone, V-blender	●	●	●			●	●		●		●	●				●			●	●		●	●	●	●		●	●	●	●		●	●		●	●	●	●	1 to 80				
Columbian TecTank	Direct Flow Channel (DFC) blender	Gravity, silo	●					●			●	●			●							●					●			●					●	●		●	●			100,000 max	50,000 lb/h max		NA	
Continental Products	MK VII-I, Model No. 120-667	Dispersion, gravity, horizontal rotary drum, rotary	●	●	●	●		●	●		●			●							●	●		●	●	●	●		●	●		●		●	●		●	●	●	●	66 to 667		20 to 50	1 to 4 rpm	1. Free-fall processing
	MK VII, Model No. 132-1286	Dispersion, gravity, horizontal rotary drum, rotary	●	●	●	●		●	●		●			●							●	●		●	●	●	●		●	●		●		●	●		●	●	●	[1]	128 to 1,286		40 to 100	1 to 3 rpm	2. Free-fall processing
	MK VI, Model No. 31-10	Dispersion, gravity, horizontal rotary drum, rotary	●	●	●	●		●	●		●			●				●			●	●		●	●	●	●		●	●		●		●	●		●	●	●	[2]	1 to 10		1 to 3	1 to 5 rpm	3. Free-fall processing
Cyclonaire	CB-150 ConveyBlend	Fluid-bed, pneumatic	●	●	●				●		●								[4]		●		●		●	●		●			●			●	●				[3]	10 to 200		40 to 200		4. Fluidization
EKATO	VSM	Conical screw	●	●	●			●	●	●	●		●	●			●				●	●		●	●	●	●		●	●	●	●		●	●		●	●	●	●	0.1 to 1,150		1 to 100		
	VPT	Conical screw, agitated	●	●	●		●	●	●	●	●		●	●			●				●	●		●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	0.1 to 150		1 to 50		
FloAero	Floveyor	High-velocity	●						●			●		●					[5]		●			●		●	●		●			●	●	●	●							25 to 80,000 lb/h	1 to 10	Constant speed	5. Velocity and velocity gradients
Franklin Miller	PCM - Pipeline continuous mixer	Plow, pug mill, rotary		●	●	●	●			●	●	●	●	●			●				●			●		●	●	●	●		●	●	●	●	●	●	●	●	●	●	All		2 to 200		
GEMCO	Double-cone blender	Double-cone	●		●	●		●	●		●	●	●	●	●		●	●			●	●	●		●	●		●	●				●	●				●	●	0.5 to 300				
GPE	INA Incline Action Kettle	Container, scrape-surface		●			●			●	●			●							●	●					●	●		●		●			●			●			1 to 125		1 to 50	1 to 50	
Hayes & Stolz Industrial Mfg.	Twin-shaft batch mixer	Twin-screw or																																											
	Horizontal ribbon mixer, horizontal paddle mixer	twin-paddle	●	●			●	●	●	●	●			●					[6]		●	●		●		●		●	●	●		●	●	●	●		●	●	●	●	10 to 700		5 to 250	25 to 85 rpm	6. Fluidizing
		Paddle, ribbon, ribbon-paddle combo, mixing tub	●	●		●	●	●	●	●	●			●			●				●	●		●	●	●	●	●	●	●	●	●	●			●		●	●	●	5 to 1,000		3 to 250	16 to 55 rpm	
	DA (dual-agitator) blender	Twin-screw, adjustable paddle	●	●	●	●	●	●	●	●		●		●			●				●	●		●	●	●	●	●	●	●	●	●		●	●		●	●	●	●		1 to 350 t/h	3 to 150	75 to 300 rpm	
Hosokawa Micron Powder Systems	Vitomix	Conical screw	●	●		●	●		●	●	●			●					[7]			●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	17.6 to 350		1.5 to 150	0.4 to 6 m/s	7. Three-dimensional convective
	Cyclomix	Conical paddle	●	●	●	●	●		●		●		●	●					[8]	●				●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	0.003 to 70		0.25 to 150	3 to 30 m/s	8. Impact and shear
	Vrieco-Nauta	Conical screw	●	●			●		●		●		●	●					[9]					●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	0.18 to 1,765		0.25 to 50	1 to 4 m/s	9. Three-dimensional convective
Jiffy Mixer	HS-1	Paddle		●	●	●	●	●	●	●	●	●	●	●							●	●											●	●	●	●	●	●	●	●				1,200 rpm	
	ES	Paddle		●	●	●	●	●	●	●	●	●	●	●							●	●											●	●	●	●	●	●	●	●				1,000 rpm	
	PS-1	Paddle		●	●	●	●	●	●	●	●	●	●	●							●	●											●	●	●	●	●	●	●	●				800 rpm	
KMPT USA	Loedige ploughshare mixer	Plow	●	●		●	●		●	●	●	●	●	●							●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.18 to 700	4.5 to 900 m³/h	2 to 500	0 to 200	
	Krauss-Maffei helical mixer	Ribbon, helix	●	●		●	●		●	●	●	●	●	●							●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1.4 to 530		2 to 150	4 to 80	
Kercher Industries	Lancaster K-Lab	Counter-current rotating pan	●	●	●	●	●	●	●	●	●		●	●			●	●			●	●		●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	0.2 to 0.5		4	10 to 3,000 rpm	

Company	Model	Mixer type	Feed material: Solid/solid	Feed material: Solid/liquid	End product: Agglomerate	End product: Coating	End product: Paste	End product: Pellet	End product: Powder	End product: Slurry	Operation: Batch	Operation: Continuous	Operation: Lab	Mixing/blending method: Agitation	Mixing/blending method: Gravity	Mixing/blending method: Pressure	Mixing/blending method: Intensification	Mixing/blending method: Tumbling	Mixing/blending method: Other	Intensity: High	Intensity: Low	Intensity: Intermediate	Mixer has intensifier or lump breaker?	Materials handled: Abrasive	Materials handled: Fibrous	Materials handled: Fragile, friable	Materials handled: Free-flowing	Materials handled: Pastes	Materials handled: Pellets	Materials handled: Powders	Materials handled: Sanitary	Materials handled: Slurries	Materials handled: Sticky/tacky	Materials handled: Wide particle size distribution	Mixer characteristics: Complete discharge	Mixer characteristics: Easy cleaning	Mixer characteristics: Handles wide range of particle sizes in the mix	Mixer characteristics: Low energy requirements	Mixer characteristics: Low maintenance	Mixer characteristics: Method(s) for liquid addition	Mixer characteristics: Uniform liquid additions	Standard capacity range: Batch in ft³	Standard capacity range: Continuous (per hour)	Standard capacity range: Horse power	Standard capacity range: Speed	Notes
Kercher Industries	Lancaster K-6	Counter-current rotating pan	●	●	●	●	●	●	●	●	●			●			●	●		●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	15 to 45		30 to 130	35 to 1,000 rpm	
	Lancaster 30-DP	Muller, plow	●	●	●	●	●		●		●								●[10]			●		●			●	●	●	●			●	●	●	●	●	●	●	●	●	0.375 to 1.75		3	41 rpm	10. Counter-current
	Incline agitator (single- and double-motion)	Scrape-surface		●		●	●			●	●			●							●	●			●		●	●			●	●	●		●	●		●	●			1 to 125		1 to 50	1 to 50	
Lee Industries	Horizontal ribbon/ paddle blender	Paddle, ribbon, ribbon-paddle combo	●	●				●	●	●	●			●							●					●			●	●	●	●		●	●	●	●	●	●			1 to 125		1 to 50	1 to 50	
Lowe Industries	Horizontal custom design	Paddle, ribbon, ribbon-paddle combo	●	●	●	●	●	●	●	●	●	●	●	●						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1.5 to 600	0.25 to 250	0.75 to 250	15 to 60 rpm	
Machine and Process Design	Ribbon blenders, rotary drum	Ribbon, horizontal rotary drum	●	●		●			●		●	●		●				●			●				●	●	●			●	●		●	●		●	●					25 to 150				
Marion Mixers	Horizontal custom design	Paddle, ribbon, ribbon-paddle combo	●	●	●	●	●	●	●	●	●	●	●	●						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1.5 to 600	0.25 to 250	0.75 to 250	15 to 60 rpm	
Metalfab	CBI continuous mixer	Ribbon-paddle combo	●						●			●		●							●			●			●		●	●	●			●		●	●	●	●				15 to 2,500 ft³/h	1 to 5		
Munson Machinery	Rotary batch mixer	Horizontal rotary drum, rotary	●	●	●	●		●	●		●		●		●			●			●			●	●	●	●		●	●	●			●	●	●	●	●	●	●	●	10 to 600		3 to 100	8 to 12 rpm	
	Ribbon blender	Paddle, plow, ribbon, ribbon-paddle combo	●	●			●	●	●	●	●	●	●	●			●					●	●	●	●		●	●	●	●	●	●	●	●			●		●	●	●	1 to 500	20 to 10,000 ft³/h	1 to 150	1 to 300 rpm	
	Rotary continuous mixer	Horizontal rotary drum, rotary	●	●	●	●		●	●			●	●					●			●			●	●	●	●		●	●	●			●	●	●	●	●	●	●	●		20 to 10,000 ft³/h	0.5 to 40	8 to 12 rpm	
National Bulk Equipment	Quik Mix	Gravity, vertical auger	●					●			●			●	●							●		●			●		●					●	●	●	●	●	●			10 to 750		1.5 to 30	230 to 350 rpm	
	Vertical ribbon blender	Gravity, ribbon	●			●		●	●		●			●	●						●			●	●		●		●	●	●				●	●			●			10 to 60		10 to 30	30 to 50 rpm	
	Whirlwind mixer	Gravity, vertical auger	●	●		●		●			●			●	●							●		●			●		●	●				●			●		●	●		25 to 750		3 to 30	300 to 450 rpm	
Nol-Tec Systems	Model 244 pneumatic blender	Pneumatic	●	●	●			●	●		●	●				●					●			●	●	●	●		●	●	●			●	●	●	●		●	●		3 to 3,000	1 to 100 t/h	NA	NA	
	Model 277 pneumatic blender	Pneumatic	●	●	●			●	●		●	●				●					●			●	●	●	●		●	●	●			●	●	●	●		●	●		3 to 3,000	1 to 100 t/h	NA	NA	
Powder Technologies	High-shear mixer	High-shear mixing		●		●	●			●	●	●	●						●[11]	●	●	●						●			●	●	●		●	●			●	●	●	800 to 48,000+	800 to 48,000 lb/h			11. Powder inducting, wetting, and dispersing
	Mixer	Paddle, ribbon, paddle-ribbon combo	●		●	●			●			●							●[12]								●		●	●	●				●	●		●	●		●		100,000 L/h max			12. Combined radial and axial mixing motions
Reliance Industries	Removable container - RC10-2000L	Container, dispersion, fluid-bed	●	●	●	●			●		●		●	●			●					●		●			●		●	●				●	●	●	●	●	●	●	●	5 to 56.6		4 to 50	6 to 40 m/s	
	Horizontal cooling mixer - HCM 150-8000L	Dispersion, fluid-bed, paddle, plow, ribbon, ribbon-paddle combo	●	●	●	●			●		●	●	●	●			●					●	●	●			●		●	●				●	●	●	●	●	●	●	●	5.5 to 200		5 to 400	1 to 8 m/s	
	Vertical fluidizing mixer - VFM 4-2000L	Dispersion, fluid-bed	●	●	●	●		●	●	●	●		●	●			●			●				●			●		●	●				●	●	●	●		●	●	●	0.1 to 56.5		3 to 600	10 to 40 m/s	
S. Howes	Sanimix series	Paddle, plow, ribbon, ribbon-paddle combo	●	●	●	●	●	●	●	●	●		●	●			●				●	●	●*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	0.33 to 1,000+		1 to 350	16 to 90	
	Mixall/Powermix series	Paddle, plow, ribbon, ribbon-paddle combo	●	●	●	●	●	●	●	●	●		●	●			●				●	●	●*	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	0.33 to 1,000+		1 to 350+	16 to 90	
	Continuous paddle mixer-pug mill	Paddle, pug mill, ribbon, ribbon-paddle combo, single or dual shafts	●	●	●	●	●	●	●	●		●	●	●							●	●														●	●	●	●	●	●		1 to 300+ t/h	5 to 100+	100 to 300	
Scott Equipment	Plow mixer	Paddle, plow	●	●			●		●	●	●	●	●	●			●			●			●	●	●		●	●		●		●		●		●	●			●		10 to 750		10 to 200	40 to 150	
	HST blender	Paddle, pin	●	●	●	●	●		●	●		●	●	●						●							●	●		●		●			●	●	●		●		●		200 to 300,000 lb/h	10 to 200	100 to 2,500	
	Twin-shaft mixer	Paddle, ribbon-paddle combo	●						●		●			●							●	●		●	●		●			●				●	●		●		●	●		25 to 1,500		5 to 250	10 to 75	
Tote Systems International	Single-pedestal tumble bin blender	Container	●	●	●			●	●		●						●*	●				●	●*	●	●	●	●		●	●	●			●	●	●	●	●	●	●	●	2 to 62		5 to 15	2 to 20 rpm	
	Lab-scale blender	Container	●	●	●			●	●		●						●*	●				●	●*	●	●	●	●		●	●	●			●	●	●	●	●	●	●	●	0.25 to 10		0.5	2 to 25 rpm	
	Double-pedestal tumble blender	Container	●	●	●	●	●	●	●		●						●*	●				●	●*	●	●	●	●		●	●	●			●	●	●	●	●	●	●	●	26 to 79+		10 to 20	2 to 20 rpm	
Young Industries	Horizontal blender	Paddle, ribbon, ribbon-paddle combo	●	●		●		●	●		●	●	●	●							●		●		●	●	●	●	●	●	●			●	●		●	●	●	●	●	0.25 to 1,500		0.25 to 200	8 to 70	
	Multi-shaft continuous mixer	Paddle, pug mill	●	●		●	●	●	●			●	●	●								●			●		●	●	●	●	●		●	●			●	●	●	●	●	0.32 to 42	0.16 to 84 cfm	0.5 to 100	60 to 575	
	Multi-port gravity blender	Gravity	●					●	●		●	●	●		●						●			●			●		●	●	●			●	●	●	●	●	●			15 to 25,000		NA	NA	