VELODYNE

A cleanwater1® Company

HYDRAMAX™

DRY POLYMER WETTING TECHNOLOGIES & HYDRATION SYSTEMS

Scan the QR code to visit our website for more information

Optimizing Dry Polymer Performance

1. Atomize Polymer To Achieve Effective Polymer - Particle Wetting

Optimizing dry polymer performance starts with effectively wetting each individual polymer particle. Metering moderate to high rates of dry polymer directly in to a wetting bowl fails to effectively disperse and therefore wet the polymer. The Hydramax pneumatic conveyance system is designed to thoroughly disperse the polymer prior to wetting in order to minimize polymer hydration time.

2. Prepare Proper Solution Concentrations

Cationic polymers are typically prepared at solution concentrations between 0.25% to 0.5%. Anionic polymers are typically prepared between 0.1% and 0.25% solution. The solution can then be further diluted after the solution metering pumps through a secondary dilution system.

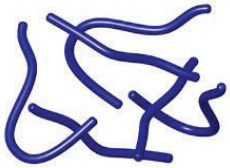
3. Properly Mix Polymer Solution

When polymer is first wetted, the molecule is not susceptible to damaging shear induced by a tank mixing impeller due to its coiled shape. However, during the hydration process the polymer elongates and becomes susceptible to shear, and possible degradation of the polymer's effectiveness. Too low of mixing energy or insufficient mix times will prevent the polymer from fully uncoiling. Too much mixing energy or mixing for too long will damage the polymer molecule. Inducing higher impeller speeds initially which then decrease as the polymer becomes more activated can result in higher polymer performance.

4. Provide Sufficient Polymer Aging

The amount of aging time required to reach optimal performance depends on the type of polymer and other process variables, such as water temperature. It is not uncommon for systems to be designed with insufficient aging time. With proper preparation as described above, it is recommended that cationic polymer systems are designed to allow 45 to 60 minutes of aging to ensure optimum system performance and flexibility. Anionic polymer systems should be designed for 120 minutes of aging.

Polymer Molecule Prior To Effective Wetting



Polymer Damaged By Excessive Mixing

Polymer Molecule Improperly Activated

Effectively Activated Polymer Molecule

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Hydramax™ Dry Polymer Wetting Technology

Optimized Polymer-Particle Wetting At Rates Up To 16# Per Minute

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Sequential Batch Process

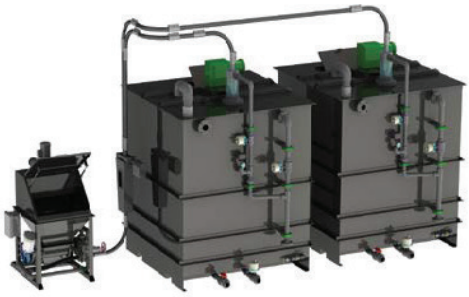
The sequential batch process is the most common process and utilizes a single mix/age tank, transfer pump and feed tank. Recommended for polymer production rates from 5#/hr up to 80#/hr. The benefits of sequential batch systems are simplicity, lower cost, and, for capacities up to 15#/hour, the ability to stack the mix/age tank over the feed tank to reduce space requirements.

Sequential Batch Process
(Over / Under)

Sequential Batch Process
(Side By Side)

Alternating (Flip/Flop) Batch Process

The alternating (flip/flop) batch process utilizes two mix/age/feed tanks that alternate back and forth by automatic valves. The system has a dry polymer diverter valve, and each tank has a polymer wetting head, tank mixer, inlet water control valve, and solution discharge valve.



Recommended for applications requiring over 80#/hr and up to 250#/hr. The benefit of an alternating batch process is the polymer processing cycle time is shorter because there is no transfer time, allowing a system to produce more polymer using the same size batch tanks as a sequential batching system.

Cascading Batch Process

The cascading batch process is for ultra-high rate applications and utilizes three mix/age/feed tanks that operate in a "cascading" batch cycle of operation. While one tank is operating in feed mode, one tank is operating in a mix/age mode, while the third tank is operating in fill mode. Once the feed tank reaches a low level, the tanks switch modes through automatic valves. The system has a three-way dry polymer diverter valve, and each tank has a polymer wetting head, tank mixer, inlet water control valves, and a solution discharge valve.

Recommended for applications requiring up to 1000#/hr. Because of the capacities of polymer processed, a storage silo is typically required for proper storage, and to minimize operator handling of dry polymer.

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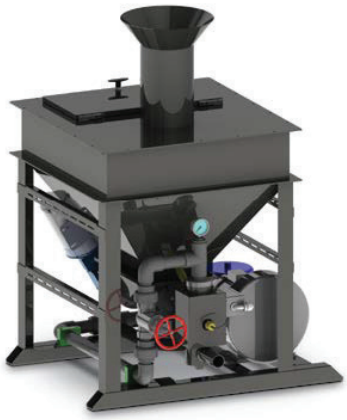
The Modular Hydramax™ System
Engineered To Meet Your Specific Needs

Manual-Fill Hopper
with Dust Collector

Bulk-Bag Hopper



Universal Hopper

Bulk Bag Handling System

Bulk Bag Handling
& Storage Systems

Silo Systems

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BASE MODEL	SEQUENCE TYPE	PLC/HMI OPTION	HOPPER STYLE / CAPACITY	POWER
D750F	S	3D	D4	D

Model # Example:

Build Your HydraMax:

BASE MODEL:		LBS. PER POLYMER HOUR PRODUCED		GPM SOLUTON AVAILABLE	WATER RATE / TRANSFER RATE	
		SOLUTION CONCENTRATIONS				
		0.25%	0.50%			
SEQUENTIAL BATCH OVER/UNDER TANK SYSTEMS						
D100S-S	45 MINUTES AGING	2.4	4.7	1.9	20 GPM @ 50 PSI	30 GPM
	60 MINUTES AGING	1.85	3.7	1.5		
D200S-S	45 MINUTES AGING	4.4	8.8	3.6	40 GPM @ 50 PSI	40 GPM
	60 MINUTES AGING	3.5	7	2.9		
D400S-S	45 MINUTES AGING	7.95	15.9	6.2	40 GPM @ 50 PSI	40 GPM
	60 MINUTES AGING	6.4	12.8	5		
SEQUENTIAL BATCH SIDE BY SIDE TANK SYSTEMS						
D500F-S	45 MINUTES AGING	9.5	19	8	50 GPM @ 50 PSI	50 GPM
	60 MINUTES AGING	8	16	6		
D750F-S	45 MINUTES AGING	12.5	25	10	50 GPM @ 50 PSI	50 GPM
	60 MINUTES AGING	10.5	21	8		
D1000F-S	45 MINUTES AGING	18	36	14	100 GPM @ 50 PSI	100 GPM
	60 MINUTES AGING	14.5	29	12		
D1500F-S	45 MINUTES AGING	22.5	45	18	100 GPM @ 50 PSI	100 GPM
	60 MINUTES AGING	19	38	15		
D2000F-S	45 MINUTES AGING	27.5	55	22	100 GPM @ 50 PSI	150 GPM
	60 MINUTES AGING	24	48	19		
D2500F-S	45 MINUTES AGING	31	62	25	100 GPM @ 50 PSI	150 GPM
	60 MINUTES AGING	27	54	21		
D3000F-S	45 MINUTES AGING	50	100	40	200 GPM @ 50 PSI	200 GPM
	60 MINUTES AGING	41.5	83	33		
ALTERNATING (FLIP/FLOP) BATCH SYSTEMS						
D750F-A	45 MINUTES AGING	15	31	13	50 GPM @ 50 PSI	N/A
	60 MINUTES AGING	12.5	25	10		
D1000F-A	45 MINUTES AGING	20.5	41	16	100 GPM @ 50 PSI	
	60 MINUTES AGING	16.5	33	13		
D2000F-A	45 MINUTES AGING	32.5	65	26	100 GPM @ 50 PSI	
	60 MINUTES AGING	27	54	22		
D3000F-A	45 MINUTES AGING	62.5	125	50	200 GPM @ 50 PSI	
	60 MINUTES AGING	50	100	40		
CASCADING BATCH SYSTEMS						
D24000F-C	60 MINUTES AGING	500	1000	385	400 GPM @ 50 PSI	N/A

* ADDING AN "L" IN FRONT OF THE BASE MODEL INDICATES THE LIQUID POLYMER OPTION
** PRODUCTION CAPACITIES ARE DEPENDANT ON MEETING WATER RATE REQUIREMENTS

CONTROL / SEQUENCE TYPE

SEQUENTIAL BATCH	S
ALTERNATING (FLIP / FLOP) BATCH	A
CASCADING BATCH	C

* CONSULT FACTORY FOR "FLIP-FLOP" OR CASCADING PROCESSES

PLC / HMI OPTION:

		COLOR TOUCHSCREEN HMI OPTIONS						
		C-MORE		ALLEN BRADLEY			MAGELIS	
		8"	10"	7"	10"	12"	7"	10"
PLC OPTIONS		**A**	**B**	**C**	**D**	**E**	**F**	**G**
VELODYNE CONTROLLER ("S" SERIES ONLY)	1	•	6" COLOR TFT TOUCH SCREEN					
ALLEN BRADLEY MICROLOGIX	2	•	•	•	•	•		
ALLEN BRADLEY COMPACTLOGIX	3	•	•	•	•	•		
ALLEN BRADLEY CONTROLLOGIX	4	•	•	•	•	•		
MODICON M340	5	•	•				•	•
MODICON UNITY	6	•	•				•	•

* OTHER PLC / HMI OPTIONS AVAILABLE - CONSULT FACTORY

HOPPER & STORAGE DESIGN:

		CUBIC FEET						
		2	4	10	20	70	1500	3000
50# BAG UNLOADER	A	•	•	•	•			
50# BAG UNLOADER WITH DUST COLLECTOR	B	•	•	•	•			
BULK-BAG ADAPTER	C		•	•	•			
COMBINATION 50# BAG / SUPER SACK UNLOADER	D		•	•	•	•		
TOTE UNLOADER	E		•	•				
SILO - BULK DELIVERY	F						•	•

POWER OPTION:

C	230V/3PH/60HZ	
D	480V/3PH/60HZ	REQUIRED ON 750 SERIES & ABOVE
E	575V/3PH/50HZ	

Related Products

Velodyne – Three Decades of Experience

For over thirty years our team has been dedicated to excellence. Through knowledge gained from thousands of installations worldwide, VeloDyne unites proven technologies with unsurpassed experience. Contact us to learn how our products and services can help optimize your treatment process.

More Proven Solutions From Velodyne

Dry Polymer Activation

Auger Feeders & Conveyors

Manual Bag Systems

Liquid Chemical Metering & Feed Systems

Bulk-Bag Systems

Lime Slakers

Containerized Systems

Silo Systems

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