

POLYMER ACTIVATION SYSTEMS



POLYBLEND®

DYNABLEND™

POLYMER FEED SYSTEMS

Proper Polymer Activation is the Key

UGSI Chemical Feed, Inc. pioneered the development of cost-effective polymer activation technologies for water and wastewater applications by following the science of polymer activation.

Backed by decades of scientific research and field experience gained from more than 65 years and 10,000 installations, Polyblend® mechanical and Dynablend™ hydraulic polymer activation systems deliver significant operational savings by reducing the consumption of polymers used for the treatment of water and wastewater.

While polymers vastly improve the operation of water and wastewater plants by accelerating the settling of particles and improving sludge dewatering, polymer costs are one of the largest operating expenses at a plant. Even a small reduction in polymer consumption can result in meaningful savings. Proper polymer activation is the key to maximizing polymer effectiveness.

To get optimal “uncoiling” of polymer chains without damaging or shortening the polymer chain, different levels of energy must be applied to the polymers at different times. High shear mixing is required to prevent agglomerations, but over-mixing can damage the polymer. The key is to shift mixing energy over time to get the optimal results. Following the science of polymer activation, UGSI hydraulic and mechanical mixing technologies employ a two-zone mixing regimen of applying high energy at the moment of initial wetting (MOIW) followed by a transition to a low-energy quiescent zone, the Polyblend® and Dynablend™ polymer mixing systems can consistently achieve higher activation levels and viscosities.

We Wrote The Book

Polymer activation expert Dr. Yong Kim leads UGSI’s program of rigorous testing of system activation performance. Chemists will continue to refine existing polymers and develop new ones just as they have for more than 35 years. Our ongoing equipment testing with different polymer types helps you choose the best polymer activation system for your application.

All UGSI polymer activation systems are designed using the science of efficient polymer activation



**HIGH ENERGY
AT MOIW**



**TRANSITION TO
LOW-ENERGY
“QUIESCENT ZONE”**



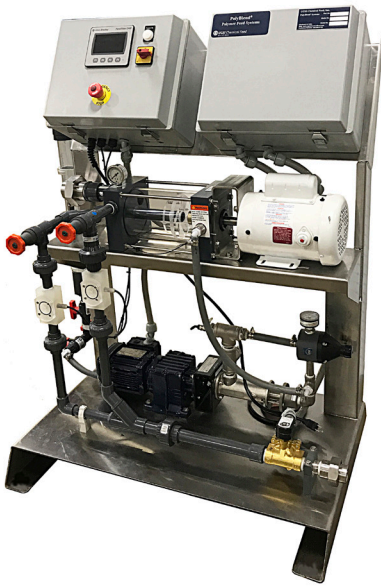
**ADEQUATE
RESIDENCE TIME**



**FULLY ACTIVATED
POLYMER SOLUTION
AT DESIRED
CONCENTRATION**

Emulsion Polymer Activation

UGSI Chemical Feed's industry-leading emulsion polymer activation technologies use superior two-stage mixing, frequently provide polymer savings of 20%-30% compared to single-stage mixing. Optimizing mixing energy ensures consistent performance to handle new polymer developments, ultra-high molecular weights, different charge densities and new chemistries. The compact size and open-frame design enables easy installation, access, and maintenance in confined spaces. Control options range from simple manual to full PLC-based automatic control with complete SCADA interface.



Polyblend® Mechanical Mixing

- Highly efficient mixing process results in polymer savings
- Excels at high molecular weight polymers
- Ability to quantify the energy input and relate it to G value - important for high molecular weight polymers or polymers with a tight tolerance for activation
- Low maintenance cost
- Wide variety of size options
- Large installation base



Dynablend™ Hydraulic Mixing

- Performs well with wide range of molecular weight polymers
- No moving parts in the mixing chamber
- Low operating cost
- Low maintenance cost
- Multiple mixing chamber sizes
- Highly reliable

Polyblend® Mechanical Activation (Emulsion Polymer)		
Series	Water Flow Rate GPH (LPH)	Polymer Output Range GPH (LPH)
PB Series	1.6-1200 (6-4540)	0.0125-8 (0.05-30.2)
M-Low Series	3-120 (11.4-454.2)	0.0125-2.5 (0.05-9.5)
MM Series	240-3200 (912-12,113)	0.0125-660 (0.05-2508)
M Series	240-12,000 (912-45,600)	0.0125-660 (0.05-2508)

Dynablend™ Hydraulic Activation (Emulsion Polymer)		
Series	Water Flow Rate GPH (LPH)	Polymer Output Range GPH (LPH)
MiniBlend	12-1200 (45-4543)	0.0125-5 (0.05-18.9)
L4	12-1200 (45-4543)	0.0125-20 (0.05-75.7)
L6	180-3000 (681-11,356)	0.0125-20 (0.05-75.7)
L8	360-6000 (1363-22,712)	1.5-300 (5.7-1135)
L12	900-21,000 (3407-79,494)	1.5-300 (5.7-1135)

Dry Polymer Activation

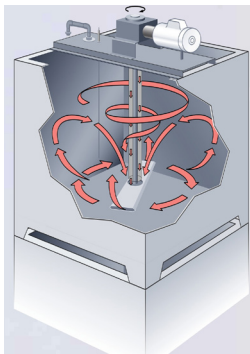
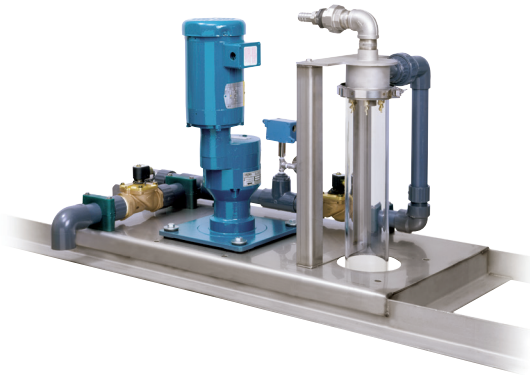


Polyblend® Mechanical Mixing

To create the ideal environment for the first stage of dry polymer dissolution, crucial initial wetting occurs in UGSI's DD4 disperser, where polymer and water are subjected to high energy created by mechanical mixing. The dry polymer is precisely metered into the high-energy mix chamber and properly activated with water. After brief exposure, the solution exits the high-energy disperser. The point of initial polymer / water contact is visible to the operator through a clear, acrylic interface.

Dynajet™ Hydraulic Mixing

The Dynajet™ technology uses a blower-induced pneumatic conveyance system to convey up to 12 lbs of polymer per minute from the volumetric feeder to the wetting head, with higher capacity custom systems available. The polymer is naturally dispersed in the conveyance air before introduction to the dilution water for optimum polymer-particle wetting. Polymer and water come together in a high flow shower of water produced by a minimum of six specially designed waterjets to ensure complete polymer-particle wetting. The solution that's created enters the mix tank where the polymer solution is ready for the mixing and aging process.



The activated polymer storage tank is specifically designed to provide fully uniform mixing intensity. The rotating impeller - known as a "hollow wing" - has a length that is more than half the width of the tank. This unique design continuously moves the solution both vertically and horizontally, creating a pump-like action that reduces agglomerations and broken polymer chains. The square tank design eliminates the potential for a damaging vortex. With minimal waste, polymer costs are reduced and polymer activation performance improved. The hollow wing impeller design is available for use with various tank sizes up to 2,000 gallons. The hollow wing design is standard on all Polyblend® dry polymer systems and optional on Dynajet™ dry polymer systems.

Polyblend® Mechanical Activation (Dry Polymer)

Series	Water Supply GPM (LPM)	lbs. (kg) Polymer/Hr. @ 0.75% Concentration	# of Tanks/ Tank Capacity USG (L)
DP 110	10 (37.8)	4 (1.8)*	2/ 75 (283)
DP 500	20 (75.7)	16 (7.3)	2/ 160 (606)
DP 800	30 (113.6)	32 (14.5)	2/ 360 (1363)
DP 2000	30 (113.6)	62 (113.6)	2/ 750 (2839)
DP HC	115 (435)	469 (212)	2/ 7500 (23,385)

*Numbers provided are @ 0.3% concentration. UGSI does not recommend exceeding this concentration for a DP 110 system.

Dynajet™ Hydraulic Activation (Dry Polymer)

Series	Water Supply GPM (LPM)	lbs. (kg) Polymer/Hr. @ 0.75% Concentration	# of Tanks/ Tank Capacity USG (L)
DJM-390	50 (185)	27 (12)	2/ 390 (475)
DJM-750	50 (185)	40.5 (18.3)	2/ 750 (2839)
DJM-1000	50 (185)	63 (28.5)	2/ 1000 (1363)
DJM-1500	50 (185)	87 (39.5)	2/ 1500 (5675)
DJM-2000	50 (185)	114 (51.7)	2/ 2000 (7570)
DJM-2500	50 (185)	138 (62.5)	2/ 2500 (9460)

Larger capacity systems available. Please consult your sales representative.

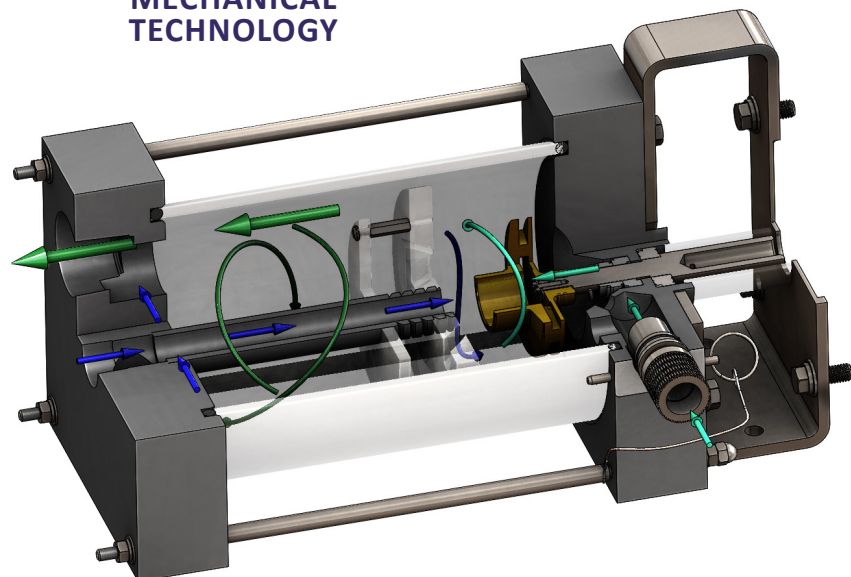
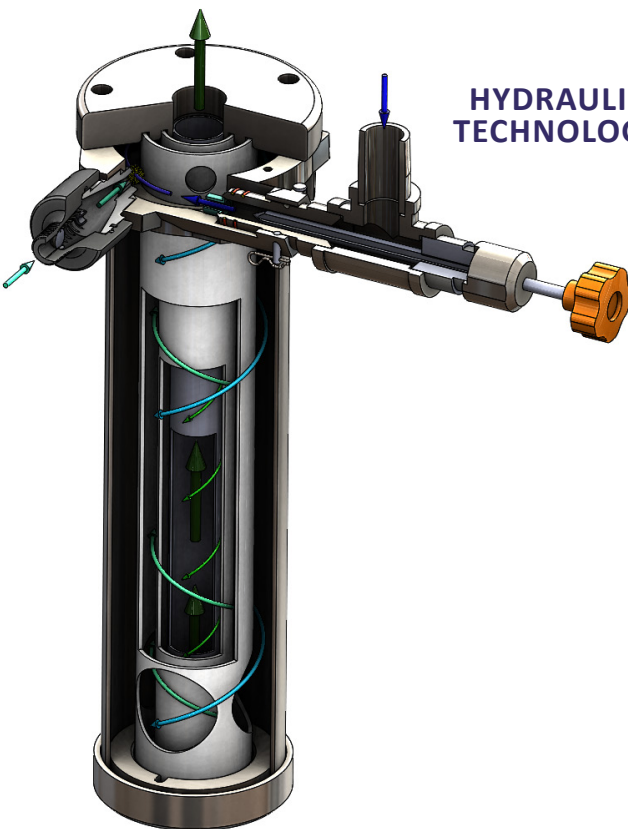
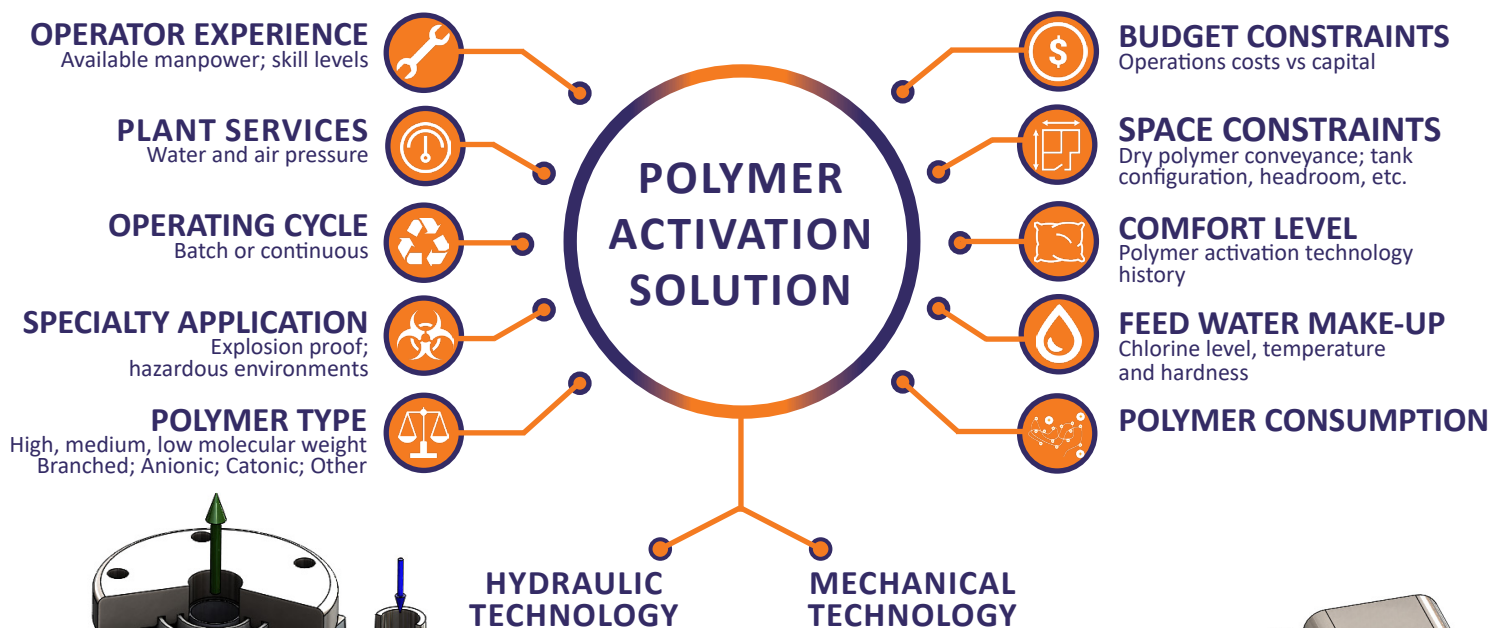
Mechanical or Hydraulic Mixing Technology?

UGSI Chemical Feed offers a comprehensive line of polymer activation methods with both the mechanical activation design of the Polyblend® system and the hydraulic activation design of the Dynablend™ system for all emulsion and dry polymer formulations.

So how do you know which technology is best for you?

Our team of trained experts can help determine the best technology for your application. Because we are not limited to one technology, you can feel confident knowing we're committed to finding the system that meets your process objectives.

UGSI experts help guide the equipment selection process based on the specifics of your particular application.



UGSI Demo Program : Experience the Savings

Experience the Effectiveness

of science-based polymer mixing systems for yourself. We're so sure you'll be satisfied with a demonstration on your existing or new application, that we'll bring the on-site trial to you for a side-by-side comparison.



Polymer Feed and Control Applications

Drinking water

Groundwater remediation

Industrial process water

Wastewater

Water reuse and recycle

Available for Polyblend[®], Dynablend[™] and Dynajet[™] polymer activation systems.

Ten emulsion systems operating in the field at any given time.

Two trailer mounted dry polymer systems available.

Highly successful program for customers and consulting engineers.

Direct evidence of demonstrated polymer savings.

Case studies available.

"The PolyBlend[®] DP800 Demo Trailer was very simple to use. I just set the settings and walked away; it was extremely user-friendly. The way it blends and the resulting polymer solution – and the reduction in polymer usage – made this an excellent unit."

**Brad Anderson, O&M Tech V
Fairfield-Suisun Sewer District, CA**



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