Dry Polymer Make-Down System

Bisan developed a modular dry polymer make-down system with seven options, from fully manual to fully automatic for intermittent and continuous operation.

Polymer solution concentration can be adjusted from 0.1% to 0.5%.

ON REQUEST, BISAN INC CAN SUPPLY:

- 900 L tanks, with same configurations
- Secondary dilution systems.
- Make-down systems with larger capacities *

SYSTEM CAN PRODUCE:

- 500 L/hr on Options 1, 3 & 5
- 1,000 L/hr on Option 2, 4 & 6
- 1,500 L/hr on Option 7

* Using different tanks, wetting cones assemblies, volumetric feeders and accessories, Bisan Inc can supply make down systems up to 23 lbs/hr (10.5 kg/hr).

For this capacity a water flow of 11.1 gpm (2,500 L/hr) @ 100 psi is required. To increase to water pressure to this level, a booster pump can be supplied.

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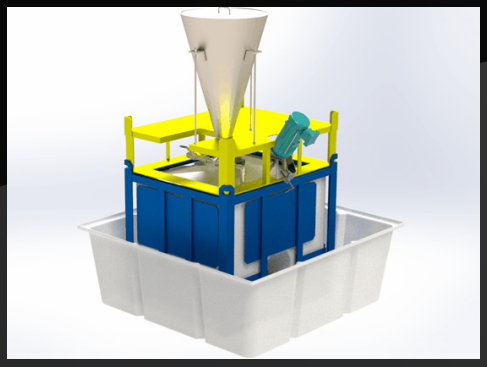


OPTION 1

Operation intermittent
(one 500 L tank)
Solution concentration max 0.5%
Control manual
Water pipe size 25 mm (1”)
Water requirements 6.1 gpm @ 30 psi
Recommended aging time 30-40 min.
Batch preparation time 60 min.

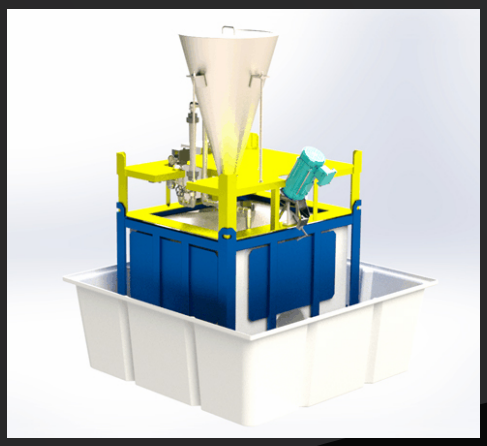
Manual batch preparation:
- After polymer solution is used, a new batch can be prepared.
- Operator will open the water valve and will slowly dump the required quantity on polymer in the wetting.
- When solution level gets to mixer impeller, the operator will start the mixer for 30-40 min.

OPTION 2

Operation continuous
(two 500 L tanks)
Solution concentration max 0.5%
Control manual
Water pipe size 25 mm (1”)
Water requirements 6.1 gpm @ 30 psi
Recommended aging time 30-40 min.
Batch preparation time 60 min.

Manual batch preparation:
- After polymer solution is used, a new batch can be prepared.
- Operator will open the water valve and will slowly dump the required quantity on polymer in the wetting.
- When solution level gets to mixer impeller, the operator will start the mixer for 30-40 min.

Note In order to transfer solution by weight a concrete pad is required.



OPTION 3

Operation intermittent
(one 500 L tank)
Solution concentration max 0.5%
Control semi-automatic
Water pipe size 25 mm (1”)
Water requirements 6.1 gpm @ 30 psi
Recommended aging time 30-40 min.
Control panel NEMA-4X
Total batch preparation time 60 min.

Semi-automatic batch preparation:
- When Low Level is detected, the feed pump will receive a interlock signal to stop.
- At this time the operator press “Batch start” and after water is flowing he will slowly dump the required quantity on polymer in the wetting cone.
- After batch is finished, the interlock signal is off and feed pump will start.

OPTION 4

Operation continuous
(two 500 L tanks)
Solution concentration max 0.5%
Control semi-automatic
Water pipe size 25 mm (1”)
Water requirements 6.1 gpm @ 30 psi
Recommended aging time 30-40 min.
Control panel NEMA-4X
Total batch preparation time 60 min.

Semi-automatic batch preparation:
- When Low Level is detected in the make-down and aging tank, a new batch can be prepared.
- At this time the operator press “Batch start” and after water is flowing he will slowly dump the required quantity on polymer in the wetting cone.
- After batch is finished, a solenoid valve will open and transfer the chemical in the solution tank, if solution tank is at “Low Level”.

Note In order to transfer solution by weight a concrete pad is required. ■ If the height is limited, the make down assembly can be installed on the floor.

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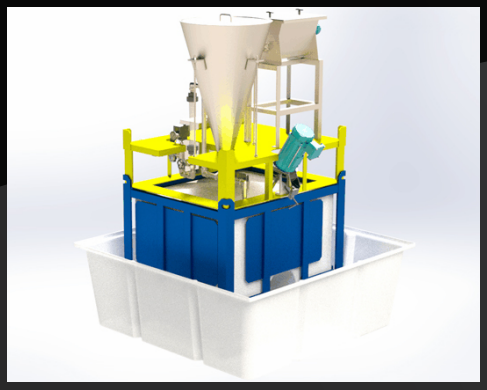

OPTION 5

Operation intermittent
(one 500 L tank)
Solution concentration max 0.5%
Control automatic
Water pipe size 25 mm (1")
Water requirements 6.1 gpm @ 30 psi
Recommended aging time 30-40 min.
Total batch preparation time 60 min.
Control panel NEMA-4X

Automatic batch preparation:

- When Low Level is detected, the feed pump will receive a interlock signal to stop.
- At this time the automatic batch preparation will start.
- After batch is finished, the interlock signal is off and feed pump will start.

Note Hopper loading is not part of this system.

OPTION 6

Operation Continuous
(two 500 L tanks)
Solution concentration max 0.5%
Control automatic
Water pipe size 25 mm (1")
Water requirements 6.1 gpm @ 30 psi
Recommended aging time 30-40 min.
Control panel NEMA-4X
Total batch preparation time 60 min.

Automatic batch preparation:

- When Low Level is detected in the make up and aging tank, a new automatic batch starts.
- At this time the operator will dump the required quantity on polymer in the wetting cone and press "Batch start"
- After batch is finished, a solenoid valve will open and transfer the chemical in the solution tank, if solution tank is at "Low Level".

Notes Hopper loading is not part of this system.
- In order to transfer solution by weight a concrete pad is required.
- If the height is limited, the make down assembly can be installed on the floor.

OPTION 7

In order to increase the system capacity, the third tank and transfer pump can be added.

- Tank destination is as follow:
- Make down tank
- Aging tank
- Solution tank

By adding the third tank to Option 6, we increase system capacity from 1000 L/hr (2 tank option) to 1,500 L/hr.

For larger capacities (over 180 kg of dry polymer per day), Bisan Inc. can accommodate any make-down capacities, according to project specifications.

On request, Bisan Inc. can supply pump dosing systems, according to project specifications.

Notes In order to transfer solution by weight a concrete pad is required.
- If the height is limited, the make down assembly can be installed on the floor.

SYSTEM CONTROL PANEL

For Options 3 & 4, a control relays & pilot lights control panel is provided for the following equipment:

- NC solenoid valve
- Low RPM mixer
- Ultrasonic level control

Pilot light provided to display the equipment status, and a digital display will indicate the tank level.

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For Options 5, 6 & 7, a PLC & Touch Screen Display is provided for the following equipment:

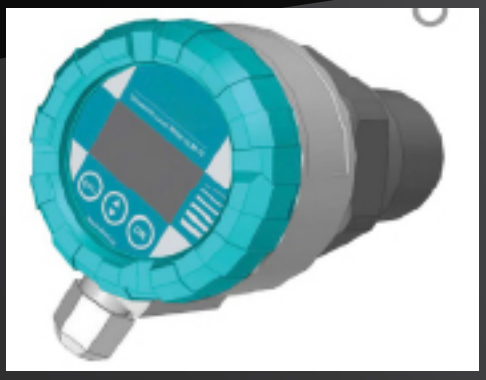
- NC solenoid valves (2)
- Low RPM mixer
- Ultrasonic level control (1, 2 or 3)
- Volumetric Feeder
- Transfer Pump (on Option 7)
- Additional secondary dilution (if required)

Equipment status and alarms will be displayed on touch screen. From touch screen all controls are allowed.

VOLUMETRIC FEEDER

Internal Hopper 0.1 cubic feet
Tuf-Flex™ design Gray Vinyl
Motor drive .02HP - 24 VDC - 45 RPM - PM - open frame
Max. Capacity 3 lbs/hr (1.36 kg/hr)
Enclosure rating NEMA -1 - Remote Mount
Electrical requirements 115V, 60 Hz, 1 phase, 1.0 amps
Contact materials FDA approved Vinyl, Polyethylene, ABS Plastic, 304 Stainless Steel, and 316 Stainless Steel

Feedernote This feeder is designed to be used for no more than 8 hours of continuous operation.



ULTRASONIC LEVEL CONTROL

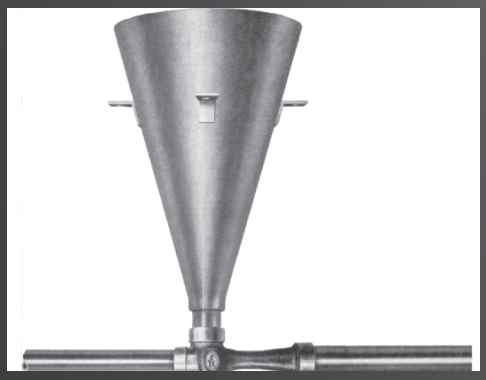
The Ultrasonic level Sensors are 2-Wire loop powered sensors designed provide reliable accurate level measurement, flow monitoring, and volume of liquids in tanks, pits, sumps and open channels. The Ultrasonic is very reliable and offer both 4-20mA analog output with HART® protocol or output RS-485 Modbus.

- Accurate Non-Contact Continuous Level Measurement of liquids / Tanks / Sumps /Ranges up to 65 Feet
- Quick View Display
- Simple to Program / Easy Adjustment
- False Echoes Elimination / (Self Teaching)
- Automatic Temperature Compensation
- Analog Current output (4 -20mA) with HART® protocol or output RS–485 Modbus

LOW RPM MIXER

Heavy duty tote mixer for the most difficult mixing applications.

- PG-1 Model
- Permanently greased bearings
- 9” Propeller
- 48” Shaft
- Aluminum/Cast Iron Housing
- 350 RPM
- 0.5 HP Motor
- TEFC enclosure
- Variable frequency drive to reduce the speed down to 60-90 RPM



WETTING CONE/EDUCTOR ASSEMBLY

Eductor will do the primary mixing (high velocity to eliminate the fisheyes formation). A low RPM mixer will do the secondary mixing (to minimize polymer damage) till the aging process is complete (20-30 min.). This 2-stage mixing will ensure a very good quality polymer solution.

1" Fig 267 Solids Handling Eductor Connections:
Discharge 1" NPT
Pressure 3/4" NPT
Net Weight Approx. 32 lbs (14.5 kg)
Material 316 SS Unit, 304 SS Hopper

Motive Pressure psig	30	40	50	60	70	80	90	100
Entrainment, cu. ft. per hr. Of Granular Solids	2.5	7.0	14	17	19	21	22	23
Motive Flow, gpm	6.1	7.0	7.9	8.6	9.2	9.9	10.5	11.1

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