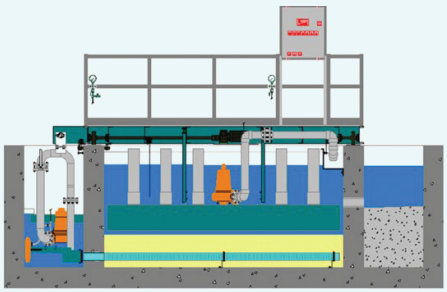
Gravisand® Sand Filtration Systems

TECHNICAL SPECIFICATIONS



DESCRIPTION

Evoqua's Gravisand® Filtration Systems incorporate the principles and advantages of conventional traveling bridge designs and utilize methods of accomplishing and maintaining filtration and regeneration. Gravisand filtration systems are ideal for use after suspended growth systems, for tertiary polishing and water reclamation, and algae removal and provide low life-cycle costs.

DESIGN CONFIGURATIONS & COMPONENTS

Gravisand Filtration systems are available as a steel pre-assembled package plant with a design flow rate of 0.05 to 2.0 million gallons per day (MGD). System components can be configured for concrete basins up to 5 MGD with unlimited capacity in multiple units. Concrete basins can also be retrofitted with disc filtration systems to increase filtration capacity in an existing footprint.

- **Filter media**—For lowering head loss, solids removal, and the ability to operate longer without backwashing.
- **Under drain system**—Hydraulically designed to uniformly collect filtration and distrubute backwash water over the area of the filter bed served by the under drain.
- **Traveling bridge and drive system**—Equipped with a ¼ horsepower gear drive that drives two wheels, one on either side of the filter through a common drive shaft to carry the backwash mechanism to the filter bed.
- **Backwash pump and shoe assembly**—Provides backwash water for backwashing and fluidizing the filter media for the removal of accumulated suspended solids.
- **Washwater pump and hood assembly**—Collects and removes solids from the backwash cycle. The washwater hood spans the width of the filter basin and is 50% wider than the area that is backwashed and is positioned about 1 inch above the top of the filter.
- **Electrical control system**—The control panel is NEMA4X Stainless steel and meets UL requirements. The PLC controls all functions such as backwash start time, backwash duration at each cell, water level functions and many others.

OPTIONS

- **Air Scour System**—economical air/water backwash system with no additional mechanical components for operation.

Gravisand Filtration Systems are ideal for use after suspended growth systems, tertiary polishing, water reclamation and algae removal.

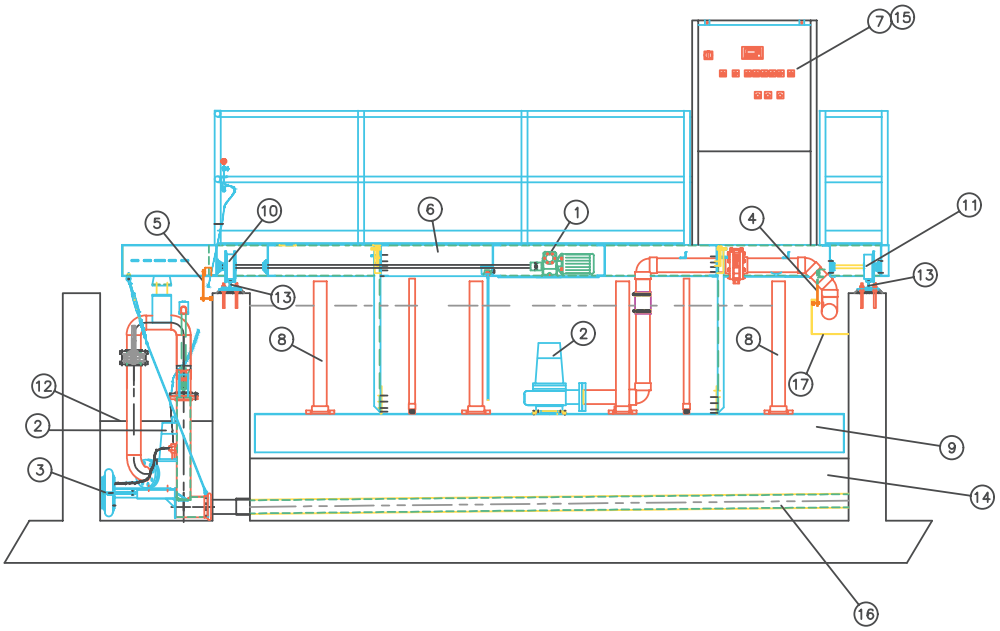
FEATURES

- Small footprint
- Low capital and install cost compared to other filtration systems
- Continuous Filtration during backwash
- Fully automatic—minimal operator supervision
- High solids loading capacity
- No redundancy required since media is continuously cleaned while system is operating
- XCell™ Filter Configuration (No Cell Dividers)
- Standard Steel package and concrete base designs with retrofits available
- Backwash triggered via level sensor
- Unique tubular underdrain providing superior backwash flow distribution
- Underdrain system includes non-clogging, non-fouling slotted pipe helping elimnate fouling from biological growth
- Title 22 approved

System Capacity and Dimensions

ASSEMBLY DETAILS

1. Gear Reducer
2. Backwash and Wash Water Pumps
3. Backwash Shoe Assembly
4. Bridge End Stop Limit Switch
5. Cell Stop Limit Switch
6. Bridge Assembly
7. Control Panel
8. Air Vent Pipe
9. Hood
10. Drive Wheels
11. Idler Wheels
12. Effluent Weir
13. Tank and Rails
14. Filter Media
15. PLC Controller
16. Underdrain Lateral
17. Wash Water Trough



DESIGN BASIS

- Washwater pressure: 4–5 psi
- Operating temp: 50–100°F
- Backwash flow: 25 gpm/ft²
- Backwash pressure: 10–11 psi
- Indoor/outdoor installation
- Feed flow through gravity
- Influent TSS up to 60 mg/l
- Typical cell divider spacing 8″ or 12″ apart

CONSTRUCTION MATERIALS

- Painted carbon steel tank or concrete basin
- PVC underdrain: Schedule 40
- Stainless Steel Hardware
- Piping Header: Stainless steel or painted carbon steel
- FRP Cell Divider if required

MEDIA

- Coarse sand: 1.2mm to the top of underdrains
- Fine sand: 0.55–0.56 mm, 5″ deep
- Anthracite: 1.0–1.1 mm, 6″ deep
- All media conforms to AWWA B100 standard

TYPICAL FILTRATE QUALITY

- Filtrate TSS < 10 mg/l if feed at 20 mg/l
- BOD < 10 mg/l if feed at 20 mg/l

UTILITY REQUIREMENT

- 460 VAC, three-phase, 60 Hz

STEEL TANKS

Flow		Bed Area (ft^2)	Connection Size				Tank Dimensions		
GPD	GPM		Influent	Effluent	BW Flange	Bypass Flange	Length	Width	Height
50,000	35	19	3″	3″	3″	3″	9′ 4½″	8′ 1¼″	12′ 11¾″
100,000	69	36	3″	3″	3″	3″	13′ 10½″	8′ 1¼″	12′ 11¾″
150,000	104	53	4″	4″	3″	3″	18′ 4½″	8′ 1¼″	12′ 11¾″
200,000	139	68	4″	6″	6″	6″	29′ 11½″	10′ 1¼″	12′ 11¾″
250,000	174	88	4″	6″	6″	6″	21′ 4½″	10′ 1¼″	12′ 11¾″
300,000	208	104	4″	6″	6″	6″	24′ ½″	10′ 1¼″	12′ 11¾″
350,000	243	120	4″	8″	8″	8″	27′ 4½″	10′ 1¼″	12′ 11¾″
400,000	278	140	4″	8″	8″	8″	30′–½″	10′ 1¼″	12′ 11¾″
500,000	347	175	6″	8″	8″	8″	26′ ½″	13′ 7¼″	12′ 11¾″
600,000	417	210	6″	8″	8″	8″	30′ ½″	13′ 7¼″	12′ 11¾″
700,000	486	245	6″	10″	10″	10″	34′ ½″	13′ 7¼″	12′ 11¾″
750,000	521	262	6″	10″	10″	10″	36′ ½″	13′ 7¼″	12′ 11¾″
800,000	556	280	6″	10″	10″	10″	38′ ½″	13′ 7¼″	12′ 11¾″
900,000	625	313	6″	10″	10″	10″	42′ ½″	13′ 7¼″	12′ 11¾″
1,500,000	1,042	528	8″	14″	14″	14″	52′ 8½″	16′ 1¼″	12′ 11¾″
1,750,000	1,215	619	8″	16″	16″	16″	60′ 8½″	16′ 1¼″	12′ 11¾″
2,000,000	1,389	895	8″	16″	16″	16″	67′ 8½″	16′ 1¼″	12′ 11¾″

CONCRETE TANKS

Flow		Bed Area (ft^2)	Tank Dimensions		
GPD	GPM		Length	Width	Height
200,000	139	68	29′ 4″	12′	14′ 8¼″
250,000	174	88	32′ 8″	12′	14′ 8¼″
300,000	208	104	35′ 4″	12′	14′ 8¼″
350,000	243	120	38′	12′	14′ 8¼″
400,000	278	140	41′ 4″	12′	14′ 8¼″
500,000	347	174	37′ 4″	15′	14′ 8¼″
600,000	417	210	41′ 4″	15′	14′ 8¼″
700,000	486	246	45′ 4″	15′	14′ 8¼″
750,000	521	258	46′ 8″	15′	14′ 8¼″
800,000	556	276	48′ 8″	15′	14′ 8¼″
900,000	625	312	52′ 8″	15′	14′ 8¼″
1,000,000	694	350	46′	22′	14′ 8¼″
1,250,000	868	433	52′ 8″	22′	14′ 8¼″
1,500,000	1,042	525	60′	22′	14′ 8¼″
1,750,000	1,215	608	66′ 8″	22′	14′ 8¼″
2,000,000	1,389	693	61′ 4″	22′	14′ 8¼″
2,500,000	1,736	864	72′	22′	14′ 8¼″
3,000,000	2,083	1,045	83′ 4″	22′	14′ 8¼″
3,500,000	2,431	1,216	94′	22′	14′ 8¼″
4,000,000	2,778	1,386	104′ 8″	22′	14′ 8¼″
4,500,000	3,125	1,568	116′	22′	14′ 8¼″
5,000,000	3,472	1,738	126′ 8″	22′	14′ 8¼″

EVOQUA WATER TECHNOLOGIES

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