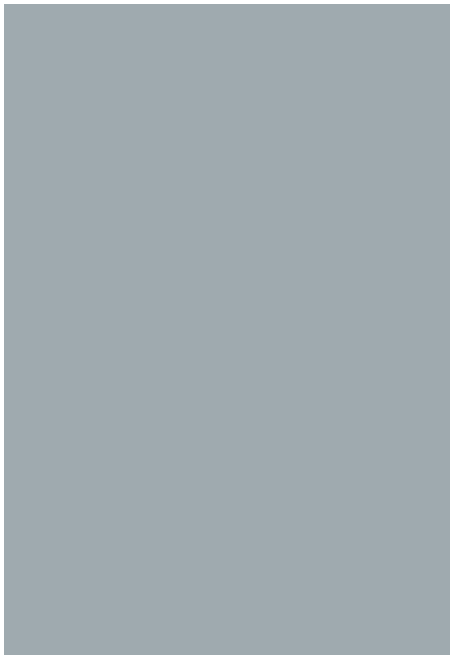




# Steel Filters: Pressure, Gravity and Specialty

Water Technologies

**SIEMENS**



Vertical pressure filters and softeners

## Pressure Filters: Consistent performance

Siemens Water Technologies has created a wide variety of pressure and gravity filter systems to best fit your specific filtration application. We have all the technologies and the know-how to coordinate and design the most effective and affordable system. Our pressure filters provide the most consistent performance under varying conditions. And for simple, accessible operation and maintenance, our gravity filters are ideal. To avoid scale buildup and other hard water complications, our ion exchange processes can be adapted to any situation. Regardless of the operation, Siemens can help you reduce initial and operating costs as well as increase your plant's effectiveness.

Siemens pressure filters are designed in both vertical and horizontal configurations. Our design engineers can help you decide which configuration is best for your plant. The MULTICELL® filter configuration, which supplies backwash water from in-service cells, is also available. Other options include ASME code construction, non-code construction and different media arrangements such as anthracite, dual media or mixed media. Pressure filters are ideal for removing iron, manganese and arsenic, as well as many other applications.

### Vertical Pressure Filters (VPF)

Vertical pressure filters are most applicable to plants under one MGD capacity. This design offers the flexibility of incremental plant expansion and the ability to easily isolate a single filter cell. Water backwash and gravel supporting underdrains are standard, however, the MULTIWASH® Filtration System and media retaining underdrains are options when needed.

### Horizontal Pressure Filters (HPF)

Horizontal pressure filters typically are used for larger plants since their layout maximizes filter area and minimizes footprint. Tank connections can be end piped to locate the tank outdoors with the face piping and valves indoors to minimize building requirements. Side piped vessels are used when more than two filter cells are included in a single tank. Common underdrain area for all cells makes backwashing from in-service cells convenient and cost effective. Horizontal pressure filters are either 96" or 120" diameter depending on flow and available building space. Water backwash and gravel supporting underdrains are standard. The MULTIWASH® backwash system is an option.

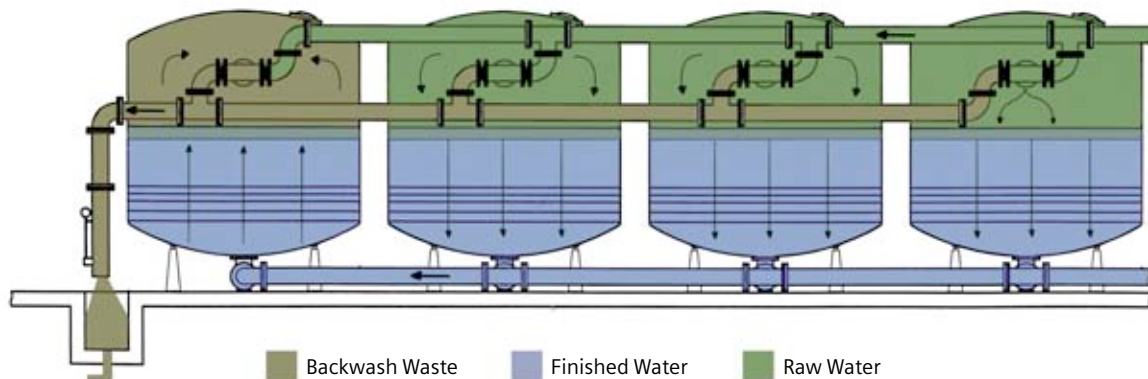


MULTI-TECH™ System



Horizontal Pressure Filter (HPF)

### MULTICELL® Filter Backwash Configuration

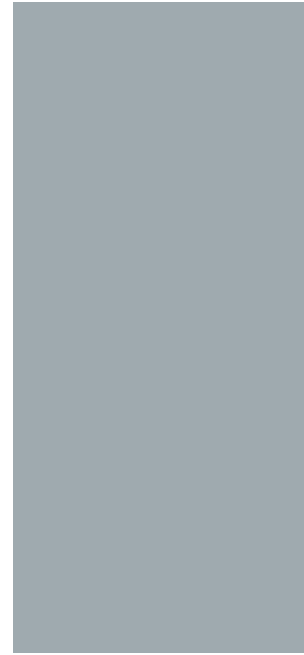


#### MULTI-TECH™ SYSTEMS

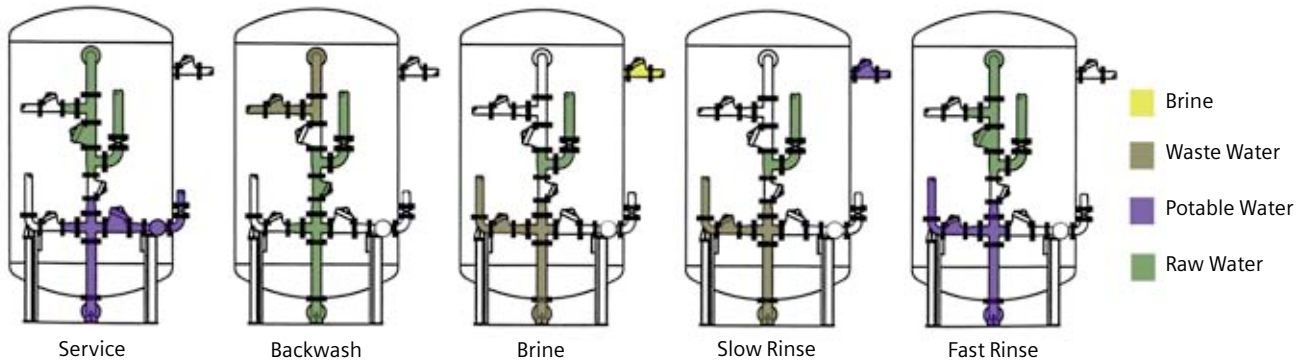
The Multi-Tech™ Multiple Barrier Filtration System consists of a pressure contact clarifier and mixed media filter. Raw water chemical feed prior to the contact clarifier promotes coagulation and flocculation to remove a bulk of the solids. Mixed media filtration polishes the water. A Granular Activated Carbon (GAC) contactor can be provided to reduce taste, odor and organics in the finished water. Multi-Tech™ systems provide installation and operating cost savings with induced air scour of the contact clarifier and clarifier backwash water supplied from the filter backwash waste. This easily operated and expandable system is ideal for small community and industrial surface water and ground water supplies.

#### Ion Exchange

A full range of pressure cation exchange systems is available for several applications. Ion exchange units are supplied with cationic exchange resins for softening filtered water or removing other contaminants such as barium or radium. Like our pressure filters, ion exchange tanks can be constructed non-code or ASME code with stamp. Designs are available with diameters between 36 inches and 12 feet. The full range of auxiliary devices includes such options as by-pass flow control, manual or fully automatic regeneration capabilities, brine-making systems, meters, test kits and pre- and post-treatment. Single units can handle flow rates from 35 to 800 gallons per minute. Additional units increase capacity and allow for treatment during regeneration.



Ion Exchange



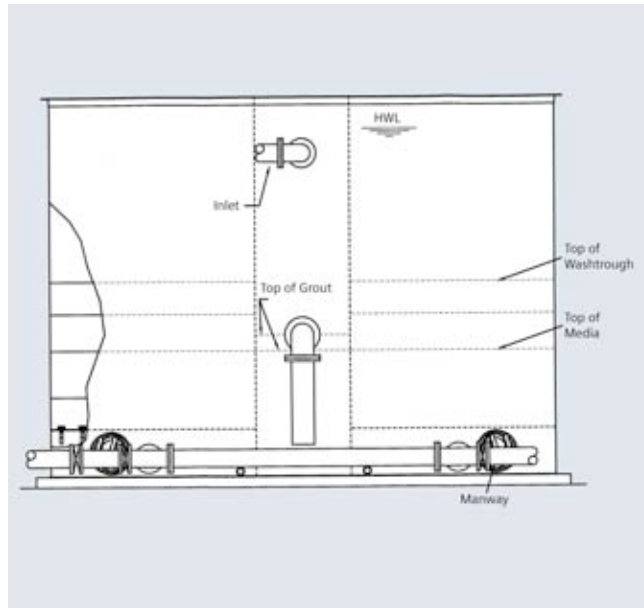
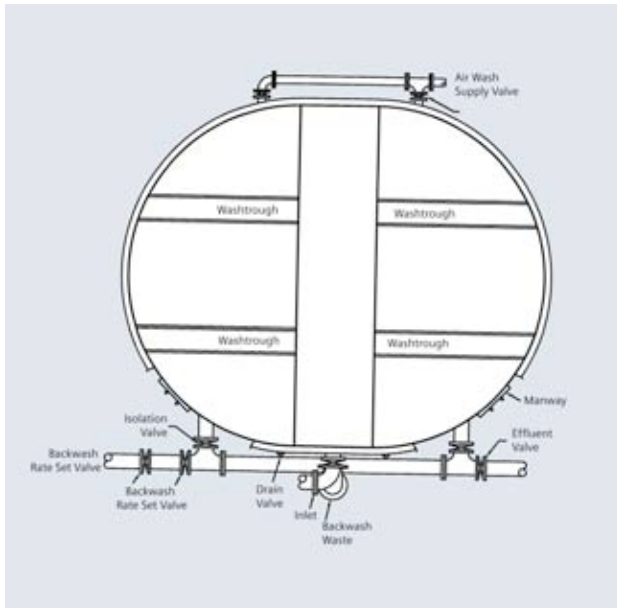
### Softener Regeneration Cycle

OPTIONS	VPF	HPF	CSGF	RSGF	DuoVAL™ System	CentROL® Filters	Multi-Tech™ System	Ion Exchange
Application:								
Potable Water	○	○	●	●	●	●	○	●
Water Re-use	○	○	●	●	○	●	○	○
Wastewater	●	●	●	●	○	●	○	○
Backwash:								
MULTICELL® filter	●	●	○	○	○	○	●	○
Water only wash	○	○	○	○	○	○	○	●
Air scour/water wash	○	○	○	○	○	○	○	○
MULTIWASH® process	●	●	●	●	○	●	○	○
Underdrains:								
Media Retaining Nozzles	●	●	●	●	●	●	●	○
MULTIBLOCK® Plastic Lateral	●	●	●	●	●	●	●	○
MULTIBLOCK® with Shield	●	●	●	●	●	●	●	○
Gravel Support Nozzels	●	●	●	●	●	●	●	●

OPTIONS	VPF	HPF	CSGF	RSGF	DuoVAL™ System	CentROL® Filters	Multi-Tech™ System	Ion Exchange
Filtration Mode:								
Inlet Flow Splitting	○	○	○	○	●	●	○	○
Effluent Rate of Flow Control	○	○	○	○	○	○	○	○
Declining Rate	○	○	○	○	○	○	○	○
Level Control	○	○	○	○	○	○	○	○
Hydraulic Flow Splitting	●	●	○	○	○	○	●	●
Continuous Operation	●	●	●	●	○	●	○	●
Shut Down Operation	○	○	○	○	●	○	○	○
Fabrication:								
Steel Tankage	●	●	●	●	●	●	●	●
Aluminum Tankage	○	○	○	○	○	○	○	○
Stainless Steel Tankage	○	○	○	○	○	○	○	○
Media:								
Mono	●	●	○	○	○	○	○	○
Dual	○	○	○	○	○	○	○	○
Microfloc® Mixed Media	○	○	○	○	○	○	○	○
Activated Carbon 1	○	○	○	○	○	○	○	○

Notes:

1. The use of activated carbon is not available with the aluminum tankage option.
2. ● Standard; ○ Optional; ○ Not Available



## Gravity and Specialty Filters: Successful and Accessible

Useful in water and wastewater plants, gravity filters are often preferred by regulatory agencies and operators for their accessible, open cell design. Each of the designs offers optional modes of operation and filter control. We understand that each site is different. Our design experience and manufacturing flexibility enables us to provide tightly engineered designs for every type of treatment plant. Like all of our filters, media selection, operational control, materials of construction and backwash procedure can be selected to best suit your specific application.

### Cylindrical Steel Gravity Filter (CSGF)

Like vertical pressure filters, CSGF units are most applicable to smaller plants and offer the flexibility of incremental plant expansion. Isolating one cell for maintenance is easily accomplished. Water backwash and gravel supporting underdrains are standard. However, the MULTIWASH® Filtration System and media retaining underdrains are options when needed. The cylindrical design reduces the structural material cost for economical installation.

### Rectangular Steel Gravity Filter (RSGF)

For higher flow rates and a more compact design, rectangular units are used. Typical configurations use multiple cells in a single tank. Continuous operating

units (one cell taken off line for backwash) offer more flexibility in plant operation and maintenance. However, shut-down type units (entire filter taken off line to backwash) are most economical and excellent values for intermittently operated plants.

### Specialty Filters

In many instances our filters are called upon to do more than simply filter water. We have developed a number of specialty designs to accommodate unique operations. The space saving Two-Cell Center Gullet Filter places big filter area into a small space while keeping backwash requirements to a minimum. Large designs are shipped in two halves for field joining. DuoVAL® systems store their own backwash water overhead to eliminate alternate storage and backwash supply pumps. MULTICELL® filters don't store their backwash water, rather they produce it as needed from in-service cells. CentROL® filters also eliminate rate of flow controllers and pipe galleries with hydraulic flow control and pre-fabricated components. We can also supply our cylindrical or rectangular filters with optional pre-filtration detention tanks, recarbonation chambers or integral clearwells.

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East Tel: +1.508.849.4600

Central and International Tel: +1.515.268.8400

West Tel: +1.719.622.5320

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