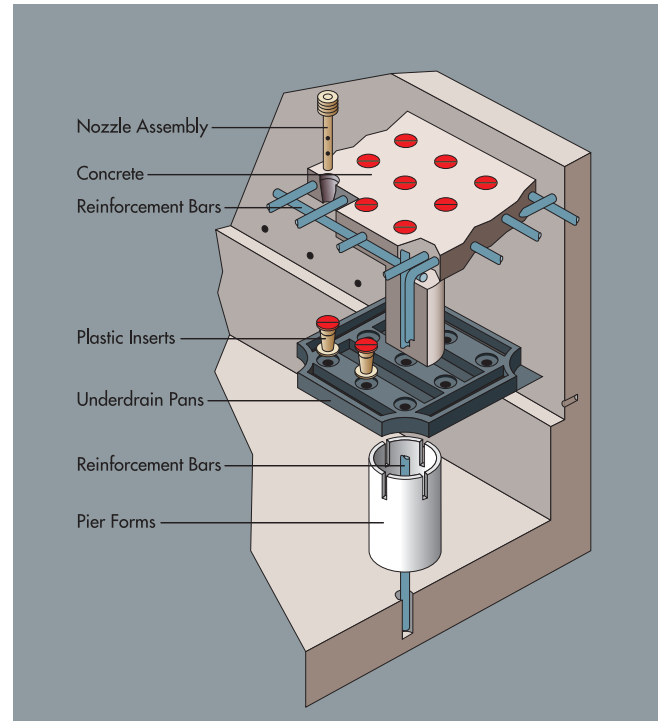




# Gravity Filter Components: Parts For Peak Performance

Water Technologies

**SIEMENS**



## Underdrains, Troughs, and Media Make the System

### MULTICRETE II™ Underdrains

MULTICRETE II™ underdrain is a monolithic, cast-in-place, open plenum system used in concrete gravity filters. The design allows water, air followed by water, or simultaneous air and water to be used as a backwash process. The filter nozzles are designed for either direct media retaining or gravel support bed systems. The concrete for the filter floor and support piers is poured at one time to provide strength and installation cost savings.

### MULTIBLOCK® Underdrains

MULTIBLOCK® Underdrains offer the proven effectiveness of compensating lateral technology for uniform distribution and collection. Underdrain blocks are snapped together to form laterals which provide water only or air-water backwash capability. Filter media is supported on layered gravel or with a direct retention Shield.

At less than one-tenth of an inch thick direct media retention with our unique Laser Shield® minimizes filter depth requirements. Slot openings are laser cut and sized to retain media as small as 0.2 mm. Single, dual and mixed media configurations are directly retained on the Laser Shield.

### ESSD® Washtroughs

The ESSD® (Engineered Stainless Steel Design) is a washtrough or launder system design constructed entirely of stainless steel. Applications include gravity filter washtroughs and collection launders in solids contact reactors. Light-gauge stainless steel provides durable construction and corrosion resistance in an economical design.



## A System is Only as Good as its parts

### Surface Washers

Rotary surface and sub-surface washers scour filter media with pressurized water while providing hydraulically powered rotation during backwash. With available diameters from 30" to 162", single or multiple units can be provided to fit round or rectangular filter basins. Several types of arm and nozzle configurations are available to suit your application.

### Filter Media

Siemens can provide any type of filter media that your application requires, whether it's greensand, Mixed Media, activated carbon or something highly specialized like Manganese ANTHRA/SAND®. Specifically developed for iron and manganese removal, Manganese ANTHRA/SAND conditioned media is more cost-effective than manganese greensand. Manganese ANTHRA/SAND is formed by adding a special coating to carefully selected granular media.

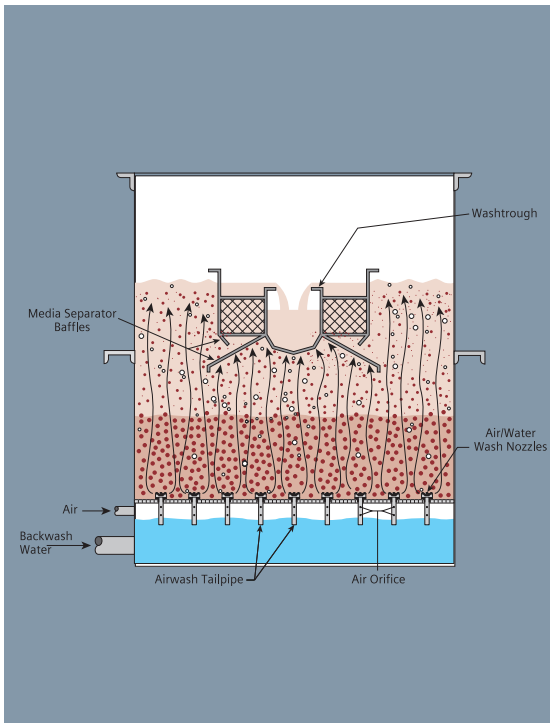
### In-bed Air Wash Grid System

The in-bed air wash grid system can be used in all types of filters that use a gravel support bed. The air grid is placed at the gravel/media interface and is used to distribute air in the filter bed during backwash. The system is a header and lateral design with air distribution slots and distributors to slots. Media-retaining distributors provide even air distribution throughout the filter bed.

### MULTIWASH Filtration Process

This system offers simultaneous air/water backwash ñ the most effective way to clean a filter. An important part of hundreds of water and wastewater installations, MULTIWASH is easy to operate, and it contributes to efficient operation, consistent water quality, and exceptionally long filter runs.

Introduced in the 1970s, MULTIWASH backwash continues to be refined. The most recent innovations include low-profile baffles, which eliminate media loss with a reduce depth, allowing MULTIWASH to be retrofit into existing cells.



## Installation, Process Control

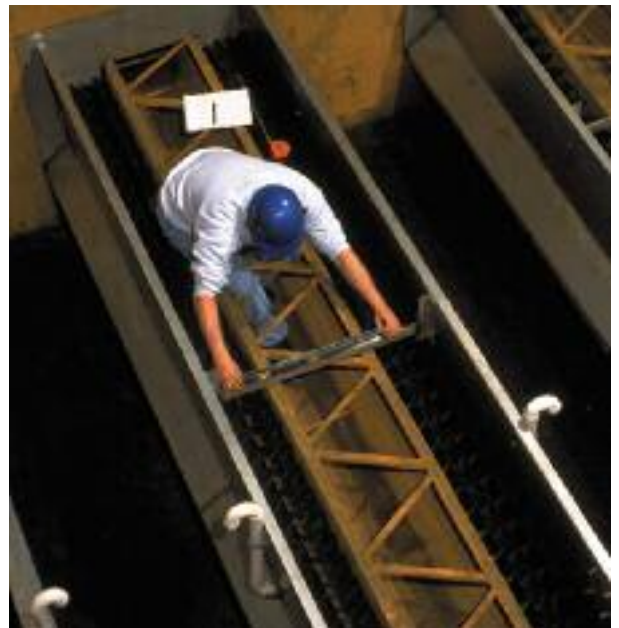
### Controls

Siemens Water Technologies offers a wide variety of controls for filter operation, ranging from individual instrumentation components to complete filter control systems. Control design and construction is custom for each project in order to specifically meet the customer's needs, and all controls are factory tested before shipment. Filter controls such as streaming current monitors, turbidity meters and particle counters can be provided to enhance plant operation.

### Service and Installation

Aquaritrol® III controller: Changes in raw water characteristics and flow rate are automatically detected by our Aquaritrol® III controller, which monitors filter effluent quality and continually evaluates and changes chemical feed to maintain desired (or preset) water quality parameters.

We offer filter evaluations to help determine which parts need to be upgraded or replaced. Siemens can also provide on-site technical direction or the labor to install the parts. In all cases our materials and labor are guaranteed.





### Cedar-Knox Rural Water System

The Cedar-Knox Rural Water System (RWS) treats surface water from the Lewis and Clark Reservoir off the Missouri River in northeast Nebraska. The system utilizes a rectangular gravity filter following a lime softening process.

The original filter backwash method was water-only at 15 gpm/ft<sup>2</sup> of filter bed area. Not long after the filter was put online, it began to show signs of calcium carbonate media fouling. Filter run lengths were ranging from 24 to 48 hours and the plant was experiencing gravel upsets. A Low-Profile MULTIWASH<sup>®</sup> process was installed. By utilizing the Low-Profile washtrough baffles and a media-retaining underdrain that eliminates the need for support gravel, the media depth was increased by 6 inches. The water rate during backwash remains 15 gpm/ft<sup>2</sup>, but now 2 fcm/ft<sup>2</sup> of air is added simultaneously. Effluent turbidity from the filter was reduced from 0.5 to less than 0.1 NTU. Average filter run lengths are up to 3 times longer than prior to the retrofit.

### Manitowoc, WI, Wastewater System

After 20 years of operation, the wastewater treatment facilities of the City of Manitowoc, WI, needed a major renovation, including a complete

upgrade and rehabilitation of the wastewater filter. The city and their design engineer investigated various filtration processes before selecting a MULTIWASH retrofit design. The MULTIWASH process allowed the City to re-use the existing filter underdrain, so filter cells were individually taken off-line for renovation without interrupting filtration in the other cells. The new process also allowed replacement of the existing media with large (1.2-1.6 mm effective size) monomedia filter sand, which provided increased filter bed solids storage capacity. With the new filter parts installed, the plant tripled its run lengths.

### Cliff Road WTP, Eagan, MN

In order to filter 20 million gallons of water a day, Eagan's Cliff Road WTP uses many of our filter parts. MULTIWASH Filtration Process, MULTICRETE II Underdrains, ESSD washtroughs, filter controls and Manganese ANTHRA/SAND media are combined to remove excessive iron and manganese from the ground water supply. Chemical addition ahead of the filters oxidizes the contaminants to form a filterable floc without the use of a polymer. Manganese ANTHRA/SAND media provides for long filter runs, consistent manganese removal and low headloss characteristics.

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