



# FilterWorx<sup>®</sup> Performance Filters

EFFICIENCY AND INNOVATION BUILT INTO EVERY COMPLETE SYSTEM



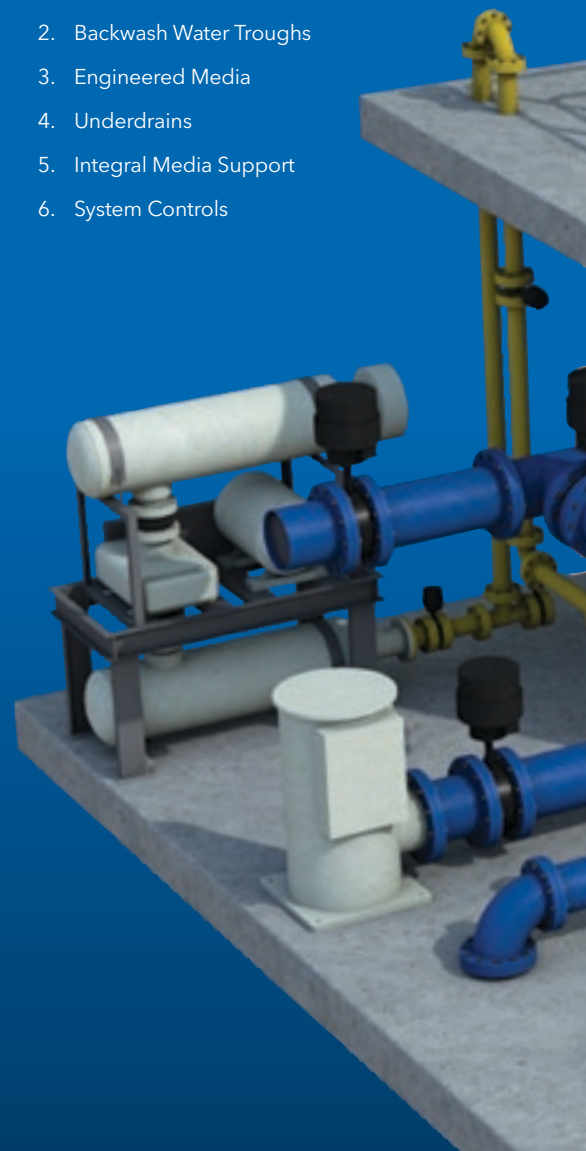
# Water filtration is more than the sum of its parts.

And no one knows more about filtration than Leopold, the leader in gravity media filtration. Whatever your application:

- **Potable drinking water treatment**
- **Tertiary wastewater treatment**
- **Nutrient removal in water or wastewater**
- **Pretreatment prior to low pressure membrane systems**
- **RO membrane desalination pretreatment**

Leopold engineers can assist you in developing a cost effective, energy efficient, high performance system designed to meet your requirements. FilterWorx performance filters are designed to achieve the longest possible filtration cycles to meet your permit requirements at the lowest possible costs.

1. Flume
2. Backwash Water Troughs
3. Engineered Media
4. Underdrains
5. Integral Media Support
6. System Controls



## Engineered to maximize treatment and minimize headaches

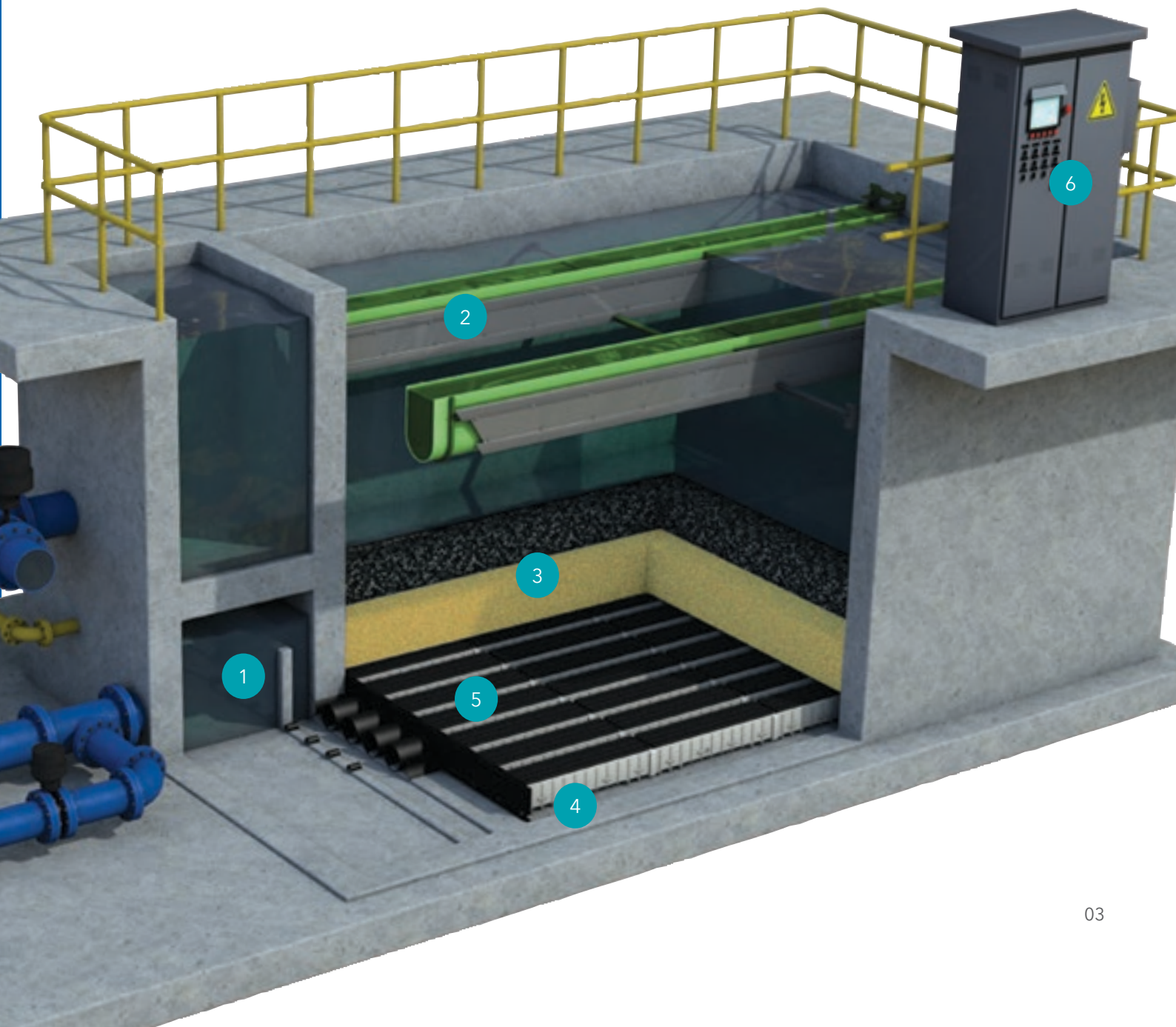
Leopold engineers have been at the forefront of gravity media filtration since 1924. With more experience than anyone in the industry, we can help you analyze, evaluate and design all aspects of your complete filtration system.

**Evaluate influent water qualities**, including seasonal changes, demand requirements, and determine the best pretreatment options.

**Select the best media characteristics**, media quality, bed composition, bed depth and grain size distribution to match the filter configuration, influent quality, pretreatment processes and required filtrate effluent quality.

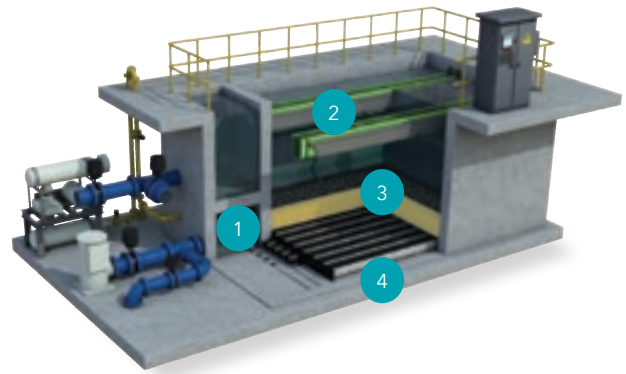
**Determine optimal loading rates and best design configuration** to meet site conditions and operational requirements.

**Design the backwash process** to restore original headloss and solids storage capacity, maximize filter runs while minimizing power costs and wastewater generation.





# Leopold FilterWorx Components

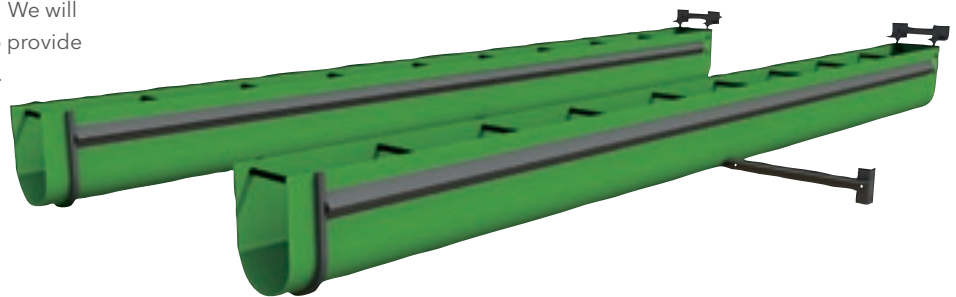


## 1 Flume

Our flat-bottom flume reduces excavation requirements and support structures. This simplifies new construction, resulting in substantial cost savings. We can also design FilterWorx systems with front flumes, center flumes or H flumes, or even wall sleeves for conversion of an existing basin. We will carefully evaluate your site requirements to provide the most cost effective flume configuration.

## 2 Backwash Water Troughs

Our troughs help conserve media while removing backwash water efficiently. Made of durable fiberglass reinforced plastic (FRP), backwash water troughs are sized and configured to match your process needs.



## 3 Engineered Media

Whether monomedia deep bed, dual media, or tri-media, we carefully evaluate your influent water characteristics and process requirements. Then we provide the right configuration of media, with the effective size and uniformity coefficient to give energy efficient, consistent and long term performance.

In the US, we can provide anthracite engineered media with the lowest uniformity coefficient in the industry.

A lower uniformity coefficient provides:

- Superior filtration qualities,
- Increased filter run volumes, and
- Requires less water to thoroughly backwash.
- Less frequent and more efficient backwash saves energy and increases overall water production.



Leopold features three types of underdrains to meet any configuration need.

Underdrains collect filtered water during the filter run, and distribute air and water during the backwash cycle. All Leopold underdrains deliver the superior performance that has made the Leopold underdrain the industry leader.

- **Superior air and water distribution** for effective backwash. The dual parallel lateral design and the water recovery channels, both developed by Leopold, give even distribution with less than +/-5% maldistribution and no dead zones, even in extra-long length laterals.
- **Cleaner filters** mean longer filter runs and higher water efficiency, more product water, less waste. This lowers your operating costs per gallon or liter of filtered water.
- **Air flow adjustability** allows you more control and saves energy and water. Air scour rate can be adjusted from 2 to 5 scfm/sq.ft. (0.6 to 1.5 m/min), enabling collapse pulse cleaning during concurrent air/water backwash with various media configurations. Air scour provides higher shear forces and cleaner media, with less wastewater generation.
- **Faster installation** with fewer parts than nozzle systems and no false floor. Underdrain blocks are lightweight for easy handling and snap together for quick installation, shortening construction time and putting you in production quicker.
- **Design flexibility** with different heights to allow for different combinations of lateral lengths and vertical filter heights, as well as different flume configurations.

	HEIGHT INCH (CM)	LATERAL LENGTH FEET (METERS)			
		CENTER FLUME	FRONT FLUME	WALL FEED/ H FLUME	LEOPOLD FLAT BOTTOM
<b>Type S®</b>	12 (30)	96 (29)	48 (15)	48 (15)	48 (15)
<b>Type SL®</b>	8 (20)	32 (10)	16 (5)	NA	NA
<b>Type XA™</b>	8.25 (21)	64 (20)	32 (10)	32 (10)	32 (10)

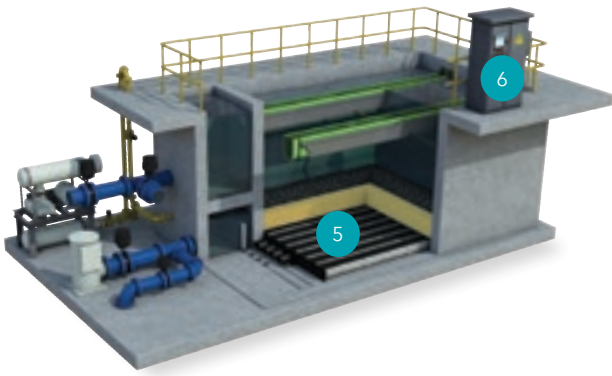


**Type XA™**

**Type SL®**

**Type S®**

**Leopold underdrains**  
Shown with I.M.S® 200



## 5 Integral Media Support

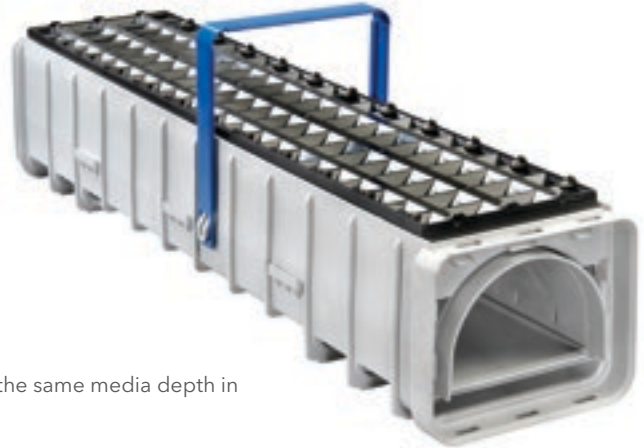
### I.M.S Media Retainers

- Replaces up to 14 inches (36 cm) of gravel media support allowing for the same media depth in less vertical space, reducing construction costs.
- Compatible with all Leopold underdrains, I.M.S media retainers are factory installed on the Leopold underdrains saving time and labor during installation.
- Provides even backwash distribution to deep clean filters.

### Two sizes for different applications

**I.M.S 200 media retainers** with 0.2 mm overlapping slots are specifically designed for drinking water treatment using dual media or mono media anthracite. Supports media of effective sizes down to 0.45 mm sand.

**I.M.S 1000 media retainers** with 1 mm tapered slots are specifically designed for wastewater treatment applications, including the elimi-NITE® 2.0 denitrification system developed by Leopold. Supports media of effective size down to 1.7 mm.



### I.M.S 1000 Media Retainer

Shown on Leopold Type XA Underdrain and with quick install handle

## 6 System Controls


### The Keys to Efficient Operation

**Longest filtration run cycles lower operating costs:** FilterWorx control system continuously monitors filtrate quality and filter bed conditions. Your filter is backwashed only when needed and only for as long as needed. Filtrate quality and filter run volumes are optimized, while reducing energy consumption and wastewater generation. Our controls keep the filter media well conditioned, extending the life of your filter.

**Efficient deep cleaning backwash:** Genuine Leopold underdrains and I.M.S media retainers evenly distribute backwash water and air to every portion of the filter bed, eliminating dead zones. Air scour increases shear and develops collapse pulse throughout the bed, for a deep clean with reduced backwash water consumption.

**Complete integration:** We use standard communication protocols that easily integrate into most other plant control or SCADA systems.





# Leopold goes beyond engineering energy and water efficiency features into every filter component. We also support our work every step of the way.

Our commitment to your satisfaction goes beyond designing the best system for your application and providing single source supply of all components.

**Pilot testing:** We will test your filter at our site or yours. We can run a pilot test of your system at your site, to demonstrate performance. Or we can test a full-scale lateral run with your flume configuration at our Product Development Center. There you can witness first hand the head loss and flow distribution during backwash.

**Construction and start-up assistance:** Our experienced technicians are available to supervise the correct installation of your filter, to ensure proper operation. We can also provide ongoing support through calibration, commissioning and start-up. Throughout the life of your filter, we can assist with ongoing process evaluation and trouble shooting, to keep your filter operating at peak efficiency.

**Rehabilitation services:** We can analyze your existing filter performance and provide a cost effective rehabilitation to upgrade your system to current standards. From underdrains to trough configuration, media selection, and controls, we can custom design your system to provide optimum performance.

# Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

**For more information on how Xylem can help you, go to [www.xylem.com](http://www.xylem.com)**



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