SIMUL-WASH™
Simultaneous Air and Water Backwash System

Media Particles Settle Out in Quiescent Zone
Backwash Effluent
Air Influent
Backwash Supply Water
Filter Underdrain Plate with Non-Plugging Gravel Retaining Nozzles

Filtered Solids Discharged into trough and out to Backwash Holding
Media Expansion Area
Area of Collapse-Pulsing Action using Simultaneous Flows of Air and Water
Airwash Distribution System with Double Screened Orifices
Clear, Unobstructed Flow-way

TONKA WATER™
A U.S. WATER BRAND
Simul-Wash™ Advantage

State of the Art

Since airwash was first introduced into filters in the 1960s, it has been widely known that the introduction of air with water achieves superior media cleansing and promotes optimum performance of granular water filters.

Tonka Water has used airwash since its inception, and in the late 1970’s we combined the air and water backwash process. Tonka Water’s “Simul-Wash™” is a totally controllable, low rate, sustained simultaneous air and water backwash system.

Process

The Simul-Wash™ cycle consists of four steps: draindown, combined air/water backwash, air purge, and restratification. The key to the process is the combined air/water step. During this step, air and water at sub-fluidized rates are simultaneously introduced to set up within the filter bed a condition called “collapse-pulsing” cleaning. The agitation causes a unique scouring action in which media particles collide, breaking loose any attached solids.

At these low air and sub-fluidization water rates, air bubbles form, collapse and re-form during their travel to the surface. The repetitive formation of expanding air bubbles creates outward pressure, optimizing media particle contact and abrasion in a sub-fluidized backwash procedure.¹

Suspended solids and media are carried by the air and water up to the surface into the backwash trough area. To prevent media loss, our specially designed Simul-Wash™ baffled trough creates an area free of air bubbles; i.e., a quiescent zone where media particles settle out of the backwash wastewater and return to the bed.


Advantages

The Simul-Wash™ is the only sustained air and water backwashing process using the “collapse-pulsing” technique.

Sustainability

Other manufacturers’ combined air/water backwash systems rely on the freeboard distance between filter media and the backwash trough. Thus, they are typically limited to less than 2 minutes of air/water cycle before the airwash blower must be de-energized to avoid media loss. However, Tonka Water’s proprietary baffled trough design allows an unlimited duration of the combined air/water backwash cycle without media loss. This major difference allows extended “collapse-pulsing” cleaning cycles to more fully clean the bed, maximizing cleaning efficiency while minimizing backwash waste.

Simul-Wash™ in a Filtralator™ Gravity Filter
Versatility

Simul-Wash™ works in horizontal and vertical pressure filters, gravity filters (concrete and steel), and in low profile retrofit applications. It is also compatible with a variety of manufactured underdrain systems. Furthermore, Simul-Wash™ is automatically controlled with manganese greensand or any mono, dual or tri-media application.

Water, Power, and Media Conservation

Simul-Wash™ prevents media loss while using as little as half the water of a conventional backwash system.

The unique water conservation features of Simul-Wash™ allow for a significantly downsized backwash chamber. In turn, construction costs and wash water consumption are reduced, saving a substantial amount of money and water.

Proven Design

Since 1977, Tonka Water has installed hundreds of filters utilizing the Simul-Wash™ process. These include pressure filters, gravity filters, and package plant systems treating ground, surface, or wastewater. Reflecting our years of experience, many state authorities now recognize Simul-Wash™ as a superior media cleansing system.

Hydraulic Capacity

Due to its unique shape, the Simul-Wash™ trough has exceptional hydraulic capacity. Consequently, fewer troughs may be required in a typical installation, thus reducing costs.

Other Simul-Wash™ Advantages:

- Lowest profile design
- Meets ten states standards
- Long, clear spans
- Stainless steel standard construction
- *Mudball prevention

Simul-Wash™ vs. Conventional Filter Backwash

Water Consumption Comparison - Per 100 sq. ft. Filter Area

Tonka Water’s Simul-Wash™ assures that no significant media loss will occur when backwashing at recommended rates. Because of the water, power, and media savings, Simul-Wash™ has a rapid pay back for the owner. The Simul-Wash™ system offers true state of the art technology to meet the increasing demands on public water plants.

*Conventional backwash rate based on 12 gpm/sq. ft. filter area—with dual media.
**Tonka Water Guarantee**

Tonka Water provides the best custom manufactured water treatment systems in the industry. Our people will deliver excellent service and support for your project from conceptual and cost-effective design, to construction and commissioning; and throughout the system warranty and operational life of the project.

*Thousands of quality water treatment installations since 1956.*

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**Tonka Water Products Suitable for Simul-Wash™**

- Unitized Treatment Systems (UTS™)
- Filralator™ Steel Gravity Filter
- Filralator™ Concrete Gravity Filter
- VertaCell™ Vertical Pressure Filter
- OptaCell™ Horizontal Pressure Filter
- Dualator® III
- CentraCell™
- Dualator® VI

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