

IMPROVE PROCESS EFFICIENCY AND DELIVER QUALITY BOTTLED WATER

It is estimated that the bottled water market size will reach USD 215 billion by 2025. By volume, the market was 391 billion liters in 2018 and will reach 430 billion liters by 2025.

In this study, Global Filter hopes to provide you with solutions for each part of your process that will improve process efficiency and save production costs and downtime.



Delivering a Quality Product

The bottled water market continues to grow worldwide and was valued at \$198 billion dollars in 2018, with expected growth to \$215 billion by 2025. By volume, the market was 391 billion liters in 2018 and will reach 430 billion liters by 2025.

With the increase in demand for bottled water there has also been an increase in demand on bottled water manufacturers to produce a higher quality product, free from harmful bacteria and chemicals. In recent years, this is a reoccurring issue for bottled water manufacturers, as source water used to produce their products has been decreasing in quality.

With the challenges being faced globally among manufacturers, the need for efficient and effective filtration systems has become a critical component to delivering quality product that is safe and meets consumer demand. Bottled water consumers are also adopting new products with added health benefits in the form of minerals, oxygen, and vitamins which creates an added layer of complexity and need for advanced filtration solutions. In addition to these challenges, there are standards of quality set by governing bodies like the FDA, EPA, International Bottled Water Association and EU Directives that have to be met in order for manufacturers to sell their products to consumers.

Considering these compounding elements, filtration has become a critical point in the bottled water process, now more than ever, filtration solutions help bottled water manufacturers to overcome these challenges. Filtration systems and strict process controls provide processors with the necessary means to meet or exceed the standards set for products they manufacture. Due to these regulations, bottled water producers rely on different grades of filters that are proven to retain microbial contaminants while maintaining the safety, quality and true nature of source water.

Source water varies from site-to-site, therefore impacting the filtration process and the steps required to ensure the water meets quality standards. Water is a very sensitive product from both a microbiological and chemical standpoint, making it difficult to produce a quality product that is free of microbial contaminants that could threaten consumer health. Despite manufacturing difficulties, filtration solutions implemented in your process can address these challenges.

One major area of impact can be the filter elements that are selected and the media composition.



The filtration solutions you implement directly impact the safety and quality of the products you deliver.

Choosing the Right Media for your Process

When choosing the best filtration media for your application, one must consider several factors, including product specifications, required flow rate, influent quality and chemical compatibility. For example, polypropylene is FDA compliant and there are limited compatibility concerns when filtering water, but the other mentioned factors are vital to ensure suitable production of quality products that are safe for consumers.

Given that influent quality is largely consistent within any given plant, this is good place to start. One of the main concerns early in the bottled water process is the consideration of having enough effective filtration area, or EFA. This is critical for capturing the bulk of the incoming solids content. This can either be accomplished with a polypropylene depth or pleated depth filter, depending on the particulate distribution.

Once the majority of the solids have been removed, the focus then shifts to the capabilities of the bottling equipment including the required end product quality specifications. In the bottled water industry, the accepted final filtration step is to polish with a 0.2um membrane cartridge. The type of membrane chosen is usually determined by the specific microorganisms present and the required retention claims predetermined by the bottler and regulatory agencies.

Another factor that must be considered is to ensure adequate flow to the bottling equipment. If a filter is undersized or the incorrect media is chosen at any stage, the bottling equipment can

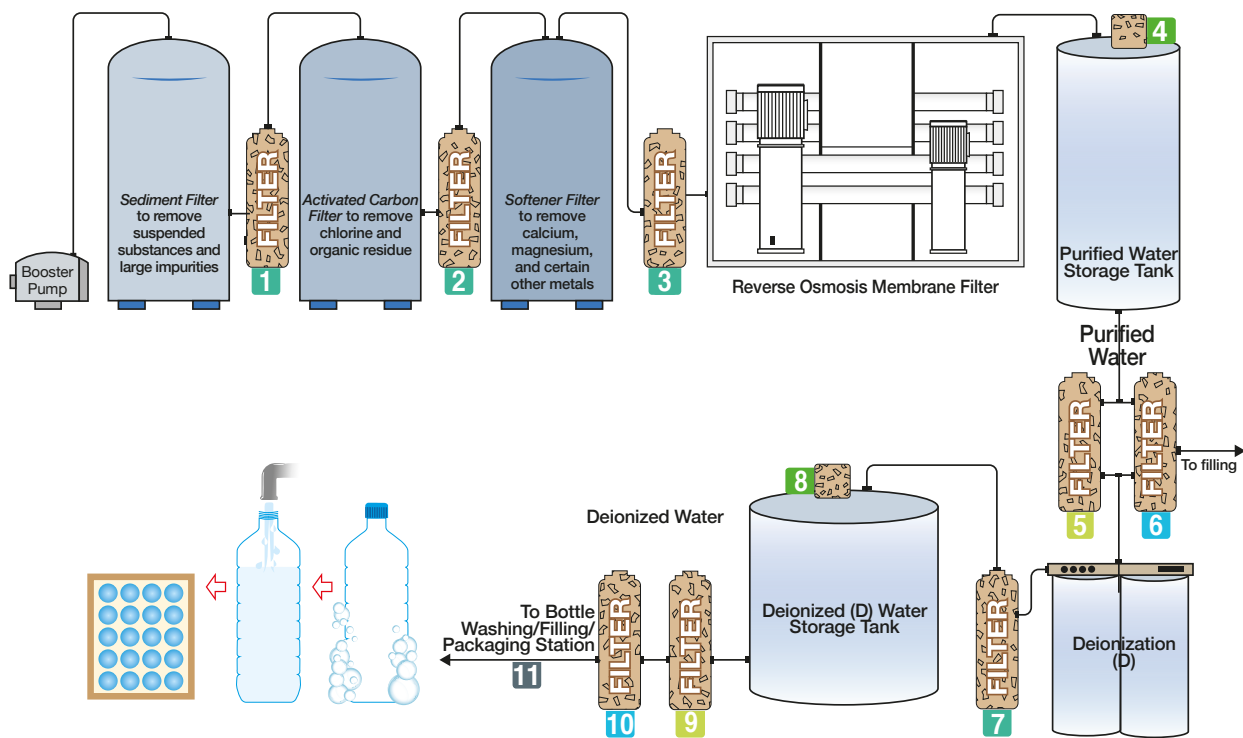
be starved, which can lead to unexpected delays or complete shutdown.

While the general bottled water process is similar between manufacturing locations, each process is unique and demands specific filtration requirements and specific process considerations. To help you meet your challenges, Global Filter provides you with the knowledge, technologies and solutions you need to enable productivity and help make the world safer.

Differences in Process & Product

Producing bottled water can be very different from one manufacturer to another and this means varying levels and types of filtration. The following are several common types of bottled water being produced today:

- Spring Water: sourced from a natural underground formation and must flow naturally to the earth's surface or through a sanitary bore-hole.
- Purified Drinking Water: has been processed to remove chlorine and a majority of dissolved solids, such as magnesium. The source is not required to be named unless it is untreated public source of water.
- Mineral Water: typically from a spring, this contains dissolved solids like calcium, magnesium, sodium, potassium, silica and bicarbonates.
- Seltzer Water: the FDA regulates this as a soft drink, which means rules are less strict than those for bottled water.



Sediment, Particulate & Trap Filter Stages: 1, 2, 3, 7

Pleated Polypropylene
PP, PPE, HF Series

Pleated Microglass
FG, FGE Series

Polypropylene Meltblown
GWTB, GCTB, GATB Series

Protecting the RO or Ion Exchange Units (IEU) is critical. Surface or ground water is typically treated and softened before filtration with a filter that removes particles larger than 10 microns, then filtered down to one or five microns filter to protect the RO and Ion Exchange Unit.

Pre-Filtration Filter Stages: 5 & 9

Pleated Polypropylene
PP, PPE, HF Series

Pleated Microglass
FG, FGE Series

Removes fine particles and suspended organic matter and serves as pre-filtration to the deionization system and the bottling line. If water is treated with an IEU, a 5 micron filter may be installed between the IEU and the water storage tank to prevent fractured beads from entering.

Bio-Burden Filter Stages: 6 & 10

Polyethersulfone (Hydrophilic) Membrane
GFPES Series (Food & Beverage Grade)
BRPES Series (Bio-Burden Reduction Grade)

Reduces biological contaminants and serves as final filtration before the bottling line, utilizing pre-filters ranging from 1 to 10 microns.

Tank Filter Stages: 4 & 8

PTFE (Hydrophobic) Membrane
GGPTFE Series (General Grade)
PPTFE Series (Sterilizing Grade)
Polysulfone (Hydrophobic) Membrane
PSH Series

Storage tank vent filtration allows for bacteria-free air to pass during filling and evacuation, protecting the storage tank and its contents from contamination. This filter is typically rated at 0.2 micron, and is hydrophobic and bacterial retentive, which prevents moisture and bacteria from entering the tank.

Gas Filter Stages: 11

PTFE (Hydrophobic) Membrane
GGPTFE Series (General Grade)
PPTFE Series (Sterilizing Grade)
Polysulfone (Hydrophobic) Membrane
PSH Series

Serves as filtration during the bottling and packaging stage where CO₂ or N₂ is present. Typically rated at 0.2 micron, this filter is hydrophobic and bacterial retentive to prevent moisture and microorganisms from contaminating the finished product.

Global Filter will assist you in improving your process and tailoring your filtration solutions to fit your needs.

SEPARATE YOURSELF FROM YOUR COMPETITION

Global Filter’s industry-leading products can be used in a wide variety of bottled water applications. Our vessels accommodate high-purity filter cartridges and lead the industry in performance and cost-effectiveness. We can optimize your production by helping you avoid costly downtime with the most reliable products in the industry.



Quality Products

Pleated & Depth Cartridges
Liquid Bag Filters
Cartridge & Bag Vessels



Reliability

Reduce Costly Downtime
Robust Construction
Cost-effective



Fast Delivery

On-Hand Inventory
Minimal Lead Times
Easy Access to Products

FILTER VESSELS



GTCH Series



GTCHB Series



GBFV8 Series



GBFV8 Twin Series



Filtration Elements by Media Type

Meltblown Products

- Water Grade Polypropylene Meltblown Cartridge – GWTB
- High Performance Grade Polypropylene Meltblown Cartridge – GCTB
- Absolute Grade Polypropylene Meltblown Cartridge – GATB

Pleated Polypropylene Products (0.2-5.0 micron filtration)

- High Purity Pleated Polypropylene Cartridge – PP
- Economy Pleated Polypropylene Cartridge – PPE
- High Flow Pleated Polypropylene Cartridge – HFPP

Pleated Membrane Products (< 1 micron filtration)

- Hydrophilic Pleated Polysulfone Membrane Cartridges – GHPS
- Water Service Grade Hydrophilic Pleated Polyethersulfone Membrane Cartridges – GWPES
- General Grade Hydrophilic Pleated Polyethersulfone Membrane Cartridges – GGPES
- Bio-Burden Reduction Grade Hydrophilic Pleated Polyethersulfone Membrane Cartridge – BRPES
- General, Bio-Reduction, and Pharmaceutical Grade Hydrophobic PTFE Membrane Cartridges (for air/gas) – GGPTFE, BRPTFE, PPTFE



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