



PROCESS MAP FOR THE

1 Water Polishing

The first stage of purification in the production of purified water is polishing. This step takes municipal water and aids in the removal of large contaminants like dirt and sand. Polishing serves two purposes: it protects more expensive filters from becoming overburdened, and it purifies the water to the point where it can be used as boiler feed water. As a first stage of filtration, Ultrafilter recommends an Liquid Bag housing with Liquid Bag elements.

2 Steam Filtration

Steam's heat energy accelerates the deterioration of system components like carbon steel pipes, sealing elastomers, and mechanical components like pressure reducing valves. As an entrainment separator and pre-filter, use a P-EG housing with a P-SWM 25 micron element. To generate culinary-grade steam, use a P-EG housing with a 5 micron P-GS element after the entrainment separator.

3 Carbon Bed Sterilization and Regeneration

Carbon beds are commonly used to remove chlorine and other treatment chemicals, but they are also common sources of contamination because microorganisms feed on the carbon and reproduce. The carbon's effectiveness decreases as it becomes saturated with chlorine. Use a P-EG housing with a P-GS element to steam sterilize the carbon beds to regenerate the carbon and help prevent the growth of microorganisms.

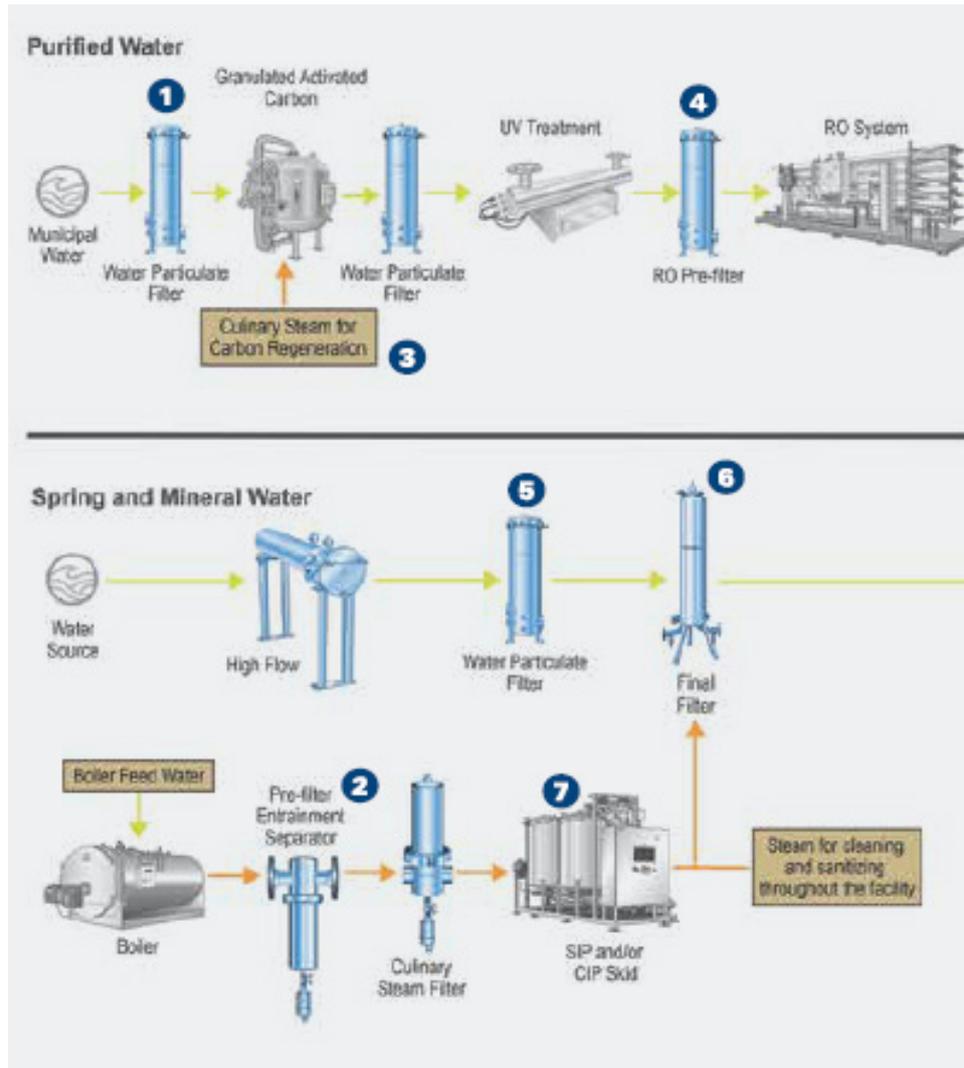
4 Pre-Reverse Osmosis Filtration

Protecting Reverse Osmosis membranes with pre-filtration is best practice for increasing the service life of these membranes. Reverse osmosis is used to produce purified water, and protecting RO membranes. Between a UV light and the Reverse Osmosis system, place a PF-EG with PP elements to remove particulate and act as a safety filter if the UV light breaks and sends glass downstream.

5 Spring Water Pre-filtration

In contrast to purified water, spring or mineral water comes from a naturally occurring aquifer rather than a municipal source. There is no need for a carbon bed because spring water contains no treatment chemicals.

The water cannot be passed through a reverse osmosis system in order to be marketed as spring or mineral water. The first step in preparing spring or mineral water for bottling is to remove particulate and avoid overburdening the sterilizing filter. To capture particulate and prepare the water for sterilization, Ultrafilter recommends a PF-EG housing with 1 micron PP100 N elements.



BOTTLED WATER INDUSTRY

6 Sterilization of Spring or Mineral Water

Microorganisms must be removed from spring and mineral water in order to ensure food safety and quality. By passing the water through a membrane filter, no dissolved minerals are removed, and the flavor profile is preserved. To reduce the bioburden in the water, Ultrafilter recommends a PF-EG housing with 0.2 micron PES elements.

7 Steam Sterilization of Final Filter

Microorganisms are captured but not killed by the final membrane filter. The microorganisms captured by the final filter will be killed by steam sterilization, preventing them from replicating and growing through the membrane media. Using culinary grade steam for steam sterilization is the best practice. For culinary steam, Ultrafilter recommends a P-EG housing with a 5 micron P-GS element.

8 Tank Venting on Water Storage Tank

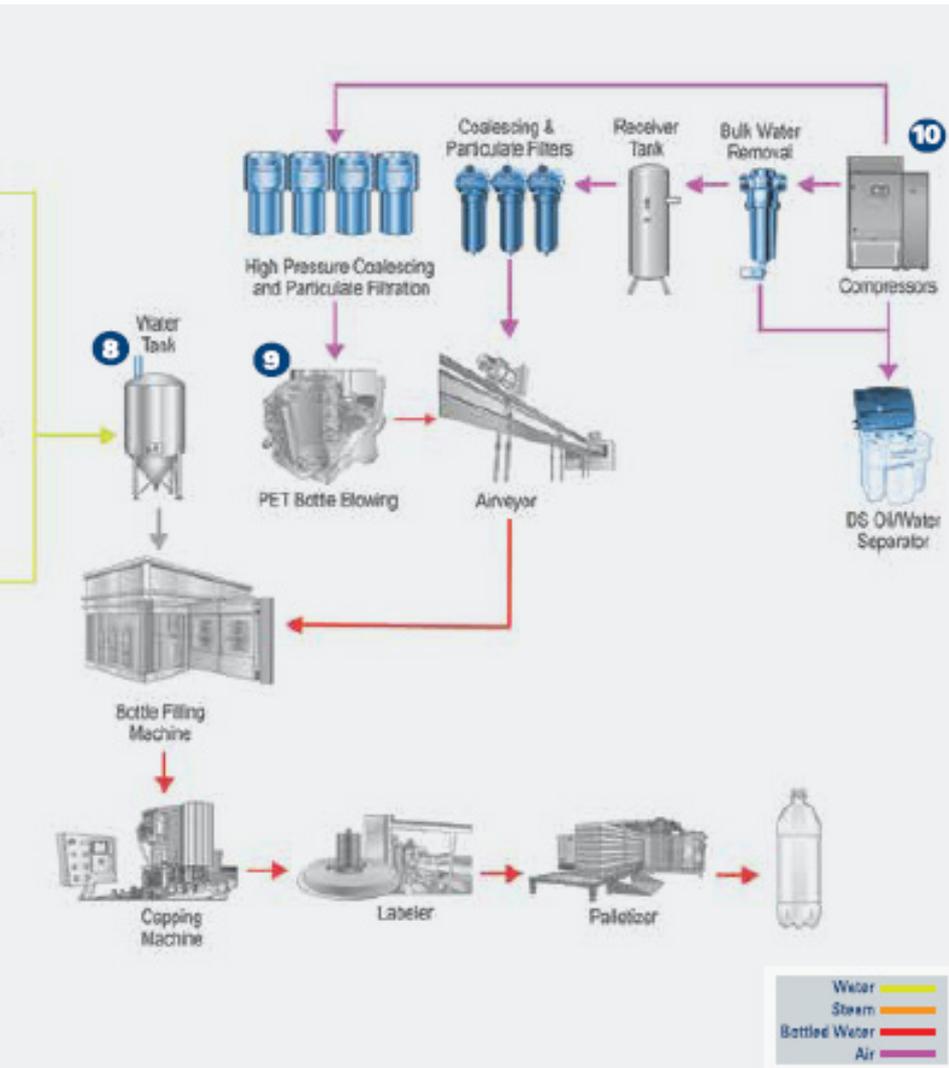
After purified water or spring water has been treated, it can be moved to a storage tank before being packaged. Use a sterile air vent filter to keep the water sterile as the storage tank is filled and drained. The vent filter will remove microorganisms from the incoming make-up air as the water is drained from the tank. For sterile venting applications, use a P-BE housing with a P-BE element.

9 Bottle Blowing

PET preforms are injected with high-pressure compressed air to transform them into fillable plastic bottles. Particulate, oil, and microorganisms should not be injected into the bottles prior to filling, so the high-pressure air should be sterile. To create sterile air for the blow molding process, Ultrafilter recommends using four HD housings in series with MF, SMF, AK, and SRF elements.

10 Compressed Air Filtration

One of the best ways to prevent equipment breakdown and promote cleanliness throughout a process is to use clean, dry compressed air. The pneumatic tools, instrumentation, and airveyors are all powered by compressed air. The Cyclone Separator and Ultrapure housing combinations make it



simple to remove oil, moisture, hydrocarbons, and particulate. The Oil/Water Separator separates the oil and condensate collected from compressed air lines, allowing the condensate to be disposed of safely.

SUPERIOR FILTRATION MAXIMUM PROTECTION

Hygienic Design according to EHEDG



- *Stainless steel end caps*



- *Binder Free*



- *FDA Compliant*



Cost Saving Energy Efficiency



- *Nano Fiber filter medium*



- *70% more energy efficient*



- *Huge cost saving*



**NANO FIBER
FILTER MEDIUM**

QUALITY - RELIABILITY - EXPERIENCE

IMPORTANT NOTICE

Many factors beyond Ultrafilter's control can affect the use and performance of our products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, specifications, availability and data are subject to change without notice, and may vary by region or country.



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