



# **BOTTLED WATER FILTRATION APPLICATIONS**

Process Filtration





# A SUCCESSFUL PARTNERSHIP FOR

## 1 Water Polishing

When producing purified water, polishing is the first stage of purification. This step takes the municipal water and helps to remove large contaminants such as dirt and sand. Polishing accomplishes two goals – it protects more expensive filters from being overburdened and it purifies the water to a point that makes it suitable for boiler feed water. Donaldson suggests an L-BH housing with L-BE elements as the first stage of filtration.

## 2 Steam Filtration

The heat energy contained in steam contributes to accelerated degradation of system components such as carbon steel pipes, sealing elastomers, and mechanical components such as pressure reducing valves. Use a P-EG housing and P-GSL N 25 micron element as an entrainment separator and pre-filter. Following the entrainment separator, use a P-EG housing with a 5 micron P-GS element to generate culinary grade steam.

## 3 Carbon Bed Sterilization and Regeneration

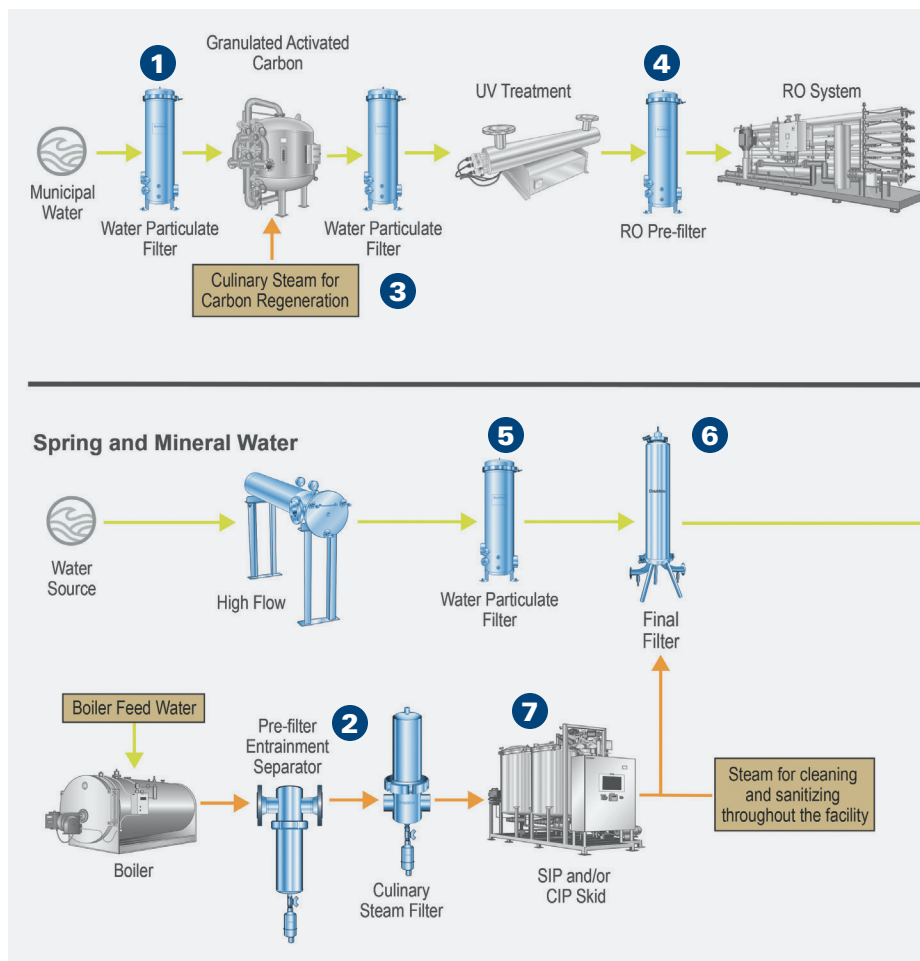
Carbon beds are frequently used to remove chlorine and other treatment chemicals, but carbon beds are also common points of contamination because microorganisms feed off the carbon and are allowed to replicate. As the carbon becomes saturated with chlorine, its effectiveness becomes limited. To regenerate the carbon and help prevent the growth of microorganisms, use a P-EG housing with a P-GS element to steam sterilize the carbon beds.

## 4 Pre-RO Filtration

Reverse osmosis is used to produce purified water and protecting RO membranes with pre-filtration is best practice for increasing the service life of RO membranes. Place a P-FG with PP-Q elements between a UV light and the RO system to remove particulate and act as safety filter if the UV light breaks and sends glass downstream.

## 5 Spring Water Pre-filtration

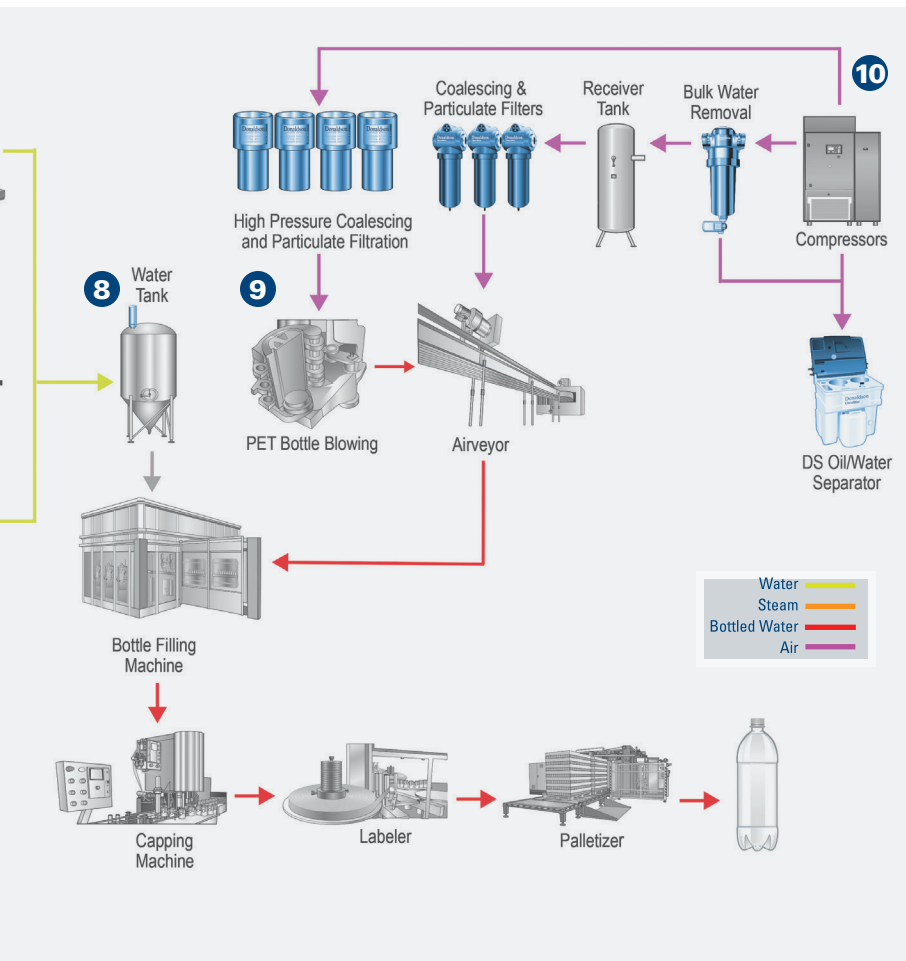
Spring or mineral water is different from purified water in that the water source is a naturally occurring aquifer vs. a municipal source. Since spring water does not have any treatment chemicals, there is no need for a carbon bed. In order to be marketed as spring or mineral water, the water cannot be passed through a reverse osmosis system. The first step in preparing spring or mineral water for bottling is to remove particulate and protect the sterilizing filter from being overburdened. Donaldson recommends a P-FG housing with 1 micron LifeTec™ PP100 N elements to capture particulate and prepare the water for sterilization.



# R THE BOTTLED WATER INDUSTRY

## 6 Sterilization of Spring or Mineral Water

Removing microorganisms from spring and mineral water is a critical step for food safety and quality control. Passing the water through a membrane filter will not remove any dissolved minerals, thereby leaving the flavor profile intact. Donaldson recommends a PF-EG housing with 0.2 micron PES-WN elements to reduce the bioburden in the water.



## 7 Steam Sterilization of Final Filter

The final membrane filter will capture microorganisms, but it does not kill them. Proper steam sterilization will kill the microorganisms that have been captured by the final filter, which will prevent them from replicating and growing through the membrane media. Best practice for steam sterilization is to use culinary grade steam. Donaldson recommends a P-EG housing with a 5 micron P-GS element for culinary steam.

## 8 Tank Venting on Water Storage Tank

Once the treatment of purified water or spring water is complete, the water can be moved to a storage tank prior to packaging. To maintain sterility of the water as the storage tank is filled and drained, use a sterile air vent filter. As the water is drained from the tank, the vent filter will remove microorganisms from the incoming make up air. Use a P-BE housing with a P-SRF V element for sterile venting applications.

## 9 Bottle Blowing

High pressure compressed air is injected into PET preforms to turn them into plastic bottles ready for filling. The high pressure air should be sterile so particulate, oil, and microorganisms are not injected into the bottles prior to filling. Donaldson recommends using four HD housings with MF, SMF, AK and SRF elements in a series to create sterile air for the blow molding process.

## 10 Compressed Air Filtration

Clean, dry compressed air is one of the best ways to prevent equipment breakdown and promote cleanliness throughout a process. Compressed air is used to power the pneumatic tools, instrumentation and airveyors. Removing oil, moisture, hydrocarbons and particulate is easy with the Cyclone Separator and SQF DF housing combinations. The DS Oil/Water Separator will split the oil and condensate collected from the compressed air lines and prepare the condensate for environmentally safe disposal.

## SUPPORTING PROCESS AND PRODUCT INTEGRITY

### Extensive Product Portfolio

- Process air, steam and liquid filtration products
- Performance engineered to sanitary guidelines
- Wide range of filtration media for any application
- Housings, elements, and parts in-stock, ready to ship

### Advanced Technology

- Optimized filtration performance and efficiency
- Extensive research and development capabilities
- Advanced design and testing capabilities
- Over 1,000 engineers and scientists worldwide

### Unrivalled Support and Expertise

- Expert technical specialists available as resource
- Comprehensive pre- and post-sale support
- Extensive filter analysis and trouble-shooting
- 100 years of successful global manufacturing



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Donaldson Company, Inc.  
Minneapolis, MN

Contact us



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