

Open Stacked Rapid Sand Filter Configurable Component

Stacked Rapid Sand, StaRS, filters were invented in 2010 by the AguaClara Cornell program in response to the need for a new technology that would both eliminate the need for backwash pumps AND not require the construction of 6 filters for small towns.

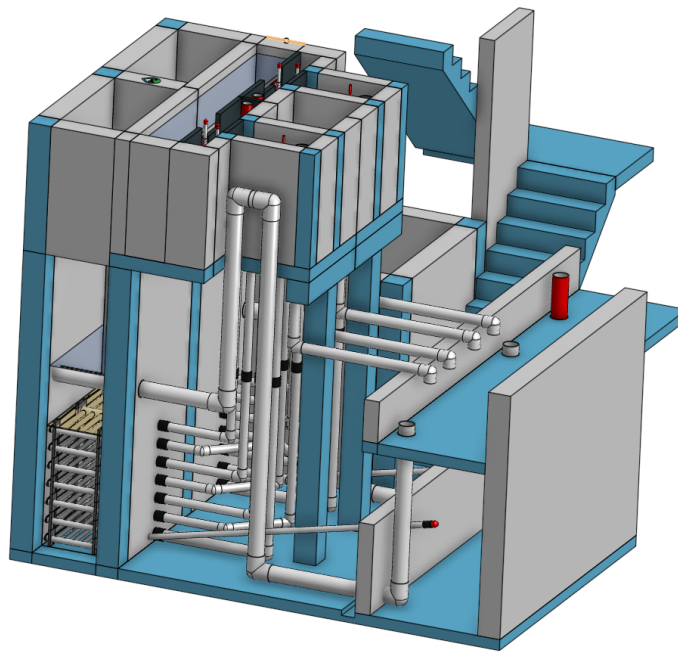


Figure 1: The open stacked rapid sand filter uses hydraulic controls to ensure steady flow through the filter media and an innovative system to inject and extract water from the sand bed to create six filters working in parallel.

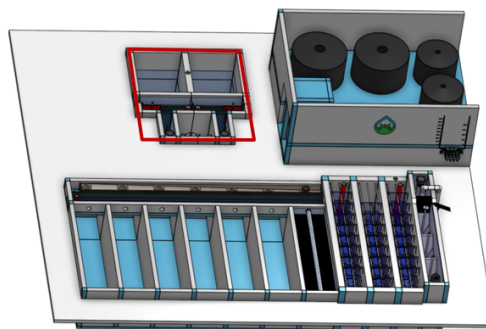


Figure 2: The open stacked rapid sand filter (outlined in red) is a compact unit next to the chemical platform.

The Stacked Rapid Sand Filter Includes Four Innovations:

1. No pumps are required for backwash.
2. The filter switches between filtration and backwash modes without changing the flow rate through the filter.
3. A single small air valve controls changing the mode from filter to backwash and back again.
4. Water is injected into and extracted from the sand bed.

Generate New Models of the Stacked Rapid Sand Filter

Edit the configurations to create new models of the stacked rapid sand filter. Send us [AIDE Feedback](#) to share how you are using the OStaRS model and to give us suggestions for how to make these models easier to use.

Configurations

Flow (L/s)

Minimum temperature (°C)

☐ Spare Filter

Fraction of clogged bed head loss

☐ Filter Mode

Figure 3: The configuration options for the Open Stacked Rapid Sand Filter.

Table 2: Open Stacked Rapid Sand Filter configurations.

Configuration	Description
Flow (L/s)	The maximum flow rate sets the size and number of the filters. Vary it to see how the dimensions change.
Minimum temperature (° C)	The temperature has a small effect on the head loss through the clean filter bed.
Spare Filter	If selected this will add filter capacity so that one filter can be taken off line while operating at the plant maximum flow rate.
Fraction of clogged bed head loss	A clean filter corresponds to a value of 0 and a clogged filter corresponds to a value of 1. The water levels change to reflect this head loss.
Filter Mode	If selected the filter is in filtration mode, otherwise the filter is in backwash mode. The water levels change to reflect the filter mode.

Additional information is available in the chapter on Filter Design