

Ask the Expert

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Welcome back to our “Ask the Expert” feature, designed to assist you with any and all issues related to swimming pool water, mechanical equipment, space conditioning, and code compliance. Ask a question, and we will answer to the best of our ability.

In drilling down to review the many Filtration alternatives that are available to the swim school owner, we can ask: what is the best filter for a swim school? That is a trick question! It actually depends on a wide variety of variables such as bather load (# of patrons per week), desired water quality, budget, maintenance tolerance, space, etc.

Filters can be located on either the suction side of a pool pump, or the pressure side. Also it is true that pool pumps are much happier pushing water through a filter (AKA a pressure filter) than pulling or sucking it through (AKA a vacuum filter). Pressure filters have a more gradual decline of flow as they get dirty, while a vacuum filter will experience a quicker drop off as the filter soils... so you get less warning before experiencing an issue.

Pool filters are, in order of popularity in the industry:

- Hi-Rate Granular Media (Sand) Filters
- DE (Diatomaceous Earth)
- Cartridge

Each of these filter are available in both the pressure and vacuum variety, and we will briefly review each to help you sort out some potential advantages.

Cartridge Filters

Cartridge filter normally come in either a stainless steel or plastic housing, and they are made of a pleated paper-like element to improve on space efficiency. You clean them by physically removing them from the housing and hosing the captured dirt off the individual grids until they are clean. You know they are dirty once the pressure differential (difference between inlet (influent) and outlet (effluent) pressures) reaches 10 lbs... so having a couple of working liquid filled gauges before and after the filter will end any guesswork. They have been largely ignored as a serious commercial pool alternative due to their labor-intensive nature, but have the LOWEST water consumption of all filters.

These filters are very susceptible to oils and grease, so using an enzyme will help. If you have cartridge filters, get a couple of sets, for quick clean out, or pre-coat them with small amounts of wood pulp, and you will enhance their appeal. Still...not the best solution for a heavily used swim school.

Diatomaceous Earth (DE) Cartridge Filters

DE is prehistoric skeletal remains delivered as bags of clean white powder. The powder is uniformly coated (pre-coated) on a cloth-like filter septum

located either in an enclosed filter vessel (pressure DE) or open tank (vacuum DE). While DE is widely acknowledged as the best filter media (in the laboratory) its efficiency varies widely with maintenance and is only as good as the barest spot on the grid. You clean these by dislodging the spent DE media from the grid into a separation tank, then disposing in the landfill or other approved means. Grids need to be cleaned whenever the pressure differential reaches 10 PSI, or when the suction reaches -15 Hg on a vacuum DE filter.

Most of these filters can use other powdered DE alternatives such as Perlite and Wood Pulp Fiber, and these offer more relaxed disposal, but offer little relief with the manual handling and cleaning. You can extend the filter run by “bumping” the filters. Bumping occurs when you temporarily alter the flow to the filters allowing the powder to fall off then recoat in a different configuration thus exposing new crevices for soiling. The filter bump normally doesn't have the full filter life as the original pre-coat.

New Regenerative DE filters provide a “more” automatic bump cycle, less water consumption, and are more space efficient than some other filters...but they are more expensive than any other filter alternative, and many customers find them much more complicated to operate.

Granular Media (Sand) Filters (GMF)

Sand filters also come in vacuum and

more popular pressure models. They are misunderstood by many rookies but are the long-time choice of many veteran operations. You can vary the water quality by using different "Permanent" granular medias and you can tweak them all the way to drinking water quality filtration.

They backwash by reversing the flow of water upwards, thus dislodging the trapped contaminants. Good sand filters only require a 2.5-3 minute backwash every week or two (when pressure differential reaches 10 lbs) depending on bather loads, so these are the most maintenance-friendly filters of the bunch. GMF, in the drinking water variety, are being used by some of the leading

USSSA swim schools in the US.

About Water Loss

Ever hear that "The solution to pollution is dilution"? Well it's true.

Regardless on how well you operate your chemistry, you will accumulate disinfection byproducts and organic contaminants that will help cause irritation for instructors and patrons alike. World Health Organization, DIN and other European Standards, and Canadian codes recommend that fresh water be added to the pool at a rate of 5-8 gallons per bather. The new US Model Aquatic Health Code (MAHC) will also offer similar recommendations.

If you use a Sand filter the water losses are pretty close to the recommended amounts, but if you use DE or Cartridge filters, you will need to proactively dump water on a periodic basis.

There is no one "right" filter for the application, but you should be able check with your fellow USSSA leaders and find a good combination of cost, maintenance requirements, water quality, and fresh water introduction... and you'll have a winner.

Best Regards,

ALVARO G. MENDOZA

Please feel free to forward your questions & comments through the USSSA office, or directly to me via email at amendoza@ceswaterquality.com

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