

## AFO

The Fall/Winter AFO schedule is online at CESWaterQuality.com. There, you can get schedules, directions, or even sign up for a local course. No internet access? Call us at (800) 940-1557, prompt #5, for more information.

## Tech Tips

**Q:** The circulating pump in our clubhouse pool makes a lot of noise. It almost sounds like there are rocks or marbles inside. What could be the problem, and how do we resolve it?

**A:** Circulating pumps, if properly sized, engineered and maintained, can provide years of reliable service. Problems such as improper chemistry and hydraulics, however, could severely shorten the pump life. The problem that you are describing is known as cavitation, and can be very harmful to pumps. Cavitation occurs when liquids vaporize inside the pump. Low pressure in the impeller "eye" will cause vapor bubbles to form, then collapse or explode when the pressure changes at the face of the impeller. These are described as "hammer-like" blows that will quickly destroy the impeller. Pumps that are cavitating will usually make a lot of noise similar to what you described above. Cavitation can be occurring in a "quiet pump", only detected by the significant vibration in the pump (evidenced when standing next to it).

The most common cause of cavitation comes from excessive restrictions on the suction side of the pump. In DE systems, cavitation is very common. Why? Since the DE filters are located on the suction side of the pump, as they get dirtier, the water would have a tougher time passing through, and the vacuum (as measured with a vacuum gauge) would increase. According to the AFO manual, cavitation will begin at a vacuum reading of approximately 18" Hg. In our travels, we see many DE filter systems with missing or inoperative vacuum gauges, thus meaning that the operator is running the system "blind". We recommend that all DE systems be equipped with a stainless steel, liquid filled gauge with a 0-30 range. With this type of gauge, the

pool operator, maintenance person, or even the manager can monitor the state of the filter system. Many DE filter systems will operate at a vacuum of 5-7 "Hg on recently cleaned grids, and should be cleaned when the vacuum reaches 15-17 "Hg, thus not putting the pump in a cavitation range. Some operators wait too long to clean the DE filters and the vacuum may reach the 20-25 "Hg range. That is when the "rumbling" or cavitation sound can be heard most often.

Cavitation can occur in pressure filter systems as well. The most common culprit is a dirty strainer. As the strainer catches leaves and debris the water flow can be severely restricted. This restricted flow can cause cavitation as severe as any DE filter system. The worst offenders are systems with older cast iron strainers that are more difficult to open and reseal. These strainers are obviously not cleaned as often, and the circulation pumps will experience more cavitation. New style strainers are made of fiberglass which will not corrode. They are also equipped with see-through Lexan lids so the operator can see the amount of debris collecting. They have swing down bolts and o-rings for easy opening and resealing. Finally they utilize an innovative "W" basket design that has over 300% more debris holding capacity than some earlier strainers. These fiberglass strainers are not cheap, but they are a permanent solution to strainer-related flow and cavitation problems.

Cavitation can also result from poor design or installation techniques. Pumps where inadequate NPSH (Net Positive Suction Head) put the pump in either a continual cavitation state or in a better position to cavitate from the variables mentioned above. Undersized suction piping or excessive elbows and/or restrictions can also cause cavitation to occur.

How do you identify the problem? The installation of Health code-required vacuum and pressure liquid-filled gauges on every pump is an effective first step in identification. CES has also developed advanced diagnostic tools to help identify and eventually correct problems that cause cavitation using amp draw, voltage, RPM, pressure, vacuum, and flow

to recreate the pump curve and determine the true cause of pumping problems. Please feel free to call Tech Services with pumping problems and we will provide you with the optimum solution.

## CES Web Site

We have received some great suggestions from our customers regarding the web site. The site is undergoing considerable monthly upgrades, and we welcome any ideas, requests, or tips on how to make this site more useful for you. Please feel free to send us your information at: [info@ceswaterquality.com](mailto:info@ceswaterquality.com).

Go ahead... log on and let us know what else we can do to provide you with "Excellence in Water Quality Control".

## NEW - CES Color Catalog

CES is proud to introduce the new 2003 CES Water Quality Control catalog. A four color, 80+ page catalog contains thousands of items designed to help you operate your pool easier, better, and more cost effectively. The catalog contains pages of information and details on chemicals, test kits, cleaning and maintenance equipment, pool vacuums, facility equipment and accessories, exercise and training equipment, rescue equipment, first aid supplies, safety equipment, deck equipment, pool covers and heaters, filtration systems and accessories, circulating pumps, strainers, flow meters, CO2 feeders, chemical controllers, and much more. There are expanded sections on chemical feeders and feeder replacement parts & accessories. These include detailed diagrams with part numbers and descriptions to assist you in choosing the right parts to get your system back in service. Besides pictures, diagrams, and descriptions, the catalog provides an easy way to compare among different equipment available in the pool industry today.

For your complementary copy of the CES Water Quality Control catalog, please contact CES customer service or your CES sales rep. We look forward to using this valuable tool to better provide you with "Excellence in Water Quality Control".