TechTALK

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JULY 2015

This month's edition of Netafim TechTALK focuses on Filtration.

Before you design a filtration system, it's important to start with a water analysis to know exactly what you're up against. It's also important to remember that multiple stages of filtration may be necessary and that there is no 'one size fits all' solution. As a pre-filter, hydrocyclones work very well at separating debris, sand, and heavy silt loads from the water supply, reducing the workload and flushing frequency of the primary filter.

How can you tell if a hydrocyclone is needed? Generally, if you have sand loads greater than 3 ppm, a hydrocyclone is required. You can determine the quantity of sand in your water supply using a mini hydrocyclone test kit, Netafim Item #: 70021-000730 (see FIGURE 1). The test kit connects to the untreated water supply and, using the graduated test tube, reveals the material that can be separated. Using the included instruction guide and a little math, you can determine if you have more than 3 ppm of sand, requiring the use of a permanent hydrocyclone upstream of the primary filtration system.

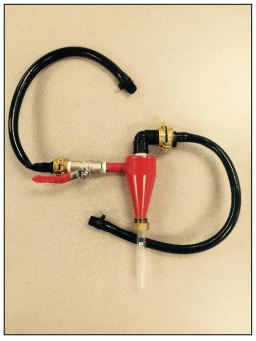

FIGURE 1 - Netafim Mini Hydrocyclone Test Kit

Hydrocyclones work by using centrifugal force to separate particles heavier than water. The heavier particles are thrown against the wall of the cyclone where they gravitate to the bottom (sedimentation tank). The fluid then exits the cyclone through the outlet on top - see FIGURE 2. For this process to be effective, a consistent flow and pressure loss across the cyclone are required. That may be tricky when variable speed pumps are involved. Netafim's hydrocyclones come in various sizes but all require 3 to 7 psi of headloss to function correctly. This pressure loss is critical and needs to be accounted for in your designs.

It's also important to note that a smaller hydrocyclone can remove smaller particles than a larger hydrocyclone. Referencing FIGURE 3 we see that the 3" hydrocyclone (cyclone diameter) is capable of removing particles as small as 25 microns, given enough pressure loss. So in a situation with 600 GPM and fine sand, it would be more effective to use five 8" hydrocyclones than one 20" for sand separation.

One last note regarding hydrocyclones. There is no sensor to tell us when the sediment tank is full or when we should trigger a flush operation. If the sediment tank fills up, sand will swirl at the bottom of the cone and deteriorate the cyclone wall causing leaks to occur. It is critical that the sediment tank be flushed regularly to prevent this from happening.

Ask your Netafim representative for more information or visit our website at www.netafimusa.com.

If you have a suggestion for a future topic, we'd love to hear from you. Please e-mail your idea to netafim.usa@netafim.com. Thank you.

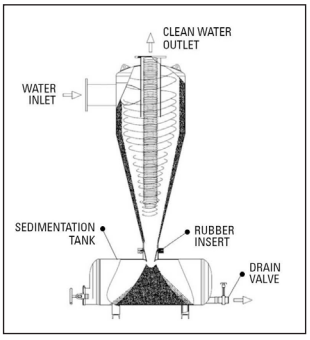

FIGURE 2 - Function and components of a Hydrocyclone

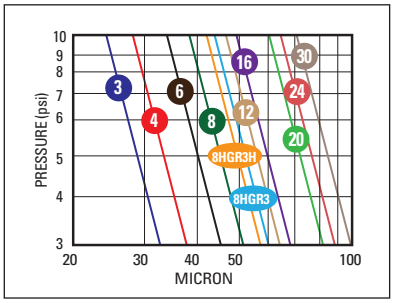

FIGURE 3 - Particle size separation

FIGURE 4 - Example of multiple small hydrocyclones working in concert.