**Automatic self-cleaning screen-filters provide cooling-system protection and more.**

Cooling towers dissipate both ambient and process heat in most large manufacturing facilities. These structures facilitate the transfer of unwanted energy (heat) from a transport liquid (usually water) to the atmosphere. Problems with efficient heat transfer, equipment protection and pathological risks to employees can most often be traced to an issue with suspended solids. These solids can originate in the process, in the piping, from the atmosphere or from internal biological growth.

Common methods of maintaining minimal suspended solids in a cooling system are side-stream filtration, a process that cleans only a portion of system flow; cyclonic devices, which typically treat all water in a system, but are best at removing high-specific-gravity solids; and granular media filtration, which is also used to treat all water, but is best at removing low-specific-gravity organic solids.

Orival offers yet another method—*automatic self-cleaning screen-filter technology*—that can be used for all system water. Trapping both organic and inorganic solids, regardless of specific gravity, this process also requires minimal energy and little or no coolant liquid for the self-cleaning process. Fully automatic self-cleaning screen filters use weave-wire screens as

the filtering media. These provide a positive removal system and eliminate all particles larger than the filtration degree of the screen from the cooling system, and many smaller particles as well. This is due to the filtration effect of the filter cake that builds on the screen element surface between cleaning cycles.

The filtration improvement can be loosely quantified as removing particles down to about 1/10 the size of the screen-filtration degree when the filter cake is at its thickest. This 1:10 relationship, as employed in screen-filtration systems, is called the capture ratio. An efficient suction-cleaning principle allows the filter cake to be removed completely from the screen surface within seconds, without touching the cake or screen.

During the suction-cleaning cycle, the filtration process is uninterrupted, thereby providing filtered water downstream at all times and eliminating redundant equipment. Water and chemical losses are minimized, and organic and inorganic solids are removed with equal efficiency. Since only a small pressure differential occurs across the screen element, extrusion of soft organic material through the screen is prevented. If a problem should occur with the filter, a controller will open a built-in bypass valve to provide continuous water flow. The controller will then send a signal to notify personnel.

Routine maintenance of automatic self-cleaning screen filters is minimal, consisting of a monthly inspection of the rinse valves (to see that they are seating properly) and an annual inspection of the screen and hydraulic piston. An occasional manually induced cleaning cycle is recommended to assure proper operation.

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