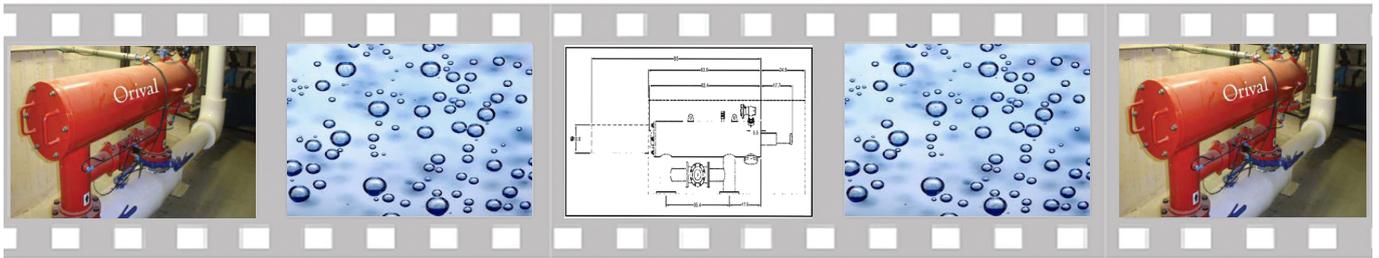


Sustainability Need Not Go Up in Smoke



This article discusses an automatic self-cleaning filter for chiller protection. Automatic self-cleaning screen filter technology provides a barrier to both organic and inorganic solids regardless of specific gravity or rigidity and requires very little energy to operate.

By Dr. Marcus N. Allhands

Cooling towers dissipate process heat in most large manufacturing facilities. Problems with efficient heat transfer, cooling equipment failure and pathological risks to employees can most often be traced back to an issue with suspended solids.

Side-stream filtration is the most commonly used method of maintaining gross control of suspended solids. Historically, cooling systems have relied heavily on cyclonic separators for the removal of heavy inorganic particles and granular media filters to control soft organic matter. Automatic self-cleaning screen filter technology provides a barrier to both organic and inorganic solids regardless of specific gravity or rigidity and requires very little energy to operate. In addition, they conserve coolant additives by using very little coolant liquid for the self-cleaning process and do not have to be taken off-line during the cleaning cycle.

The Challenge

A large producer of cigarettes and fine cut tobacco manufactures billions of cigarettes per year. The plant installed a production line with all new equipment. One of those pieces was a state-of-the-art 150 ton magnetic chiller on the evaporator loop of the cooling system.

Chillers are expensive components that must be supplied a continuous flow of water from a cooling tower. Engineers asked Orival Inc. to recommend a filtration system to protect the chiller from airborne debris scrubbed from the atmosphere by the cooling tower and other solids originating within the cooling system.

The Way Out

The solution had to accommodate both soft organic and dense inorganic solids. An Orival Model OR-06-BE fully automatic self-cleaning filter with a 316L stainless steel screen element was recommended and installed. The filter has a built-in bypass system that will automatically open a pipeline around the filter element should anything cause the filter to fault.

The use of weave-wire screens as the filtering media provides a positive removal system retaining all particles larger than the filtration degree of the screen and many smaller particles due to the filtration effect of the filter cake that builds on the screen element surface between cleaning cycles. During the efficient suction cleaning cycle, the filtration process is uninterrupted; thereby, providing filtered water downstream at all times, eliminating the need for redundant equipment.

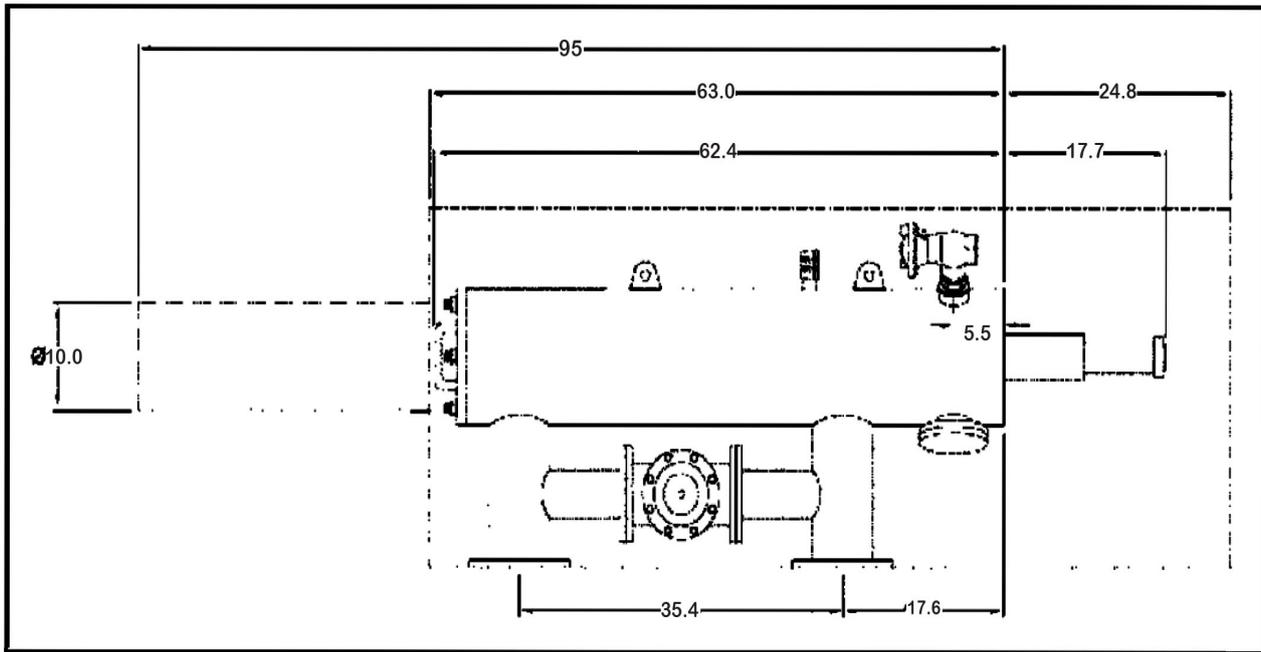


Figure 1: Dimensional Drawing of OR-06-BE

If any problem should occur with the filter, the controller will sense this and open the built-in bypass valve to provide a continuous flow of water to the new chiller. Full stream protection, automatic self-cleaning process, automated bypass system and low maintenance were just the qualities the engineers were looking for in a protection system for the new magnetic chiller.



Figure 2: Filter Installation

Applications

Orival filters have been installed on process cooling applications in industries such as petrochemical, food and beverage, steel, mining, automotive, paper, power generation and ethanol production, to name a few. A complete line of automatic self-cleaning filtration systems with sizes ranging from 0.75” to 24” and filtration degrees from 3000 microns down to 10 microns are available. The filters are used to protect cooling towers, chillers, membrane systems and heat exchangers, spray systems, furnaces, internal combustion engines and mold jackets.

About The Author

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This article was contributed by Gopani Product Systems which has 15 years of experience in designing and manufacturing cartridge filtration systems and bag filtration systems, from various materials like PP, stainless steel, mild steel etc. They can be contacted at: gopani.pr@gmail.com. www.gopani.com