



Fleischmann's Yeast selects Yardney Water Filtration Systems to Design and Fabricate a 1,000 GPM Well Water Treatment System for the Removal of Iron (Fe)

The Challenge

This food processing plant located in Memphis, TN was unable to use the water from a newly drilled well for boiler and cooling tower make-up due to the high level of iron (Fe) in the water. This resulted in higher than expected plant operating costs since the company had to purchase water from the city for these uses.

Testing

During the testing period, Yardney Water Management Systems, Inc of Riverside, CA teamed with Sparkling Clear Industries of Houston, TX (SCI) for a field trial at the plant using DMI-65, a revolutionary new filtration media manufactured by Quantum Filtration Medium in Western Australia. DMI-65 is a silica sand based filtration media that will remove iron, manganese and arsenic when operated in the presence of chlorine (sodium hypochlorite). The purpose of the trial was two-fold: to determine the effectiveness of the iron removal properties of the DMI-65, and to ascertain the appropriate hydraulic flow rate (in gpm/ft²) for the sizing and design of the required filtration equipment.

System Design and Fabrication

After the successful completion of testing, and with the DMI-65 media approved for the application based upon the testing, the design and fabrication of the treatment system moved forward. Yardney has over 40 years of experience in system design and vessel fabrication and has provided many different types of systems for all types of applications. One of the main advantages of the vessels produced by Yardney is the ability to utilize many different types of specialty medias without having to make significant modifications to the vessel design. The result is additional technical and economic benefits realized for the client.

The client requested a completely automatic system that would provide variable flows from 200 gpm to 1,000 gpm. This requirement was an ideal application since it allowed for one of the many standard designs offered by Yardney to be utilized. The system utilized a total of twelve (12) 54" diameter x 60" sideshell, fusion epoxy lined, carbon steel vessels. Yardney has determined, from many years of experience and hundreds of system installations, that this diameter of vessel provides a high degree of flexibility and ease of operation when dealing with applications requiring variable flows. This size vessel is also more cost effective than using larger diameter vessels and can achieve a complete backwash within 3-5 minutes while requiring less water during the backwash cycle.

System Automation and Operation

The client's main desire was to have a system that would be effective in removing the iron contaminant, but also require little operator involvement with regards to operation and maintenance. With this in mind, Yardney proposed an automatic system with a control package utilizing a free chlorine residual monitor, an electronic flow meter and a programmable logic controller (PLC). The final design of the system was composed of twelve (12) 54" filter vessels in four (4) banks of three (3) vessels.

As the flow varies, the flow meter sends a signal to the PLC, which then sends a signal to the control valves on the individual filter vessels. This allows either more vessels to be put on-line or taken off-line so that the hydraulic flow in gpm/ft² remains within the design range of the specialty media.

The PLC also receives a signal from the free chlorine residual monitor, which then controls the chlorine-metering pump. The result is that the proper hypochlorite feed and free chlorine residuals are monitored and maintained without operator attention regardless of the service flow through the treatment system.

The Results

The system was installed and commissioned in mid-2009. Since start-up, the quality of the water being supplied by the Yardney system utilizing the specialty iron removal media has met and exceeded the client's expectations. This has allowed the plant to use the well water treated by the Yardney system for make-up to the boilers and cooling towers. Additionally, they have found other uses in the plant due to the high quality of the water produced. In terms of cost savings, the client is realizing over \$9,000/month on water savings since the installation and start-up of the treatment system. Additional savings, yet to be quantified, are in nature gas and chemical savings due to the significant reduction of boiler and cooling tower blow down.

For additional information please contact:

Yardney Water Filtration Systems

T | +1 951.656.6716

E | sales@yardneyfilters.com

yardneyfilters.com

