

Premier Water Case Study: Grace Lutheran Church in Deephaven, MN saves money with clean water

May 2010

Grace Lutheran Church in Deephaven, MN had been fighting with their well water for years. The old mechanical Fleck 2750 water softener used 1,000's of pounds of salt each year, and did a poor job of removing the iron from the water. Every toilet in the church was orange, and the entire kitchen would smell like rotten eggs when there was heavy water usage.

The poor water quality prompted Grace to install multiple bottled water coolers for drinking water and coffee, but that ended up costing the church over \$1,600 each year.

In addition to cost, Grace had problems with storage space and microbial growth inside the water coolers. Several coolers required constant disinfection to eliminate the swampy, musty smell and taste that kept returning. The 5 gallon bottles would routinely pile up and were hard to store conveniently.

After reviewing the different options, Grace Lutheran decided to completely overhaul their water system. Premier Water was chosen as a local company with expertise in problem-water applications.

The new water system was completed in 4 phases:

1. Remove and recycle the old water softener
2. Design and install an iron filtration system to remove the iron and odor
3. Install a high efficiency water softener to treat the hard water
4. Return the rental coolers and bottles to their owner
5. Install several reverse osmosis purification systems that would supply pure water to bottle-less water coolers throughout the Church

Hellenbrand H125 Iron Curtain System

We started with a dedicated 2-stage iron filtration system as it would solve a majority of the water problems. In Step 1, water is sprayed through a compressed pocket of air inside a large pressurized aeration vessel. As the water and air mix, the iron molecules and hydrogen sulfide gas precipitate out of the water. In Step 2, a large filter vessel is used to capture those precipitated molecules and periodically flush them away. The unique design of the filter vessel uses 30% less water to clean and gives 40% better filtration than other filters on the market.

Hellenbrand H125 Water Softener

Step 3 of our new water system used the Hellenbrand H125 light commercial water system to remove hard water scale from the now iron-free water. By removing the iron first, we were able to use 37.5% less salt. The new system regenerates on a metered/on-demand schedule and uses variable reserve technology that precisely adjusts to changing water use. The previous system regenerated with salt and water every third day – even if no one was using water! With the Hellenbrand iron filter and high efficiency softener, we were able to reduce salt by almost 60%.



Old water cooler



Bottled water stockpile



New Iron Filter System



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Reverse Osmosis Systems and Bottle-less Water Coolers

Step 4 – provide clean drinking water. Bottled water coolers are open environments that collect debris in the air and eventually grow bacteria. Reverse osmosis systems squeeze water through small pores roughly 1000x thinner than a human hair to literally make pure water one drop at a time. Once purified, the water is held in a pressurized storage tank, and pumped to a bottle-less water cooler. The whole system is 100% sealed. The result is pure, fresh water that stays clean! In addition to better drinking water quality, operating costs were cut by 81%!



Reverse Osmosis system

Conclusion

The system was neatly installed in two mechanical rooms, an office, a choir room, and a commercial kitchen. All iron filter and softener tanks have dedicated bypass valves and can be easily disconnected for future service/cleaning. The reverse osmosis systems were wall-mounted at eye level to make future filter changes a snap. Lastly, the bottle-less coolers are completely sealed for sanitary water storage.



Bottle-less Water Cooler

Grace Lutheran now has soft, iron-free, odor-free water throughout the church. The drinking water for the Parish and Pre-School is pure, clean, and fresh!

“The odor and rust is gone. We used to get complaints about a rotten egg smell but we don’t get those anymore. The drinking water is clean and tastes great.”

B. Hendrickson - Facilities Manager

Water Quality BEFORE	Water Quality AFTER
Hardness: 20gpg Total Iron: 3ppm TDS: 375ppm	Hardness: 0.5gpg Total Iron: 0.0ppm TDS: 27ppm

5gpg is the average national hardness
0.3ppm iron is the limit before staining begins
100ppm+ TDS decreases ice cube clarity

Premier Water is a Chanhassen, MN based company that provides residential and commercial water softening, filtration, and purification solutions. Capabilities range from small point-of-use systems up to high volume whole-house/whole-business applications. Please call (952) 479-4553 for more details.



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