

APTwater
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Customer Success Story

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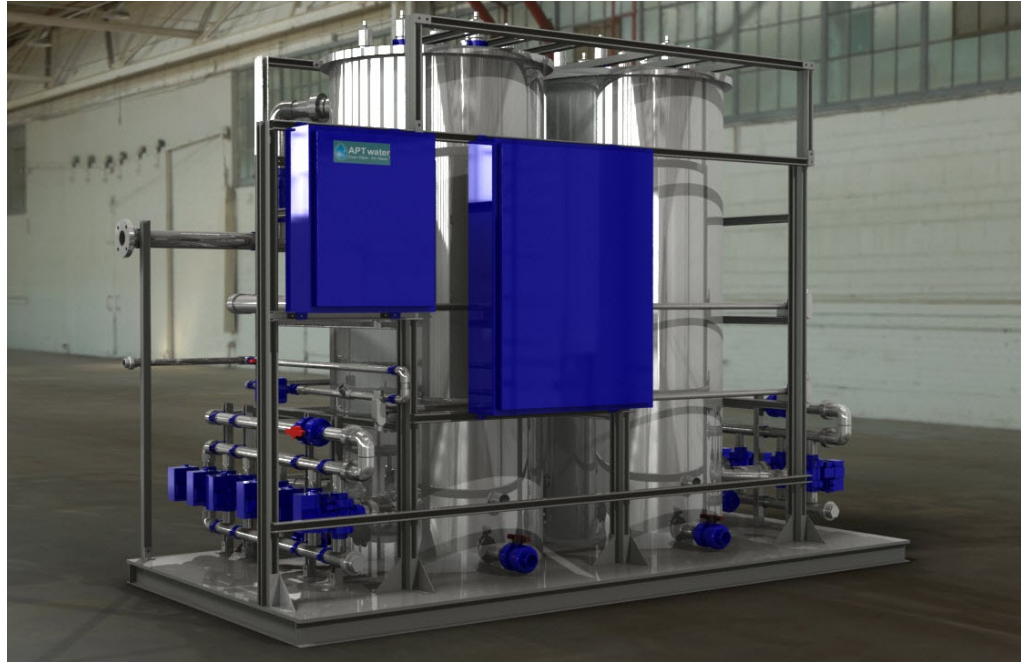
Autodesk Inventor helps us make our pipe reactors as small and efficient as possible, and makes our injection points fit perfectly into the space we have available. We have to optimize our designs for use in these tight spaces, and without Autodesk Inventor, we simply couldn't build the systems we build.

—Louis LeBrun
Vice President,
Business Development
APTwater

The Autodesk Clean Tech Partner Program supports early-stage clean technology companies with design and engineering software they can use to accelerate their development of solutions to the world's most pressing environmental challenges. For more information visit autodesk.com/cleantech.

Precious resource reuse.

APTwater improves water quality with help from Autodesk® Inventor® software.



APTwater's 50 gpm MBfR Treatment System for biological nitrogen removal - front. Image courtesy of APTwater, Inc.

Water is important. The human body is 60 percent water. Our brains are 70 percent water, and our lungs are nearly 90 percent water. Humans need to rehydrate with nearly a liter and a half per day. It may come as a shock that hazardous compounds, including trace pharmaceuticals, caffeine, synthetic hormones, and beauty product chemicals, routinely show up in water supplies all over the world.

APTwater is working hard to improve the quality and reusability of water through the development of advanced water treatment process technologies that enable water reuse. Using clean chemical reactions, known as oxidation, to literally burn up the bad stuff, APTwater processes also reduce costs and eliminate waste. Their "advanced oxidation" process produces a powerful water treatment chemical chain reaction known as the "hydroxyl radicals," the most powerful oxidant available for water treatment. By helping to destroy biologically toxic and nondegradable materials such as pesticides, petroleum, and volatile organic compounds that don't belong in water, the hydroxyl radical is a friend indeed.

APTwater currently develops and markets the HiPOx® and PulseOx® process technologies in technically advanced reactors that are customized for use in existing water and wastewater facilities, including municipal water treatment plants and industrial facilities. Floor space is limited at most of these

sites, and APTwater uses Autodesk® Inventor® software to create and provide less expensive, more compact methods for effective water treatment.

"Without the 3D modeling tools in Autodesk Inventor, we couldn't do what we do," says Louis LeBrun, vice president of business development at APTwater. "We are producing extremely dense designs that make the most of every possible square inch of usable space. Autodesk Inventor helps us make our pipe reactors as small and efficient as possible, and makes our injection points fit perfectly into the space we have available. We have to optimize our designs for use in these tight spaces, and without Autodesk Inventor, we simply couldn't build the systems we build."

LeBrun also points to Autodesk Inventor as a vital tool when dealing with outside fabricators:

"Due to the large number of systems we build, we rely on our core group of partner-fabricators," he says. "Being able to produce digital models with materials in Inventor and provide them to our fabricators is a critical part of succeeding at the high level of customization we do for our clients. We need those models to ensure both our efficiency and that of our fabricators."

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APTwater is currently working on a new biological process technology called the Membrane Biofilm Reactor (MBfR), which provides a revolutionary method of removing nitrates from water. The nitrate removal method is particularly helpful in farm areas such as the Central Valley of California, where the use of large amounts of nitrogen-rich fertilizer has polluted drinking water and groundwater supplies in recent decades.

The company is using Autodesk Inventor software to design and build a reactor that produces microorganisms that metabolize contaminants using hydrogen. This advanced reduction process is faster and more efficient than existing conventional treatment options, with just a fraction of the waste. In combination with filtration and standard chlorination, the new APTwater treatment process is making previously shuttered drinking water wells in several California municipalities safe again.

“Autodesk Inventor played a large role in our ability to move from the detailed planning and R&D to actual site implementation with the MBfR technology,” says LeBrun. “APTwater’s ability to treat water without waste is in large part possible because we are using Inventor. By removing contamination from long-dormant wells, we’ll help increase available fresh water supplies for business and agriculture. Not only are we helping the environment, we’ll also help to create jobs. This is another example of how what is good for the environment is good for the economy. People in the Central Valley will soon benefit from the results of these efforts.”



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APTwater's 50 gpm MBfR Treatment System for biological nitrogen removal - rear. Image courtesy of APTwater, Inc.