

# Healthcare Products Manufacturer upgrades processes to achieve water and energy reduction, cost savings

## Real Challenge

A healthcare products manufacturer in the United States needed to expand operations and production without increasing the water needs and water discharge requirements. Its current water system requirement was a 150 gallon per minute (GPM) treatment plant, producing high quality Pharmacopeia Purified Water.

The specifics for this example water system include:

- 150 GPM make-up water requirement
- Operation: 7 hrs/day, 5 days/wk, 50 wks/yr
- Feed water cost: \$1.33/1,000 gallons
- Wastewater discharge cost: \$2.77/1,000 gallons
- Electrical cost: \$0.05 kWh

## Project Goals:

- Add 150 GPM make-up water capabilities to existing capacity
- Reduce wastewater production by over 16,000,000 gallons/year
- Enhance water and energy efficiency to increase production with less cost and waste
- Improve water quality over existing standards
- Operate in a community-friendly environment

## Real Depth of Solutions

The healthcare products manufacturer explored various solutions and ultimately selected Siemens Water Technologies as its water partner to maximize conservation savings and optimize its production of products.

The manufacturer chose the S3<sup>®</sup> water system from Siemens, utilizing Ionpure<sup>®</sup> CEDI modules uniquely manufactured for the S3<sup>®</sup> water system. The revolutionary Sanitize, Start, Stop process used in the S3<sup>®</sup> system provides microbial control in a water system design using a quick thirty-minute heat sanitization cycle. Operation stops during dormant periods rather than continuously recirculating, providing significant energy and cost savings. Also, a rapid pulse sanitization just before use ensures that it produces consistent optimal water quality.

The S3<sup>®</sup> system: consumes considerably less water and energy; creates significantly less wastewater; reduces the need for system consumables such as salt, pH and UV bulbs; lengthens the life of components such as pumps, membranes and CEDI modules; requires less space and unit processes; is easily retrofitted to existing systems; and can be combined with chemical cleaning, chemical sanitization and conventional heat sanitization to best address microbial contamination and biofilm formation.



**Real Depth. Real Impact. Real Reduction.**

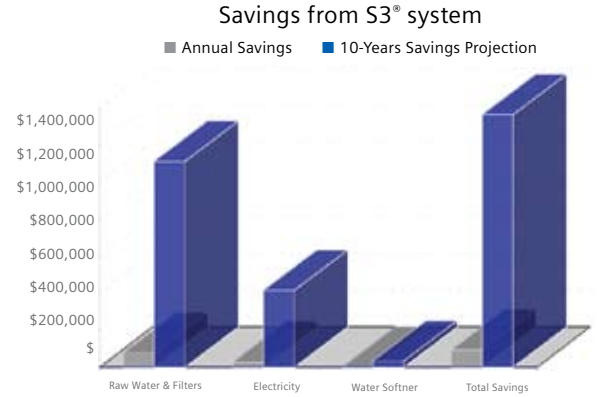
Reduction. Reclaim. Reuse.

Water Technologies

**SIEMENS**

### Real Results for Real Impact

While the upgraded water system was required regardless of the potential savings, the economic benefits from the S3<sup>®</sup> system are dramatic, saving 16.4 million gallons of water per year. Large water systems, redundant trains, high raw water costs, high discharge water costs, and water discharge limitations can greatly increase the savings of the S3<sup>®</sup> solution. While the savings are greater on larger, redundant systems, even relatively small, single-train water systems with moderate water costs still result in rapid payback and significant savings.



Description of cost savings from S3 <sup>®</sup> system		
Raw Water & Filters	\$77,105	\$1,117,989
Electricity	\$28,789	\$417,062
Water Softener	\$2,469	\$35,799
S3 Operational Cost	\$(13,838)	\$(200,473)
Total Savings	\$94,525	\$1,370,377

The projected savings over a 10-year period is significantly more than the total water system costs. The S3<sup>®</sup> system quickly pays for itself, often with a payback period of 6 to 24 months, after which the savings drop immediately to the bottom line.



### Project Profile

- **Application/Goal**  
Healthcare manufacturing water treatment process expansion with less cost and waste
- **Capacity**  
150 GPM treatment plant
- **Commissioned**  
2008
- **Key Technologies Selected**  
S3<sup>®</sup> system using Ionpure<sup>®</sup> CEDI modules

### Reduction Approach

Siemens' integrated reduction, reclaim, reuse approach can provide significant cost savings while promoting a gentle global footprint. Reduction can be defined as the lowering of water and energy costs in the manufacture of pharmaceutical products, while maintaining or improving product quality over conventional systems.

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