economic alternatives, inc.
Leaders in Managing Water

Case Study

Kaiser Permanente - Harbor City, CA

Kaiser Permanent Harbor implements TDS-reducing technology in cooling tower make-up water to save water, save energy, lower chemical usage, and preserve equipment life.

ANNUAL SAVINGS

Water Saved

Reduced water usage by

2.5

MILLION GALLONS ANNUALLY

15% Water Savings

Productivity

Sewer discharge lowered by 4,000 lbs/ year

Extended life of capital equipment with no operational impacts

SAVINGS DELIVERED

$65,000 the first Year

BACKGROUND

Kaiser Permanent (Kaiser) is Kaiser Permanente is one of the largest nonprofit healthcare providers in the United States, with over 12 million members, served across 39 hospitals in 9 states. As a part of their overall environmental stewardship effort, Kaiser committed to reduce water consumption by 25 percent per square foot by 2021. Evaporative cooling water typically represents 35-45 percent of a hospital's overall water consumption, using over 16 million gallons of water per year. Complicating the issue, the incoming water quality at the Harbor City site (property) is relatively high in mineral content compared to other areas so the evaporative cooling system required a higher bleed-off rate to sewer in order to prevent equipment damage from excess mineral build-up.

Kaiser's goal was to reduce evaporative cooling water consumption by at least 15% while continuing to provide comfort and process cooling, all the while delivering an attractive and reliable internal rate of return (IRR).

EAI: LEADERS IN MANAGING WATER

The team at EAI, with 35+ years of operation across Southern California in some of the region's premier Hospitals, Universities, Airports, Manufacturing, and Government facilities was selected to implement a total cost of operation analysis to determine the best treatment regime to meet Kaiser's ambitious goals without impacting current operations.

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Case Study

EAI delivered a solution to Kaiser that lowered costs, preserved capital assets, improved sustainability, and maintained the safe operations of a critical regional healthcare facility

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SOLUTION

Kaiser took a "total cost of operations" approach to ensure the project did not create unintended outcomes, such as increased maintenance costs, lower equipment lifespan, or increased risk to patient safety. EAI established key operational goals, with baseline values based on historical data. EAI evaluated the expected outcomes of multiple potential treatment regimes, measured against the established operational goals.

Kaiser selected EAI's proposed radial deionization technology to reduce total dissolved solids (TDS) in cooling tower make-up water. By lowering the TDS in the make-up water, EAI was able to increase the number of cycles of concentration, lowering the blowdown which had the beneficial effect of decreasing both water consumption and sewer discharge of waste contaminants and chemicals.

Kaiser and EAI were able to achieve these performance goals while also preventing corrosion and operational impacts that plague many non-chemical-based devices that purport to deliver massive water and energy savings, but don't take into consideration the long-term asset preservation and risks of operational downtime.

RESULTS

By implementing radial deionization technology to reduce TDS in cooling tower make-up water, Kaiser saved 2.5 million gallons of water per year, which equates to approximately **$35,000** per year in water savings. Additionally, water treatment costs were reduced by **$10,000 per year**, by reducing their demand for chemicals as well as reducing their sewer discharge by 4,000 pounds. Kaiser also measured the impact to the performance of their evaporative cooling system: no measurable performance losses in heat transfer efficiency, corrosion rates of their chiller systems, or Legionella risk management. Lastly, Kaiser measured their actual IRR in comparison to their projected IRR and verified the project is delivering the financial impact they anticipated.

To further improve the financial performance of the project, EAI facilitated a partnership with the local water retailer Los Angeles Department of Water and Power and wholesaler Metropolitan Water District to provide grant rebates of around **$20,000**. This rebate helped offset the capital costs and improved the rate of return on the

CONCLUSION

By taking a site-specific, client-centric, scientific approach to identifying the best treatment regime to meet the goals of the client, EAI and Kaiser developed a project that optimized their cooling tower water treatment system on every parameter measured, delivering savings of water, energy, chemicals, costs, and asset replacement while maintaining safe, uninterrupted operations of a critical regional healthcare facility.

Learn more about how EAI can help you too become Leaders in Water Management at
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