



UPDATES

Welcome to our bi-annual Installation Energy and Water newsletter, where we'll be providing periodic updates about new information & products available from the Installation Energy and Water Program Area.

Energy and Water Efficiency Solution for Dishrooms at Military Dining Facilities

The Department of Defense (DoD) manages over 500 installations, comprising of nearly 300,000 buildings. According to DoD's FY16 Annual Energy Management and Resilience (AEMR) Report¹, DoD's fixed installations account for nearly 30 percent of DoD's total energy use. Electricity and natural gas accounted for 85 percent of the DoD installation energy consumption. Similarly, in FY 2016, DoD facilities consumed 85.5 billion gallons of potable water, of which the Military Departments accounted for over 98 percent of total DoD potable water consumption. To reduce its demand of installation energy and water, DoD has been investing in efficiency and conservation projects on its installations. One of the primary objectives of these investments is to reduce energy and water costs and maximize payback in order to have the best return on investment.



ESTCP invested in one such efficiency project that offered a solution to reduce the energy and water use in dishroom operations. The objective of the project, [EW-201518, Energy and Water Efficiency Improvements for Dishrooms in Military Dining Facilities](#), was to demonstrate a combination of new technologies that recover heat from waste water, reduce waste water, improve worker environmental conditions, and reduce space conditioning loads. The project team was led by Gas Technology Institute (GTI) and the demonstration was conducted at US Army Garrison Presidio of Monterey, CA.

Daily meal preparation and cleanup in a military dining facility (DFAC) represents more than 75% of the energy and water load of the facility. Many of the dishwashers installed in foodservice facilities and DFACs are older, use excessive volumes of hot water and are operated inefficiently. In order to reduce energy and water usage and improve efficiency, the project investigated three types of technologies: waste water heat recovery, optimized ventilation system and a low-water usage dish machine. A waste water recovery system reuses heat from the waste water to preheat inlet water to the dish machine that would otherwise be poured down the drain. By recovering waste heat from the steam and waste hot water generated from the dish machine and adjusting the ventilation system's ventilation rate, less energy and water is used to clean the dishes and to maintain a comfortable work environment.

Based on the installation's DFAC capacity and the technology features and capabilities, the Hobart CLPS86ER dish machine was selected for demonstration. The Hobart unit is a conveyor style dish machine that has an internal heat exchanger that recovers heat from the waste water to heat inlet water used for washing. As the site preferred to use natural gas as the primary heat source, the Hobart unit was paired with an external natural gas booster heater from Hubbell. The unit pre-heats the inlet

¹ <https://www.acq.osd.mil/eie/Downloads/IE/FY%202016%20AEMR.pdf>

water to the dish machine to almost the temperature required for rinsing and washing. An on-board electric heater provides a small amount of energy to reach the final water temperatures.

The results from the demonstration show the combination of these technologies achieved an 89% reduction in water use (or 5,185 gallons per day) and energy savings of 51% with a payback of just over 2 years.

Additional details on the performance and cost can be found in the Final Report, which will soon be posted on the project webpage.

Recently Released Documents Available for Download

- FY19 New Start Announcement is live! [Check out the new EW Projects here](#).
- EW-201510 - “Demonstration of Ice Pigging Technology to Remove Biofilms in Water Distribution Systems” - [Final Report](#)
- EW-201513 - “Validating the COOLNOMIX AC and Refrigeration Compressor Control Retrofit” - [Final Report, Completed Project Overview](#)
- EW-201516 - “Thermally Assisted High Temperature Heat Pump” - [Executive Summary, Final Report, Completed Project Overview](#)

Key Events and Meetings

December 3-5, 2019 - SERDP & ESTCP Symposium 2019

Registration for the SERDP & ESTCP Symposium 2019 is now open. This year the Installation Energy and Water program area will host two Technical Sessions (Outlook and Applications of Distributed Energy Resources / Building Energy and Water Efficiency Solutions), along with a Short Course (Navigating RMF) [MORE](#)



Upcoming Conferences

July 8-10, 2019 - ARPA-E Energy Innovation Summit

ESTCP-EW will have representatives and a booth [\(#701\)](#) at the 2019 ARPA-E Summit

August 20-22, 2019 - Energy Exchange 2019

ESTCP-EW will have representatives and a booth [\(#416\)](#) at Energy Exchange 2019



Be sure to stop by!

Follow the [Installation Energy and Water LinkedIn](#) page for current news regarding the Program Area!