

Hydronic Additive for Closed-Loop HVAC Systems



Technology Overview

According to the U.S. Department of Energy (DOE), heating, ventilation, and air conditioning (HVAC) account for 44% of the energy used in commercial buildings.¹ Approximately 80% of GSA floor space is in large commercial buildings, with most of its HVAC relying on closed-loop systems—using hot water for heating and chilled water for cooling. This hydronic additive reduces the surface tension of the water and increases the heat transfer rate between water and flue gas or ambient air to reduce energy use and boost hydronic system performance.

The additive is non-corrosive, non-hazardous, and made from 100% organic materials. It is fully compatible with corrosion inhibitors and glycols and used in low concentrations: 1% additive to 99% water.

Why is GSA Interested?

Installing the additive is easy, with no system downtime or special equipment required. Water treatment professionals, mechanical engineers, plumbers, or building operations personnel can install the additive in less than an hour. It has no ongoing maintenance costs and no special drainage, handling, or storage restrictions. The manufacturer claims that it can last for at least 5 years without diminishing energy efficiency. In some cases, the product has been installed with proven stability for up to 10 years, providing an easy “set and forget” technology.

How Will Success Be Measured?

The testbed will assess two manufacturer claims: up to 15% heating energy savings and payback in less than 2 years. The ease of installation and maintenance will also be assessed.

Deployment Potential

This hydronic additive is applicable to closed-loop HVAC systems throughout the GSA portfolio.

¹<https://www.gsa.gov/governmentwide-initiatives/climate-action-and-sustainability/center-for-emerging-building-technologies/published-findings/hvac>, accessed 06-2022.

Green Proving Ground (GPG), in collaboration with the U.S. Department of Energy, is evaluating the real-world performance of hydronic additives for closed-loop HVAC systems in federally owned buildings within GSA's inventory. The technology will be provided by Endo Enterprises and Pace49 and coordinated with other ongoing evaluations of this technology.