



F.W. WEBB COMPANY

Case Study

Alliance Environmental Group

Glycol Concentration in Intricate Chiller System Restored to Operational Level

Alliance Environmental Group diagnosed and replenished glycol supply to keep chiller system operating properly



Project: Clean, Flush and Replace Heat Transfer Fluid in a Chiller System

Customer: New England University via an industrial HVAC specialist

Location: Southern New England

Size: Engineering laboratory consists of two interconnected two-story buildings (totaling 40,500 square feet) joined by an elevated walkway

Customer Bio: Commercial and industrial HVAC mechanical contractor specializing in the installation, maintenance and repair of sophisticated large tonnage systems

Overview

Routine analysis of the system's chiller fluid indicated the existing glycol level dropped below the 30% concentration necessary to prevent freezing. Elevated levels of dissolved and particulate material also contributed to the need to clean the system and replace the glycol.

The HVAC company engaged Alliance Environmental Group (AEG), an F.W. Webb company, to drain the existing spent glycol and flush the system with a trisodium phosphate cleaning solution. After flushing, AEG rinsed it with clean water before transferring a new 30% corrosion inhibited glycol into the chiller.

30%
concentration
needed for freeze
prevention

1,100
gallons of
spent glycol



The Challenge

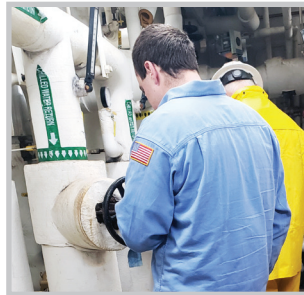
The job presented specific challenges above that of a typical glycol supply replacement:

- Removal and disposal of approximately 1,100 gallons of spent glycol
- Chiller consisted of two rooftop compressor units, nine air handlers and numerous smaller fan coil units
- Clean and flush entire system
- Employ staging equipment and safety measures for student and faculty protection

The Solution

AEG used a vacuum truck to drain the bulk of the fluid. After removing the spent glycol, AEG pumped in the cleaning solution. Alliance manually vented the individual air handlers and fan coil units to remove entrained air. They repeated that process after flushing the system with clean water and again after adding the fresh glycol solution.

Alliance adjusted the system's glycol level with a small amount of 100% glycol to bring the overall concentration up to 30%. AEG then injected pink dye into the system to differentiate the chiller fluid from the heating system and potable water system fluids should leaking occur. The university's Controls and HVAC Department tested each air handler after glycol transfer completion to ensure operational efficiency.

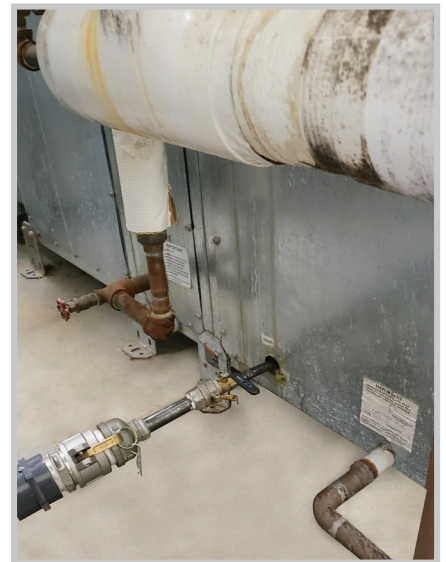


The Results

After replenishing the system, AEG collected a heat transfer fluid sample for visual inspection and laboratory analysis. Visual inspection indicated that the sample was clear, free of sediment and did not foam. Field analysis with a portable optical refractometer revealed a glycol percentage between 28% and 34%. Laboratory analysis confirmed the final glycol percentage was 30%.

Conclusion

Based on visual and scientific evidence, AEG concluded that the chiller's heat transfer fluid had been successfully replenished at a level that prevents freezing during winter and improves the heat transfer properties of the entire system.



Alliance Environmental Group provides a wide range of environmental testing, remediation and engineering consulting services. Engineering and scientific experts from Alliance work closely with federal, municipal, institutional, industrial and commercial customers. Our comprehensive list of professional services covers all your environmental and engineering needs. This includes assessments, facility management, regulatory compliance, permitting, auditing and more. Helping clients since 2001, Alliance Environmental Group joined the F.W. Webb Company in 2016. Alliance is committed to addressing your needs efficiently and cost-effectively.

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