



REQUEST FOR BIDS
Heat Transfer Fluid Replacement
DULUTH TRANSIT AUTHORITY

Addendum #2

May 2, 2023

1. Clarification:

a. The maximum recommended antifreeze mixture allowed by Cleaver Brooks is 50/50. Because of this recommendation, the DTA will accept a fluid mixture ratio that protects to a temperature of less than negative 40 degrees Fahrenheit (-40°), but must protect against temperatures at a minimum of negative 20 degrees Fahrenheit (-20°).

b. The Cleaver Brooks recommendations are as follows:

2.5 USING GLYCOL

The Model CFLC boiler may be operated with a solution of glycol and water. Where glycols are added, the system must first be cleaned and flushed. Correct glycol selection and regular monitoring of the in-use concentration and its stability is essential to ensure adequate, long-term freeze protection, including protection from the effects of glycol-derived corrosion resulting from glycol degradation.

Typically, ethylene glycol is used for freeze protection, but other alternatives exist, such as propylene glycol. Glycol reduces the water-side heat capacity (lower specific heat than 100% water) and can reduce the effective heat transfer to the system. Because of this, design flow rates and pump selections should be sized with this in mind.

Generally, corrosion inhibitors are added to glycol systems. However, all glycols tend to oxidize over time in the presence of oxygen, and when heated, form aldehydes, acids, and other oxidation products. Whenever inadequate levels of water treatment buffers and corrosion inhibitors are used, the resulting water glycol mixture pH may be reduced to below 7.0 (frequently reaching 5) and acid corrosion results. Thus, when pH levels drop below 7.0 due to glycol degradation the only alternative is to drain, flush, repassivate, and refill with a new inhibited glycol solution.

The following recommendations should be adhered to in applying model CFLC boilers to hydronic systems using glycol:

- 1) Maximum allowable antifreeze proportion (% volume):
50% antifreeze (glycol)
50% water
- 2) Glycol minimum temperature rating 300 deg F (149 deg C).
- 3) Maximum allowable boiler outlet/supply temperature: 200 deg F (93 deg C).