

COMPANY
STEAMGARD

TECHNOLOGY
STEAMGARD SYSTEMS
condensate removal devices

DEMONSTRATION SITE(S)
Metropolitan Rec. Center,
Brooklyn, NY

DEMONSTRATION PERIOD
March 2017 to March 2018



SYSTEM(S) INVOLVED

HEATING/ DOMESTIC HOT WATER



TYPE OF SAVINGS
GENERATED

NATURAL GAS

VENDOR'S POTENTIAL
FOR SAVINGS

5-20% THERMS

ESTIMATED FUTURE
SAVINGS

15%* THERMS



SAVINGS

PROJECTED PAYBACK PERIOD:

2 - 3 years

Technology Description

STEAMGARD (SG) manufactures the STEAMGARD SYSTEMS (SGS) device, a patented multi-stage condensate removal device that functions with a modified venturi nozzle design. Unlike a traditional steam trap, the SGS is designed to continuously separate two-phase steam into condensate and steam without any moving parts. As such, the longevity of the device should increase and maintenance requirements may be lower compared to conventional steam traps. Each SGS device is sized specifically for the selected site to ensure maximum efficiency based on the actual flow at each steam trap being replaced.

Optimal Facility Characteristics

SGS devices are a viable replacement for large float and thermostatic steam traps, however, it is important that each device is "blown down" immediately after installation, six months post, and annually thereafter to remove any debris that could clog the device. The SGS device can be used in buildings that have the following attributes:

- The building purchases or produces their steam and has a two-pipe steam system, including those with perimeter radiators, steam coils in air handlers or steam-to-domestic hot water heat exchangers.

- The facility has an operations and maintenance staff and schedule that will allow for the periodic blow down of the devices.
- A steam trap maintenance / repair program is being considered for the facility.

Demonstration Results & Discussion

There were fifty-eight (58) SG devices installed in the Metropolitan Recreation Center (MRC). SG reported that the temperature of the condensate receiver tank was approximately 217°F prior to the retrofit and approximately 165°F after the retrofit. These temperatures are indicative of steam bypass, due to failed open steam traps prior to retrofit, and fully condensing steam after the retrofit. SG also reported that there would be an undetermined amount of savings from the prevention of future steam trap failure.

After reviewing the final report provided by SG, CUNY Building Performance Lab (CUNY BPL) found that due to numerous repairs that were made on the heating system at the same time as the SGS device retrofit, there is no reasonable way to quantify the savings associated with the installation of the SGS devices during the demonstration period.

A parallel study by Edison Energy of the demonstration estimated the future annual energy savings to be 6,100 therms of gas on average for the 10 years after implementation.*

Recommendations for Implementation

These devices are most appropriate for replacing larger F&T traps than for radiator thermostatic traps, due to the cost and maintenance requirements. Implementation strategies can either include periodic replacement of steam traps as they fail or a whole facility replacement. Whole facility replacement may be the most cost effective, as it eliminates year-over-year surveys and repeated crew mobilization / demobilization. All steam traps to be replaced should have functioning isolation valves, otherwise partial shutdown of various sections of the steam system may be necessary. According to the manufacturer, installation takes approximately 30 minutes per trap location. Engineering surveys by vendors can take one or more days, depending on the size of the facility and the number of traps being surveyed. If only replacing failed traps, the survey must take place with the steam system operating.

It should be noted that steam traps are frequently sized based on the pipe diameter, not on the actual condensate load. This typically leads to oversized F&T traps, which are therefore prone to premature failure. It is important to have the condensate load (lbs. / hr.), pressure differential and maximum working pressure to enable appropriate device sizing.