



Multifamily Facility Management Services

STEAM TRAP REPAIR

Description:

Steam traps are generally only found on the heating systems of two-pipe steam buildings. Steam traps are an important part of the steam and condensate system of a two-pipe steam building. If they are not functioning properly, they can also represent a major loss of steam in the system, resulting in higher heating bills. The function of a steam trap is the removal of condensate and air (or other gases) from the steam space in radiators and main distribution lines.

Steam traps can fail in either the closed or open position. When steam traps fail in the closed position, condensate and air are not removed. This will greatly reduce the effectiveness of heat transfer since air and stagnant water backs up in the radiators. In addition, proper condensate removal is essential to prevent “water hammer” in the system, which is caused when slugs of water become trapped between steam pockets in a steam line. Most traps are designed to fail in the open position because this reduces the potential for damage to pipes and equipment. When traps fail in the open position, “live” steam is passed through the radiator before it has had a chance to give off its heat. This leads to higher-than-necessary losses from condensate piping, as well as losses of live steam in systems that are vented to the atmosphere. The result is tremendous energy waste and much higher fuel bills.

The cost of wasted steam far outweighs the cost of proper maintenance to repair malfunctioning steam traps. Most types of steam traps found in the heating systems of multifamily and small commercial buildings can be repaired in very little time with inexpensive replacement parts.

The major problem with steam trap maintenance is the inability to accurately diagnose which steam traps have failed. This is particularly true of the smaller steam traps common on steam radiators in heating systems. Obvious signs of trap failure include steam spurting from the condensate return tank or system vents, an increased need to add large amounts of make-up water to the boiler, or a continuous chattering, gurgling or hissing sound from the trap(s). Sometimes it is also possible to methodically inspect each trap individually by checking the temperature of the pipe one foot below and above each trap with a very sensitive thermometer. The temperature difference between these two spots should be at least 15 to 20°F. If the difference is less than this, the trap has probably failed.

How to Implement:

Most steam traps can be returned to proper operation by replacing the internal working parts of the trap with new parts available in a kit from the original manufacturer of the steam trap. Some companies have begun to standardize replacement parts, so that these internal workings may be available from other sources as well. Most heating and plumbing supply houses should be able to provide advice on the particular repair kits needed for a specific steam trap, when supplied with the make or number of the existing trap.

The operating elements of the small thermostatic traps common to radiators in heating systems can easily be replaced by the building maintenance staff. Replacing larger steam traps at the end of the main distribution lines may require assistance from a contractor to repair, or else maintenance staff may be able to repair them depending on the complexity of the task.

Because trap failure is difficult and time-consuming to determine, often the easiest maintenance program involves setting up a systematic repair schedule for all the traps in a building. Since most steam traps in common heating systems have a typical life expectancy of only three to five years, one option is to establish a four year rotation in which one-quarter of a building's steam traps are repaired annually. For example, in a four story building with traps at each radiator plus two main line traps, all of the radiator traps on the first floor plus one of the main line traps could be repaired in year one of the rotation, all of the second floor radiator traps plus the second main line trap in year two, all of the third floor radiator traps in year three, and all of the fourth floor radiator traps in year four. The procedure would then be repeated on a four year cycle. In that way, all the traps would be repaired about once every four years, eliminating the majority of trap failures.