

Balancing A System, by Carla L. Romita The Mann Report, February 2007

Many New York City steam-heated buildings share a rather unpleasant characteristic. Once the outside temperature reaches 60° F, the building's heating system switches on and it seems to stay that way for the entire season. Some residents endure sweltering apartments when they arrive home from work or attempt to prepare a meal, while others in the same building may be shivering through the night. Residents of overheated apartments may use self-help measures to lower the temperature—closing the valves on individual radiator units or opening their windows. The latter wastes precious natural resources and the owner's money. What can be done to balance a building's heating system?

The proper management and balance of a commercial steam heating system is one of the most complex and challenging tasks facing a building's technical staff. Just about every commercial building or multiple residence dwelling will experience an imbalance in the amount of heat furnished by the steam system. That imbalance cannot be eliminated completely, but it can be managed in a way that minimizes hot and cold spots. The key is to take these steps to ensure that the system functions to the best of its ability.

- A) *Ensure the correct pitch.* The most important single step is to ensure the correct pitch of every pipe and radiator in the building. All components must be pitched downward from the steam entry point to the steam exit point. Every radiator in the building should be examined for proper pitch. Years of residents scraping floors and installing and removing carpeting can wreak havoc with a radiator's pitch. A tilt in the wrong direction can cause a radiator barely to function at all. Common sense indicates that the building technical staff make it a priority to check the radiators in those apartments whose residents have been complaining of insufficient heat. The problem of insufficient heat in a particular apartment may be ameliorated by adjusting the pitch of the radiators in those apartments.
- B) *Ensure the valves on each radiator are operational.* Bottom valves (the valves that the resident can open and close) must be fully functional. Any inoperative valves should be repaired or replaced. Those who complain about too much heat can simply close off the bottom valves on their radiators. A properly functioning bottom valve can help make a significant difference in the temperature of the apartment. There is also a steam release valve on the top of each radiator. The steam release valve affects the ability to balance the heat in each apartment and, by extension, in the building as a whole. These small valves usually are found on the top right side of the radiator. If they have been painted over, they must be changed. Two brands of small steam valves are commonly used, Hoffman and Gordon. Gordon steam valves come in sizes "A" through "D," with "A" having the smallest release opening and "D" having the largest. It is recommended that the "A" valves with the smallest steam release openings be installed in the warmest apartments on the upper floors and that "D" valves be installed in the coldest apartments. The "B" and "C" size valves should be installed in the middle floors. Hoffman valves are numbered 1 through 4 and function in the same way.
- C) *Ensure that the quick vents are fully functional.* Quick vents are a component of a steam heating system that eliminates condensed water inside the pipes. They are installed in the basement area at the end of the main pipe that comes out of the boiler. A main pipe runs horizontally through the basement, then turns upward toward the residential floors. When a main pipe turns upward, it is more commonly referred to as a riser. There should be a fully functioning quick vent at the beginning of every riser to reduce condensate buildup.
- D) *Ensure that thermostats or temperature sensors are properly positioned.* This important task should be performed by a heating system specialist to maximize proper performance of the system. Computerized heating system management controls (see the March 2006 issue of Mann Report) can help control costs and prevent energy waste. However, these controls they will not deliver more heat to cold apartments and less heat to warm apartments.

It is advisable for a steam system professional to assess the building's heating system during the winter so that flaws in its functioning can be diagnosed and system specific recommendations can be made. Attempting to assess a system's functionality during the warmer months will not yield an accurate diagnosis of any problems that may exist. A reputable heating service company can perform this assessment for you and can recommend the most efficient and cost effective approach to balancing the heating system in your building.